

The Eyes Have It

An early special effect in a movie by Alfred Hitchcock consisted of building a huge gun so that he could show the view down the gun's barrel. Compare that with the computerized effects of *Jurassic Park*. Similarly, in science visual communication was previously all tables and pie charts. Compare that with recent covers of *Science* magazine, which provide weekly examples of visual breakthroughs. In fact, viewing *Science*'s covers over time would probably provide a perfect illustration of the evolution of visual communication in science.

Evidence of the growing importance of the image in science today is abundant elsewhere, too. For example, the University of Florida has created a curriculum offering interdisciplinary degrees in engineering and arts (see www.dwi.ufl.edu). Information about this curriculum refers to the Disney-coined term *imagineering*, which might be the one word that is worth 1000 pictures. A visual-communication scholar is director of product development for a new media publishing company that creates interactive digital educational animations (IDEAs) for health Web sites (see www.illustratedideas.com).

One person who has been thinking and writing about visual communication is Jean Trumbo. Her current research projects include a taxonomic analysis of Web sites on cancer and studies of visual representation and technologies used in science, visual design on the Internet, and visual literacy in the design of interactive multimedia. On her Web site (www.wisc.edu/trumbo/trumbo/trumbo.html) she quotes Dr. Seuss: "I did it because it was fun and fun is good." In the articles cited below, she says it is time to wake up to the world of visual communication in science.

Trumbo J. Visual literacy in science communication. *Sci Commun* 1999;20:409-25.

This article is as much a description of how visual representation permeates science as it is an explanation of visual literacy. Trumbo relates ideas about images from a host of scientists. For example, she notes

that da Vinci used a visualization process he called *saper vedere*, or "knowing how to see". As a "holistic construct", visual literacy consists of thinking, learning, and communicating by means of images. Trumbo illustrates each of these aspects of visual literacy with tables of their "dimensions" (based on a 1988 book by Marzano and others on the five dimensions of thinking), and she gives several examples for each dimension. For example, a dimension of visual learning is synthesis, which would include using visual representation as an interactive tool or to explain a scientific process or to collaborate. Perhaps the most useful table for editors is the one on visual communication. Its dimensions are the source of the message, the message itself, the design and visualization process, the nature of the medium, and the audience. The medium itself has its own dimensions: content (such as documentary or advertising), role (such as history, access, or effects), and technical quality (such as aesthetic or interactive).

Trumbo J. Seeing science: research opportunities in the visual communication of science. *Sci Commun* 2000;21:379-91.

This follow-up to the article above is an emphatic call for research on visual communication. Trumbo begins with excellent thumbnail sketches of the importance of visual representation in the exploration of a virus, of chaos, and of the galaxy. These concrete examples serve as a springboard for addressing a problem: that the science communicator's role of serving as a channel between scientists and the public "is not simple, neutral, or necessarily intuitive." The job is made more complex with the new forms of visual representation now available. Indeed, visualization is now emerging as a new discipline, in large part because of the computer. Research questions should address visualization as both an internal process and a communication tool.