

The Science of Art

To unlock the eternal mystery of creativity, researchers are now focusing on brain disorders that spark artistic abilities

BY LINDA CARROLL

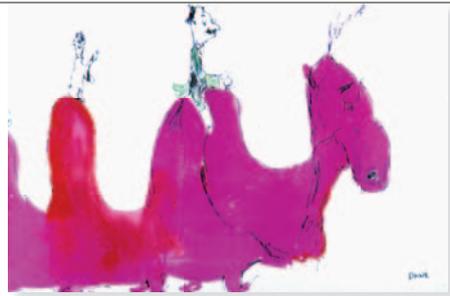
What separates the artist from the rest of us mere mortals? In Jon Sarkin's case, it turned out to be a stroke. The deluge of blood that drowned certain parts of his brain also flipped a switch that turned on a torrent of creativity. Suddenly the buttoned-down chiropractor had a compulsion to create and an artist was born in a man approaching his fifth decade.

"I came to consciousness and things were different right away," he recalls. "Something happened in my brain that made everything different. I don't know what that is and neither does anyone else."

For scientists interested in what constitutes creativity, Sarkin and others like him provide the perfect experiment: a man spends half his life as a linear-thinking pragmatist and the second half as a Bohemian painter. Here is a clear window into the neurological differences that allow a small number of us to transcend the ordinary.

At present, what is known about this strange sort of rebirth is that it stems from certain types of dementia and brain damage. Researchers suspect that most of the change results from a loss of function rather than a gain. Brain regions that once stifled creativity are muted by the damage.

Sarkin's experience, however, suggests the story is more



THE AUTISTIC ARTIST

A prodigy at age 2, Dane developed his art by instinct as his preferred means of expression. At 18, he now exhibits and sells his paintings.

complicated. Before the stroke, his life had been controlled, predictable, orderly. Although he'd always been interested in art, going to museums and sketching occasionally in his spare time, Sarkin never considered painting as a possible career choice. "I went to prep school and a really good college," he says. "You don't chuck all that away to become a starving artist."

After the stroke, everything changed. The world suddenly sounded, looked, felt, even tasted alien to him. The changes inspired feelings he'd never had before, and he felt compelled to communicate them. But he couldn't find the words to capture the new person he'd become.

"I didn't have the need to express emotions before the stroke," Sarkin says. "Afterwards, I became more primitive,

more animalistic...darker. Have you ever read 'Heart of Darkness' or seen 'Apocalypse Now'? I just went further upriver."

Sarkin says he always had an offbeat way of looking at things. But, after the stroke, "my artistic thermostat got turned up big time."

Just how that thermostat got turned up is what has scientists intrigued. As it turns out, Sarkin's stroke damaged an area of the brain—the frontal lobes—that has been linked to a blossoming of artistic activity in other people.

Occasionally patients with a condition called frontotemporal dementia suddenly develop an urge to paint, says neurologist Bruce Miller, M.D., director of the Memory and Aging Center at the University of California—San Francisco.

More often than not, Dr. Miller says, there's a loss of creativity in people with frontotemporal dementia. "But a minority of them—a very interesting minority—start producing paintings," he adds. "And this happens even in those who had no interest in art before."

This sudden unleashing of artistic talent only occurs when the left side of the brain is hit harder than the right, Dr. Miller says. The left is the side associated with language; the right is involved in visuospatial processing. Normally the left side tends to dominate the right side. When the left side is harder hit, the result is a condition scientists call progressive aphasia. "It's almost like the degeneration in some way releases functions that were hidden before the illness," Dr. Miller says. "Whatever that visual part of the brain did before was suppressed by the brain functioning as a whole."

His work with aphasia patients made Dr. Miller think about an autistic boy named Dane. "When I started realizing that some of my patients were losing language and social skills but developing an interest in art, it reminded me a little bit of autism," Dr. Miller says. "There, it's not a progressive loss, but it's similar nevertheless."

Dane was drawing strikingly advanced pictures of horses when he was just 2 years old. "I was very struck by the way Dane's artistic creativity was similar to that of my patients with progressive aphasia," Dr. Miller says. "So the language isn't there, but there's this energy and burst of visual images that comes out—in Dane's case, almost like instinct, almost like it was just sitting there and waiting to go."

