

The **brain's** *hidden agenda*

Neuroimages can reveal physical explanations for violent, impulsive behavior. But does this technology have the power to excuse the accused?

In the book, “The Man Who Mistook His Wife for a Hat,” written by neurologist Oliver Sacks, a man suffering from a neurological disorder called visual agnosia tries to pull his wife’s head off — thinking it’s her hat. The story is true, its theme detailing a number of cases where brain damage was shown to have direct influence on behavior.

Our notions of the so-called “loony bin,” with patients in white shuffling through long hallways after having had a clandestine lobotomy, has evolved. Those “patients,” we understand now, are individuals with documented illnesses — mental, physical or psychological. Sometimes they are rehabilitated, sometimes not. Rosemary Kennedy, sister of JFK, had undergone a lobotomy in the 1950s that rendered her more debilitated than she had been prior to the procedure. Fortunately, those days are gone.

We know much more about the brain today, thanks to many areas of science working together.

When a man tries pulling his wife's head off, we ask why (and come up with better answers). More recently, neuroscientists have found they can use neuroimages to link damaged areas of the brain to criminal activity and violence. At its best, these sharp pictures grant futuristic access into the dark recesses of the mind. Is this just high-tech phrenology? Or can such techniques offer another clue as to why a person might engage in impulsive crimes — even murder? How might it affect our perception of cause and accountability?

Random acts

Dr. David Hartman is a forensic neuropsychologist who handles civil

“The severity of a brain lesion ... itself is enough to make someone incapable of controlling their behavior in almost any circumstance.”

— David Hartman, Ph.D.,
American Board of Psychiatry
and Neurology

and criminal examinations of how people's brains work with respect to injury or dysfunction that might be reflected in claims of trauma or criminal indictments. He describes

his job as like that of a mechanic. “[The mechanic] tests out various systems of the car, while it is working,” says Hartman. “In a respect, I take the brain out for a drive; I evaluate its actual behavioral function and test out the emotional condition a person may have.”

The parts of the brain most associated with violence or lack of control are the frontal and temporal lobes. The frontal lobe is the anterior region located above the eye sockets. This most-evolved sector is considered to be the seat of working memory, and is responsible for high-order functions like planning and impulse-control.

An ongoing dysfunction can reveal itself in many ways. Hartman

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recalls a recent patient of his — a professional from New York — who was booked for an appointment because he was becoming verbally abusive to his staff, and figured it was due to stress. During a day of evaluation Hartman found the man was unable to pay attention under distracting circumstances; he struggled with problem-solving in a way that someone of an executive position should not; he had trouble stifling his impulses. The man was referred to Hartman for a personality problem, but that wasn't the case.

"I called back and said I think instead of calling this a psychiatric problem, you need to call it a neurological problem," recalls Hartman. Immediately, scans

showed a brain tumor the size of a lemon had been growing behind the man's frontal lobe for years, but he was otherwise asymptomatic.

"While he did not have any obvious indications of 'brain damage,' the tumor was slowly lobotomizing him," says Hartman. "His frontal lobe was being pushed out of commission."


(Brain) disorders in the court

Head injury defenses are cropping up more frequently as a defense in violent crime cases. In the early 1990s Herbert Weinstein, a 65-year-old ad executive, was charged with strangling his wife to death and throwing her body out the window of their 12th floor Manhattan apart-


ment. Weinstein's lawyer argued his client should not be held responsible, as scans showed Weinstein had an arachnoid cyst — a space occupying fluid-filled cavity the size of a baseball — surrounding his brain like a spider web. The cyst itself wasn't violent, but it pushed on part of the temporal lobe, both executive centers of introspection and self control as well as the center of emotional regulation.

In Jeffrey Rosen's March, 2007 article in the *New York Times Magazine* "The Brain on the Stand," he writes of the case: "Weinstein's lawyers could tell the jury that brain scans had identified [the] cyst, but they couldn't tell jurors that the cysts were associated with violence.

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Even so, the prosecution seemed to fear that simply exhibiting images of Weinstein's brain ... would sway the jury. Eleven days later ... they agreed to let Weinstein plead guilty in exchange for a reduced charge of manslaughter."

Such conditions can and do lend themselves to leaner sentences. Although impulsive behavior is no excuse in a court of law, *Roper v. Simmons* in 2005 demonstrated it can hold sway. The famous case ruled it unconstitutional to impose capital punishment for crimes committed by minors and mentally retarded people, as they are in general more compulsive. Impulsivity is not an excusing condition, but physical evidence that reveals such can at times change a death sentence to life.

