

From drawings based on neurological networks to sculptures cast from whale skulls, artists are making the brain their subject—and some are helping to uncover its secrets

Jan Fabre's *Anthropology of a Planet II (Thinking Model)*, 2008/9.

**OPPOSITE** In *Slumber*, a 1993–2000 performance, Janine Antoni measured her own brain activity while sleeping.

# B R A I N

BY ANN LANDI



COURTESY THE ARTIST AND GALERIE BERND KLÜSER, MUNICH

**LEONARDO DA VINCI** was likely the first artist to take a formal look at the brain and its functions. He illustrated optic nerves and the cross sections of a human skull, locating what he believed to be the site of the soul. Though some scientific researchers have claimed that other Renaissance masters, notably Michelangelo and Raphael, included disguised images of the brain in their paintings, the organ remained an object of fascination primarily for anatomists. It's only recently that a new wave of artists has found a rich lode of imagery and inspiration in that complex bundle of gray matter. Some are attracted to the visual data that are products of neuroscience, such as MRI scans and microscopic cross sections; others look at the physical shape and structure of brains, both human and animal; and a few even use the energy generated by brain waves to fuel artistic creations.

British painter and printmaker Susan Aldworth first saw es-

# W A V E

thetic possibilities in the brain after she collapsed in her London studio in December 1999. As doctors worked on a diagnosis—they initially suspected a brain hemorrhage caused by inhaling fumes in an unventilated space—Aldworth remained fully conscious. “I was looking into my brain, in real time, live, on a monitor, while lying on an operating table at the Royal London Hospital,” she recounts. The damage wasn’t serious, but the episode marked a turning point for Aldworth as an artist.

“I knew from that moment that I didn’t have a soul,” Aldworth says. “The mind and the body are one thing, and that is my brain. I became obsessed with finding out what neuroscientists know about the brain and with understanding what it is to be human nowadays.” Aldworth subsequently obtained permission to observe brain operations on other patients. “I drew brain scans and developed a visual language as an artist,” she says. “I used the lines and the arteries to develop work about personal identities.” The resulting etchings and aquatints, which Aldworth sells privately via [susanaldworth.com](http://susanaldworth.com), may look like abstractions, but in fact they document tiny bursts of thought and hyperkinetic activity buzzing through the brain. One particularly vibrant series, 2007’s “Apoptosis,” depicts a systematic process of cell death in the brain.

Firsthand observation is central to the work of Brooklyn-based artist Nene Humphrey as well, and she’s become a regular at the laboratory of Dr. Joseph LeDoux, the director of the Center for the Neuroscience of Fear and Anxiety at New York University. “I started going in and talking to a group of scientists,” the artist says. “Sometimes I draw through the microscope, and sometimes I observe a procedure.” Humphrey used microscopic images of the brain as the basis

for a series of delicate embroideries in 2004. Similar images inspired an installation and works on paper in a recent solo show at New York’s Lesley Heller Gallery. Titled “The Plain Sense of Things,” this exhibition included red and black clusters of wire and hair-thin fibers that had been molded, twisted, and positioned to render neurological structures like ganglia, myelin sheaths, and dendrites.

London-based artist Andrew Carnie traces his interest in the brain to his boyhood discovery of what he describes as “a pink indented object the size of a walnut” in the woods. He believed it to be the brain of a small animal, but later acknowledged that it was probably just a wad of chewing gum. In college, Carnie became fascinated by animals, animal behavior, and the brain, he says. Then, a few years ago, Carnie, 52, found himself taken with the subject yet again. His work had shifted from sculpture and painting to video- and installation-based pieces. Neuro-

science and animal behavior, it seemed, offered a trove of raw material. Carnie used short films of chick brains developing in vitro for a series of slide projections in *Magic Forest*, an in-