While it's possible that frontotemporal dementia leads to artistic talent simply through an unleashing of pent-up creativity, some researchers suspect the condition leads to changes in how people see the world. The originality we see in these patients may result from the different way they perceive commonplace objects, says Kate Rankin, Ph.D., assistant professor of neuro-



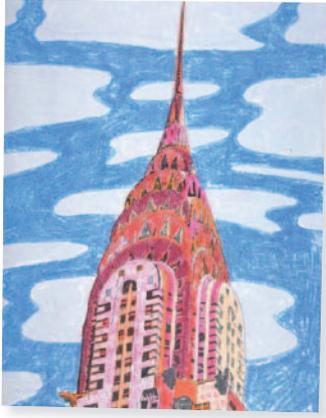
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psychology at UCSF. What we see as creative may just be their altered perceptions of the world. In their paintings, "they tend to take something typical and make it unusual by the way they represent it," Dr. Rankin says. "I don't think that they're making great symbolic connections. Your average abstract artist is looking for content, for symbology."

Activity in the visual side of the frontal lobes may be boosted when the side that processes language is severely damaged, Dr. Rankin says. Just as blind people hear better than the sighted, those with left-lobe damage may be more sensitive to what they see around them. And the paintings may be an expression of how they feel about that.

"Some of the paintings almost make your brain fry," Dr. Rankin says. "The visual elements and lines are so intense that it's almost disturbing to look at them. You can almost imagine what it must be like to be in the head of someone who sees the world in a more intense way."

COURTESY OF JON SARKIN



A NEW-BORN ARTIST

A stroke at 36 inspired Jon Sarkin to become an artist when words were failing him. His artworks (which have been published in *The New Yorker*) have evolved over 17 years to include words as well as images.

Friends and colleagues noticed signs that the painter's memory was failing in the late 1970s. Visiting him in 1982, artist Chuck Close found de Kooning to be inert and forgetful—until de Kooning entered his studio. There, de Kooning seemed more engaged and lively. With the help of his ex-wife and assistants, he was able to keep painting for another decade, but with a new and coherent style.

“Interestingly, the work of artists with dementia can change in a way that critics find more appealing,” Dr. Chatterjee says. “There is a sense of resiliency of the creative spirit that forces itself out through different conduits when the initial ones are blocked.”

To uncover the science behind the art, researchers are turning to brain scans. So far, they've done only the types of scans that reveal which structures have atrophied in the brain. Other scanning technologies, such as functional MRI, might show that certain areas of the brain have been turned up by the brain damage. “What we haven't done, and what I think is really important to do, is to look at what parts of the brain are released,” Dr. Miller says.

Some scientists believe that the birth of an artist at an older age may have less to do with a change in perspective than with the sudden onset of a compulsion to create resulting from temporal-lobe damage. Alice Flaherty, M.D., whose research focuses on creativity, notes that damage to the temporal lobes can lead to a compulsive burst of artistry.

“In most of the compulsive creativity syndromes, it's usually the drive that is key,” says Dr. Flaherty, assistant professor at Harvard Medical School. “People tend to think that talent is everything. But there is a practice effect. When you love what you are doing and do it all the time, you get better by dint of practice.”

Dr. Flaherty cites one of her patients who became obsessed with painting after a brain bleed. “The photos he sends me show that his paintings are really becoming quite lovely,” she says. “For him, it's an amazing and horrible experience to be suddenly fascinated by art. His whole personality has changed.”

The drive to paint has become so intense that the patient has no time for anything else in life, she adds. “He's painting on walls, on the stove, everywhere.”

For Sarkin, it comes down to a compulsion to paint—and a compelling need to make himself understood. He's acutely aware that he sees the world differently from those around him, and even from his former self. That is both isolating and alienating. Painting, Sarkin says, “is like pouring your emotional reality onto canvas.”

Exactly how damage to the brain impacts art depends on which areas are affected, experts say. Alzheimer's disease, for example, tends to lead to a more simplistic—almost child-like—quality in paintings, says Anjan Chatterjee, M.D., associate professor of neurology at the University of Pennsylvania.

This is certainly true for the renowned abstract expressionist painter Willem de Kooning. At the same time Alzheimer's was stealing de Kooning's memory, the disease may have been contributing to his artistry.

Prior to developing Alzheimer's, de Kooning painted in both representational and abstract styles. But once he developed the disease, he only made abstract paintings and these were far less complex than those painted in earlier periods. “There was a successive simplification in his work,” Dr. Chatterjee says. “There was a paring down of forms and colors. Some critics say he was getting down to the essence and that he did his best work during that period.”



For more information about art therapy, see **RESOURCE CENTRAL** on page 46.