

From cyborgs to sex robots, U of M professor studies how brain science is changing legal system

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Francis Shen spends a lot of time thinking about transhuman cyborgs, brain-wave lie detectors, sex robots and terrorists hacking into devices implanted in our heads.

And, no, he's not a science fiction writer. He's a neurolawyer.

More precisely, he's a University of Minnesota law school professor and expert in the emerging field of neurolaw, which looks at how brain science could affect law and public policy.

Shen researches and writes about the legal implications of everything from concussions in youth sports to the reliability of memory.

Neuroscience, he said, is poised to influence debates ranging from fetal pain to the nature of brain death and whether brain abnormalities can be used as a mitigating factor in criminal sentencing.

"We're trying to prepare for a world that's coming, but not quite here yet," said Shen.

To that end, he created the Shen Neurolaw Lab at the law school, where the motto is "Every story is a brain story."

Shen admits his neurolaw is so cutting-edge as to be invisible.

"No one's ever heard about neurolaw," said Shen, 40, who has been at the law school since 2012. But he's convinced it "will fundamentally change the law."

Currently, on legal questions such as if a person is rational when signing a contract to whether a criminal can be safely put on parole, the law depends on what people report about themselves and what others can observe about them.

But what would happen if science could get inside a person's brain to help determine whether a criminal is likely to reoffend or how much pain a plaintiff is actually experiencing or whether a witness is lying?

"Seeing the world through brain circuitry is a really foundational shift, not just for law, but for policy," Shen said. "The human mind is enabled by the physical brain. Law didn't always know that. But we know now."

Imagine a world where neuroscientific evidence in criminal proceedings is as common as DNA evidence, where brain scans are collected from defendants along with their fingerprints, where jurors could stroll around a crime scene wearing virtual reality devices.

"A hundred years ago we just had to guess how the mind was working. And we still have to make a lot of guesses," Shen said. "But we know a lot more than we did 100 years ago, and it would be nice if the law caught up."

'CREATING THE FIELD'

The earliest published uses of the term "neurolaw" and "neurolawyer" date to the 1990s, according to "Law and Neuroscience," the first coursebook about the subject, which Shen co-authored in 2014 with Vanderbilt University professors Owen Jones and Jeffrey Schall.

Eighty-six percent of the cases cited in the 800-page neurolaw textbook were published only since 2000, when Shen graduated from college at the University of Chicago. More than half were published since 2006, when Shen graduated from law school at Harvard.

"Neuroscience and its effect on the law wasn't on anyone's radar 20 years ago, 15 years ago," said William McGeeveran, professor and associate dean at the U's law school. "He's creating the field," McGeeveran said of Shen.

Brain scans have been used in criminal cases, sometimes controversially, in an effort to explain or mitigate the actions of defendants. Earlier this year, attorneys for St. Paul lawyer Peter Berge provided prosecutors with evidence that a brain tumor had impaired Berge's vision at the time that he struck and killed a runner while driving in 2017. Prosecutors ended up not charging Berge with a crime in the death of Scott Spoo.

As Shen sees it, law and policy is about changing behavior, trying to shape and direct people's decisions on whether they should rob their neighbor, cheat on their taxes or save money for retirement. That's why lawyers and lawmakers should be interested in insights into the organ that people use to make decisions.

Shen was born in St. Louis and raised by his father, a retired chemist who was born in China, and his mother, a teacher and a former nun. (He's named after Francis Xavier, a 16th-century Catholic missionary and saint. Shen, who went to a Jesuit high school, once considered becoming a priest.)

While getting a doctorate at Harvard, he became interested in neuroscience when he wanted to know more about the psychological trauma suffered by sexual assault victims and combat veterans. He focused on the topic with a postdoctoral fellowship funded by the

MacArthur Foundation's Law and Neuroscience Project.

He ended up in Minnesota because the U happened to have job openings at the same time for a [law-school](#) professor and a Portuguese professor. Shen's wife, Sophia Beal, is a U professor in Portuguese. They have two children, Gabriel, 6, and Simone, 4.

DRIVEN TO DISCOVER

Shen's university office is something of a window into his mind. Carefully laid out on the walls are quotes from Bruce Lee, reminders to "outwork everyone" and a picture of legendary Olympic hurdler Edwin Moses on a Wheaties box. (Shen has been a hurdler since 1993, competing in high school and college. As an adult, he's now a masters athlete. He's won the USA Track & Field masters championship in his age group in the 400-meter hurdles for four years in a row.)

Post-it notes keep track of the wide-ranging ideas, papers, research projects and presentations Shen is working on.

"Sexbots and the Law" reads one note. That's a subject that takes up a whole week in Shen's "Law and Artificial Intelligence" class.

"The legal issue is how do you regulate that?" said Shen. "Do you need to, and is it constitutional? Is it a free speech question? Is it an obscenity question? Can you have a brothel of these things? Is it prostitution? Is this an object? What if the sexbot looks like a kid? Can you marry a robot?"

Another note reads "Confinement Companions." That refers to an article Shen is writing on whether we can use artificial intelligence to help inmates isolated and confined in prisons by providing them a Siri-like voice they can talk with as a potentially therapeutic companion in the

outside world.

"It's all cutting-edge," said Washington County Attorney Pete Orput, who has seen Shen make presentations for the Minnesota County Attorneys Association and the Washington County Bar Association. "He's so smart it hurts."

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