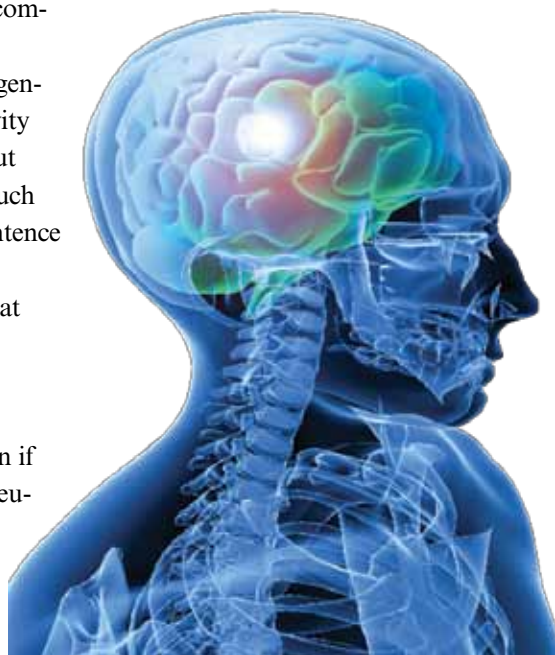
"Neuroimaging is a knife that cuts both ways," says Stephen Morse, professor of law and psychiatry at the University of Pennsylvania. He says that even if a defense argues a particular neuroimage supported a "behavioral legal-excusing condition," that same evidence might also show that the person is dangerous.

"Legal responsibility criteria are behavioral, including mental states," says Morse. "Only in cases where the behavioral evidence is unclear might neuroscience help us much ... and then the question is, is the neuroscience sensitive enough to really help? At present, I just don't think [we have] that degree of scientific precision."

Unearthing the root cause

It's hard to image the thought process of people who flagrantly

commit crimes. Violence is brought about by many variables; certainly brain dysfunction alone doesn't mean somebody will participate in this behavior. Dr. Robert Heilbronner, director of the Chicago Neuropsychology Group, is often retained in criminal and capital cases where there's a question of neuropsychological consequences as a result of a number of factors. He reports head injuries are the most prominent of factors, followed by



substance abuse, exposure to toxic substances, learning disabilities, etc.

He stresses that violence itself represents a "final common pathway" that arises from a combination of things, often including brain dysfunction in the context of other environmental determinants, such as socioeconomic pressures, how someone responds to provocation and role modeling he or she has had throughout life.

In some cases a perfect storm exists where environmental instiga-

tors and preexisting brain problems combine to make way for explosive behavior. Hartman agrees that sometimes "the severity of a brain lesion in and of itself is enough to make someone incapable of controlling their behavior in almost any circumstance."

Most serial killers are not brain-damaged. In fact, the opposite seems to be true. Ted Bundy and John Wayne Gacy were clever psychopaths — intelligent and personable — with specific goals in mind.

"Stalkers and plotters very rarely are brain-injured," says Hartman. "By virtue of the fact that they're able to engage in highly organized behavior, to select their victims and choose the nature and time of a murder, you're dealing with someone [with] very well-controlled brain function.

"I think certainly there are some subtle chemical or wiring differences between murdering psychopaths and normal individuals, but the law [is] very clear that it doesn't care."

Proceed with caution

As many crimes are crimes of passion, most jail residents do not have tumors or cysts that might arbitrarily shut off frontal lobe function. Still, law enforcement has a difficult job whenever they confront an individual.

"I think if officers did [have a clinical history available to them] they would certainly be more careful with individuals who had brain and/or a psychiatric disorder that left them in less control of themselves. But [they] already know that," says Hartman. "They know that there are people you've got to be very careful with." Indeed, com-

mon intoxicants like alcohol sedate the frontal lobe, while cocaine can stimulate anger and paranoid thinking. Officers encounter these situations every day.

Impulsivity, a common symptom of many brain injuries that can arise from dysfunction in the frontal and temporal regions, could translate into a citizen exposing himself on Main Street or, like in Weinstein's case, lead to murder. So why is it important to know *why*?

"Brains don't commit crimes, people commit crimes," says Morse. And yet the study of the living brain continues to impact criminal defense work. Is impulsiveness a mitigating condition? And if so, to what extent?

The kind of brain problem a person had or has can speak to whether he or she can be rehabilitated or are considered competent to stand trial. It can also help jurors understand the hidden operations behind behavior and judgment.

And hopefully, someday this type of trauma can be detected sooner. But for now, Hartman says, it's more a post-hoc connection where one can only look backward if the person is violent and has a brain tumor. A tumor may contribute to violence, but it can't be said that anyone with a brain tumor might be violent. "It's a pity we don't know enough about the brain to know that in one person's case, their particular combination of environment and brain technology will result in violent action," says Hartman. "I'm not sure it would be a moral avenue to pursue. Is it ethical to punish or confine a person with a combination of neurological and environmental factors because they somehow 'might' be a

murderer? What if you're wrong?"

For now, developing and relying on more specific neuro-technology is work for future neurologists and courtrooms. But it's something they work on now, nonetheless, picture by increasingly clearer picture. ■

Editor's note: This is the first in a two-part series from Associate Editor Sara Schreiber on links between the brain and impulsive crimes. Look for part two in the June issue of *Law Enforcement Technology*.

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