

## The Big Picture

Picture a scientist. Now try again, once you erase the image of Einstein from your gedanken blackboard. Since you read this magazine, you may be a scientist, and thus you may have depicted yourself. Unless you're a man in a white lab coat, however, chances are that when most people think of scientists, they're not thinking of you. What they are thinking of was the subject of a study in the August *American Journal of Physics* entitled "Probing Stereotypes through Students' Drawings of Scientists." That article, by Jrene Rahm of the University of Colorado at Boulder and Paul Charbonneau of the National Center for Atmospheric Research, also sums up previous studies on the scientist's image.

In 1957 *Science* reported on 35,000 American high school students who were asked to describe a typical scientist. The "average" response: "A man who wears a white coat and works in a laboratory.... He may wear a beard, may be unshaven and unkempt....The sparkling white laboratory is full of sounds: the bubbling of liquids in test tubes ...the muttering voice of the scientist.... He writes neatly in black notebooks." These images obviously represent grand misconceptions—most notebooks would stymie gifted cryptographers and perhaps even pharmacists, the muttering is more likely a grad student wondering if he can sneak away long enough for a game of checkers on Saturday night, and the lab last sparkled when its occupants were developing phlogiston theory.

Nearly 30 years later a 1983 study published in *Science Education* asked more than 4,800 children in grades K through 5 to draw their idea of a scientist. The conceptions were overwhelmingly male, labjacketed and adorned with Don King hairdos. The stereotype surfaces in grade 2 and is the image of choice for most fifth graders.

Fearing that public perception is driving students away from science, Rahm and Charbonneau extended the "Draw-a-Scientist" test. They administered it to 49 undergraduates and graduate students enrolled in a teacher certification program: the next generation's teachers. These older, more sophisticated students might be expected to draw a more varied array. The vast majority, however, stayed with the man in the white jacket. Seventy percent of the scientists pictured needed glasses, 58 percent wore lab coats, and 52 percent had facial hair or "extravagant hairdos," a number that may actually be too low to attract the MTV generation. Only 16 percent were clearly female.

A few students went for a reality-based approach. "We had two versions of Einstein," Rahm and Charbonneau write, "and, somewhat more troubling, two of Groucho Marx. Equally troubling, one drawing appeared to be a cross between Konrad Lorenz (in his later years) and Colonel Sanders." (Helpful hint: if the bird is chasing the man, it's Lorenz.)

Although this study doesn't address whether the stereotype drives students away from science, Charbonneau is concerned. "If everybody thinks scientists are crackpots," he says, "they think, 'Hey, I'm not getting into this business.'"

One attempt to buff up scientists' images (male ones, anyway) is the *Stud-muffins of Science* calendar, featuring bulging biceps of beefcake Ph.Ds. "I wouldn't do it," Charbonneau says of public flexing, "but it tries to say that scientists can look like actors, the most important people in society." Another attempt, despite its name, is NerdKards, trading cards featuring famous scientists and their stats. The inventor, retired Connecticut teacher Nicholas Georgis, explains that Nerd here stands for Names Earning Respect and Dignity. Unfortunately, the only woman pictured is Marie Curie, and she shares the card with Pierre. Still, it's a first step to a day when a kid wouldn't trade a Harold Varmus for a Ken Griffey, Jr. Smacking homers is cool. Discovering oncogenes is cool and important. —*Steve Mirsky*

(from the "Anti Gravity" column in *Scientific American*, November 1997, page 28)