

# EYE, MIND AND IMAGE

## LEAPING DISCIPLINES TO UNDERSTAND WHAT IT MEANS TO SEE

BY PETER NICHOLS

PHOTO ILLUSTRATION BY MATTHEW LEAKE

Following a lecture on the history of visual theory he had just delivered last fall to a class of nearly 50 undergrads, philosopher Gary Hatfield turned toward a student who approached with the look of a question on his face.

“So let me get this straight,” the student began. “For this coming assignment, you’re not asking us to simply find the place in the textbook where the answer is and paraphrase it. You want us to make some deductions of our own.”

The homework in question was one of the first assignments for Visual Studies 101, team-taught by Hatfield, the Adam Seybert Professor in Moral and Intellectual Philosophy, and Michael Leja, Professor of the History of Art. The course, called Eye, Mind and Image, includes perspectives on seeing drawn from philosophy, art history and theory, psychology, intellectual history and brain science along with a smattering of other fields. “It’s about seeing and about visual images, and about the interaction between the two,” Hatfield summarizes. The co-instructors’ tag-team teaching was supplemented by a set of talks by Psychology Professor David Brainard, an expert on visual perception and its neural mechanisms.

“Penn students know how to study and get a fairly contained idea under their belts,” says Hatfield. “What we’re asking

them to do is take some ideas from one domain and connect them to another. They already do that in other classes, but I think an even greater leap is being asked for in this course.”

Not only were students expected to integrate academic disciplines in readings, lectures and discussions, they also dissected cows’ eyes, experimented with color mixing, drew the Perelman Quad by hand, took part in computer exercises on brain anatomy, viewed and analyzed the film *The Matrix*, snapped digital photos, and went on a class fieldtrip to Dia: Beacon art museum in New York State. They also leapt into philosophical speculations on the nature of illusion and the mind-body problem, bounded onto a brief history of moving pictures, vaulted to a study of how the eye and brain detect motion, did a pirouette across modes of visualizing information (graphs, charts, maps and diagrams) and landed with both feet on Euclid’s and Descartes’ distinct geometries of vision as well as an essay into how one’s culture and historic time period can determine what and how you see. The students also spent some time looking at how artists depict space, motion and perspective, and use color in making art.

“We’re always going for some kind of cross-disciplinary challenge,” Leja comments. “It’s an awfully big leap from neural activity to something like film montage, but just when you think it’s most distant, it turns out to be directly

**“IT’S AN AWFULLY BIG LEAP FROM NEURAL ACTIVITY TO SOMETHING LIKE FILM MONTAGE, BUT JUST WHEN YOU THINK IT’S MOST DISTANT, IT TURNS OUT TO BE DIRECTLY CONNECTED.”**

connected.” A College advisor told him that Visual Studies 101 is the only Penn course that can fulfill the science, humanities or social-science sectors in the general requirement. Course enrollment reflects that range of interest with students coming from majors across the arts and sciences as well as from engineering, business and fine arts.

Lacey Baradel, an art-history graduate student in charge of several recitation sections, observes that the mix of majors enriches student discussion. “They aren’t just repeating what they learn in the lectures,” she notes. “The students have such different backgrounds and bring their own experiences and knowledge to bear on the material, which makes for a more dynamic conversation.”

Leja observed several of the recitation sections. “Some of that important pulling together of disciplinary strands takes place in the recitation discussions,” he says. “I want the scientists to come away with an ability to relate to pictures,



Seeing is believing: Gary Hatfield (left) and Michael Leja

and I want the artists to come away with an ability to use scientific analysis on visual processes as they relate to images.”

Fine arts sophomore Jillian Blackwell recalls, “Before taking this course, when I thought about vision, I thought about it as photographs floating around in my brain and a little man inside looking at them and sorting them.” The class had studied this outmoded eye-as-camera model of seeing, where the lens of the eye takes a snapshot of the outside world and projects an image onto the retina. “Now I’m beginning to realize that something chemical happens in

my eyes and then something chemical happens in my brain—like a relay—and what’s being passed isn’t an image, it’s a kind of code.”

Maya Ratajczak, a freshman leaning toward a major in economics, never thought much about vision. “I just kind of thought my visual system magically put things together into a comprehensible way,” she says. “The neuroscience helped me understand how exactly the visual system works and was useful in bridging an understanding between philosophical theories of vision and the physiology of the visual system. The art history allowed me to see how the theories of vision we studied were displayed in art and how seeing was culturally and historically conditioned. Now I look at almost everything—things I used to take for granted like lampposts converging in the distance or a piece of art on display—by analyzing things like perspective, physiological facts of vision and how visual theories are presented in works of art.” Instead of *magical*, she now describes how vision works using words like *intricate* and *amazing*. ♦