



Captive Audience

“TO FERRET” MEANS TO BRING TO LIGHT BY SEARCHING BY STEVE MIRSKY

In October researchers announced in the journal *Nature* what could prove to be one of the greatest scientific discoveries of all time—the fossil remains of a miniature species of humans. The island of Flores, already famous in paleontological circles for having been home to pygmy elephants, also seems to have encouraged the downsizing of a stray group of *Homo erectus* who wound up there. Small stature was selected until adults were just over three feet tall and deserved to be classified as a new species. Islands, with limited resources, promote this kind of diminution—*Scientific American*’s offices are on the island of Manhattan, and some of us need a boost just to type uppercase letters.

You’ll be able to read a full-length feature article about the not-quite-full-length people of Flores in our February issue. But I am forced to abandon my consideration of them at this point in favor of a discussion of other research. Because, at the end of September, *Nature* published a study in which scientists made ferrets watch the movie *The Matrix*. I’ll wait while you read that last sentence again.

Indeed, researchers at the University of Rochester made a dozen ferrets watch *The Matrix*. (The idea of 12 sentient beings exposed to bad acting from stiff guys dressed in cheap suits particularly disturbs me, but that’s probably because I was just on jury duty.) Of course, you are no doubt wondering why serious scientists made ferrets watch *The Matrix*. This question can be answered in three different ways:

1. Why did researchers make ferrets watch *The Matrix*? Answer: Because there are some things that rats just won’t do.
2. Why did researchers make ferrets watch *The Matrix*? Answer: Because if they had made ferrets watch *The Matrix Reloaded*, animal-rights groups would have been storming the laboratory.
3. Why did researchers make ferrets watch *The Matrix*? Answer: To get a better handle on the nature of the perception of reality.

Seriously. *The Matrix* was an ironic choice, because that particular movie poses questions about whether what we commonly perceive is objective reality or just an imposed fiction. But because the investigators were interested in how a brain processes visual stimulation, they could have shown the ferrets anything other than *My Dinner with An-*

dre or C-SPAN’s coverage of Congress.

A surprise for the scientists was that watching the movie made an adult ferret brain’s visual system work only a bit harder than its baseline output. The ferrets’ visual neurons were cranking along at about 80 percent of capacity even in a completely dark room. “In this framework,” the researchers write, “ongoing activity may not be noise upon which visual responses are superimposed, but rather an integral component of sensory processing.” That thing going bump in the night is your brain.

A provocative conjecture is that most of the brain’s visually related activity is devoted to continuously manufacturing its learned representation of the world—its reality matrix—even in the complete absence of any current stimuli. And new, real-time action is overlaid on that internal representation.

“Because of the high-energy consumption of baseline neural activity in the brain,” the scientists write, “it would be inefficient to maintain the observed high level of spontaneous activity unless it had an essential role in sensory processing.” Perhaps it’s simply easier to keep the matrix handy at all times than to ask the brain to build reality from scratch every moment. Which leads to this parting thought from the great mythologist Joseph Campbell: “Life is like arriving late for a movie, having to figure out what was going on without bothering everybody with a lot of questions, and then being unexpectedly called away before you find out how it ends.” Especially if you’re a ferret. ■