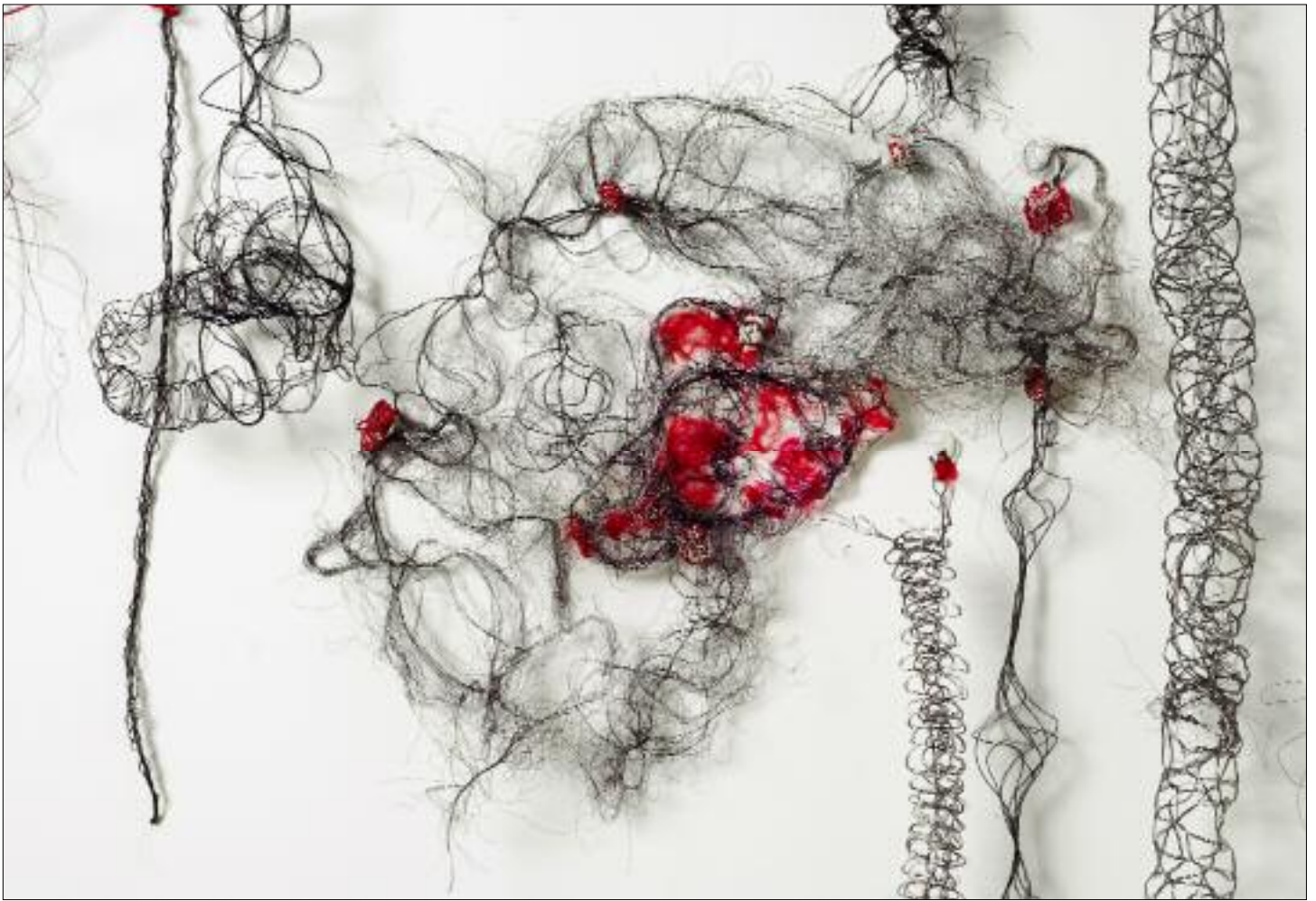
stallation shown last year along with other brain-inspired works in the group exhibition “Brainwave: Common Senses” at New York’s Exit Art. In his projections, successive images of neurons portray the complex development of the chick’s brain, which ends up resembling a glowing forest of trees with tangled roots and branches. Carnie is currently working on a



project inspired by studies of how temporal-lobe epilepsy affects creative people. “My interest is in how we incorporate this medical imagery into a sense of what we are,” he explains.

Collecting similar data, New York-based Dustin Yellin uses different types of brain scans to build portraits of men and

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**ABOVE** Nene Humphrey's *The Plain Sense of Things* (detail), 2008, an installation based on microscopic images of the brain.



**LEFT** A still from Andrew Carnie's multimedia installation *Magic Forest*, 2002, shows neurons sprouting in the brain like trees.

**RIGHT** One piece from Suzanne Anker's "The Sum of All Fears," 2002-8, a series of plaster-and-resin sculptures modeled after Rorschach inkblots.



**BELOW** Susan Aldworth's *Apoptosis 2*, 2007, an etching and aquatint depicting rapid cell destruction in the brain.





women in states of chaos, disorder, and helplessness. Yellin's recent solo show, "Dust in the Brain Attic" at Robert Miller Gallery in New York, included a pair of sculptures modeled after MRI scans. Other works suspended ink-and-acrylic paintings within blocks of clear resin to create expressionistic depictions of ghoulish creatures whose "brains are about to explode from an aneurism," Yellin says.

Suzanne Anker based her 2002 installation *The Butterfly in the Brain* on a confluence of medical and psychoanalytical imagery. While studying neurological maps of the brain, she noticed that brain ventricles are shaped like butterflies, which in turn suggested the contours of Rorschach inkblots—still a common tool in psychoanalysis and the inspiration for a series of her sculptures. "Part of my research is to look through images in science and see how these can be repurposed or reused in another context," says Anker, who shows at Deborah Colton Gallery in Houston.

**THE ENERGY** released by the brain through the systematic firing of neurons has also been harnessed for artistic ends. As part of her 1993–2000 performance of *Slumber*, Janine Antoni rigged herself to an electroencephalograph (EEG) machine to track the rapid eye movements (REM) that denote the periods of dreaming during her sleep cycle. By day, using strips torn from her nightgown, Antoni wove the markings of the REM graph into a blanket that covered her while she slept.

Fernando Orellana, an artist who teaches at Union College in Schenectady, New York, collaborated with Brendan Burns, a professor of computer science at the same school, to create a robot that acts out periods of high REM activity. After Orellana spent the night at the Albany Regional Sleep Disorders Center hooked up to a variety of sensors that recorded his brain activity, the two used patterns in that data to program a Kondo KHR-2HV humanoid robot made of shiny metal plates. "Periods of high REM activity were associated with dynamic behaviors like flying or running," Orellana explains, "while low activity had more to do with gestures or looking around. The robot's movements are like some of the actions people commonly experience in dreams."

For Belgian artist Jan Fabre, whose work will be shown at the Arsenale Novissimo in conjunction with this summer's Venice Biennale, the brain may be "the most sexy part of the body," to paraphrase the title of his recent show of sculptures and drawings at Galerie Bernd Klüser in Munich. For one installation, titled *In the Trenches of the Brain as an Artist-Lilliputian* (2008), the artist sculpted a life-size doppelgänger, trench-coat-clad and perched on the skinless head of a giant, digging his way into the terra incognita of the brain. In a similar sculpture, the small-scale *I Drive My Own Brains II* (2008), Fabre depicted himself standing atop a human brain, holding a pair of reins fastened to either hemisphere. It represents "the artist trying to tame his own brain," he says. "That's me, as if I were on top of a horse. When you think, you become comical. When you feel, you become tragic. You're always trying to tame the fight between these two things."

The human brain, its functions and forms, is what intrigues most artists, but Dustin Wenzel's sculptures are based on the craniums of whales native to his home in the Canadian Maritimes. The plaster and bronze castings he makes from skulls

salvaged along the beach or borrowed from the New Brunswick Museum—which recently acquired some of his work—give a vivid idea of what the animals' live brains look like and are surprisingly heroic in appearance. *Sperm Whale Endocranial Cast* (2007), for example, rises from its wooden base with the same majesty as one of Rodin's gigantic hands.

Wenzel has worked closely with curators and zoologists at the museum and has discovered, he says, that "scientists were keen to open up their collection because they don't have that much information about whale-brain anatomy." For his part, Donald McAlpine, curator of zoology at the museum, says he was "impressed with the structural and surface detail Dustin was able to capture. In the years ahead the casts should prove useful as reference pieces for marine mammologists."

Which raises the question: if artists are looking to science for ideas and inspiration, is science getting anything in return? Giovanni Frazzetto, a research fellow at the BIOS Centre of the London School of Economics, says that "fruitful collaborations between scientists and artists are very rare." But Frazzetto cites a few ongoing pairings of artists and scientists—SymbioticA, a research laboratory in Perth, Australia, for one—where artistic endeavors have served as catalysts for scientific research. Some scientists even see noteworthy parallels between artists' processes and their own, despite their different aims. "Observation probably doesn't get enough credit as a scientific tool," says NYU's LeDoux. "But some of the most important discoveries have been made in the course of doing an experiment that changes the way we look at other experiments. The observational process, trying to come up with a visual representation of what we study and looking at it in a new way, is not that different from what a scientist does."

Frazzetto also notes that the number of artists interested in neuroscience seems to have grown at roughly the same pace as the field itself. "The past ten or fifteen years have been unprecedented in neuroscience, both because of actual significant discoveries and because of the resulting attention devoted to the field," he says. "It's no surprise that artists have been captivated by this phenomenon." ■



**ABOVE** Dustin Wenzel's bronze *Sperm Whale Endocranial Cast*, 2007. **OPPOSITE** A detail of Dustin Yellin's *MRI No. 3 Red Sunglasses*, 2008, an ink-and-acrylic painting encapsulated in a block of resin.