

## TRYING TO HIT THE BRAKE ON TEXTING WHILE DRIVING: A TEXTING DRIVER'S EDUCATION

*Sept. 13, 2014 from The New York Times by Matt Richtel*

On Sept. 22, 2006, Reggie Shaw, 19, climbed into his sport utility vehicle to head to a painting job. He picked up a Pepsi at the local gas station and started over the mountain pass between Tremonton, Utah, his hometown, and Logan, the big city to the east, near the Idaho border.

It was 6:30 in the morning, and freezing rain was falling. Just behind Reggie was John Kaiserman, a farrier, who was driving a truck and trailer carrying a thousand pounds of horseshoes and equipment. Mr. Kaiserman noticed Reggie swerve several times across the yellow divider and thought: This guy is going to cause us all some trouble.

Reggie came over a big crest and headed down a hill, traveling around 55 miles an hour as he hit a flat stretch. He crossed the yellow divider again. This time, he clipped a Saturn heading the other direction on the two-lane highway. Inside the Saturn were two men, Jim Furfaro and Keith O'Dell, commuting to work.

The Saturn spun out of control and across the road, behind Reggie, and was hit broadside by the farrier. The Saturn slammed into a gully, and Mr. Furfaro and Mr. O'Dell were killed.

One hundred yards down the road, Reggie came to a stop, unhurt, his Chevrolet Tahoe virtually unscathed. An investigation ensued, and a historic prosecution. The facts showed that Reggie had been texting — 11 texts sent and received in the minutes and seconds around the crash, maybe right at the moment of the crash, though for more than two years Reggie denied it.

In addition to an intense human and legal drama, something else came of this landmark case — a scientific journey by the prosecutors, including testimony from a researcher who began to answer a crucial question in the digital age: When Reggie was texting, what was going on inside his brain?

Picture a prehistoric ancestor intently starting a fire. This act of survival takes enormous focus. It uses the most advanced part of the brain, the prefrontal cortex, which sits in the front of the head. It's the nucleus of high-level decision-making, our "executive control" that is crucial in so many human endeavors from art to architecture.

And it is under constant assault from more primitive parts of the brain. Those parts alert us to acute opportunity or threat. For instance, imagine that the ancient forebear hears a noise, and that these primitive regions send a signal: Turn and look. It's a lion. Run!

There is a precious balance between these brain regions — our "top-down attention" networks that let us focus and our "bottom-up" attention networks that can co-opt focus or redirect us to more urgent stimuli. Scientists say the balance can become seriously out of whack in the digital age.

When the phone rings or a text comes in, the sound can be just as urgent as a lion in the brush — and just as tough to ignore. Is it your spouse? Your boss? A new business opportunity? Primitive brain wiring compels you to answer. But what if you're driving, like Reggie?

Much of the information that comes through is insignificant, even a nuisance, like spam. Wouldn't that cause people to learn to ignore it? Perversely, just the opposite is true. The fact that the information is of variable value actually increases its magnetism. That's because it creates a lure called intermittent reinforcement, a powerful draw that comes with uncertainty of the reward. It's the very thing that causes a rat in a cage to press a lever repeatedly when it isn't sure which press will bring the next delivery of food. It presses again and again, just as we click to open our text or email programs.

"What's happening, in essence, is that you're constantly scanning your texts and email because every once in a while you are going to get a good one and you can't predict when that is," says David Greenfield, a psychologist and an assistant professor at the University of Connecticut School of Medicine, where he teaches a class on Internet addiction. He compares the Internet to a slot machine, adding: "That's why Facebook is so popular. It's the fact that it's dynamic and novel, and constantly changing."

The idea that technology use affects the brain is supported by a growing body of neuroscience. Several studies show that when people play video games or use the Internet, they exhibit changes in the levels of dopamine, a neurochemical associated with pleasure, similar to changes in the brains of drug addicts. When you hit "send" or press a letter on the keyboard, it prompts a change on the screen, a picture pops up or an email opens, and you get a little dopamine squirt, Dr. Greenfield says, a kind of adrenaline rush. If you do it over and over, it conditions you to the rush, and in its absence you feel bored.

"It's in a sense a narcotic," he says.

That doesn't mean that electronic devices are classically addictive; instead, many researchers say that these devices have addictive properties and are habit-forming, but that more research is needed before deeming them addictive in the way that drugs, say, can be. There is wider agreement among scientists that the risks are higher for young people, whose frontal lobes are less developed and therefore even less able to fend off the ping of the phone delivered from the more primitive part of the brain.

But even for adults, the devices appeal to such primal social urges that they can be overpowering.

"The cellphone, and other similar technology, meet a deep need for social connection with a greater ease and greater potential detriment to it in the same way that a vending machine that is right down the hall plays to our need for calories," says Dr. Nicholas A. Christakis, a physician and a professor of social and natural science at Yale; he is an expert in the use of social networks across time.

To some researchers, it feels like a process of neurological hijacking, the taking over of our decision-making process.

“When the phone rings, it triggers a whole social reward network,” says David Strayer, a psychologist at the University of Utah who studies driver distraction. “And it triggers an orienting response that has been wired into us since hunter-gatherer times. You had to pay attention for survival. If you didn’t attend, you got eaten by lions. We’re hard-wired that way, no matter what we want to do. It’s extremely difficult to turn those things off. It’s in our DNA.”

So maybe, on that fateful morning in September 2006, the parts of Reggie’s brain were at war; his embattled prefrontal cortex was trying to focus on the road — in darkness and rain — while the reptile parts of his brain called him to the phone.

Was that an excuse?

Certainly not to Reggie. In fact, after years of prevarication and denial, he became the last person to let himself off the hook. The more he learned about the science and saw the other evidence, the more he transformed into a zealot against the use of phones behind the wheel.

“My name is Reggie Shaw.”

The cavernous auditorium at Box Elder High School in Brigham City, Utah, seemed as if it could swallow Reggie, who stood alone onstage. He held a microphone in his right hand and wore a tie. It was the spring of 2013, seven years after the wreck that killed two men. “I’m going to tell you a story,” he said.

He’s told it dozens of times, practically anytime anyone asks, to schools and groups of professional athletes, to Oprah and to policy makers and legislators. It never gets less raw or moving. He tells how he was an ordinary kid, thought himself invincible, played football and basketball, how he got up one morning to go to a painting job. He tells about the crash. He tells about going to jail, his terror among violent offenders and about how, still, he’d have lived a lifetime there to return the lives of the Jim Furfaro and Keith O’Dell.

“I’m here for one reason. That’s for you guys to look at me,” Reggie choked back tears, “and say: ‘I don’t want to be that guy.’”

What largely caused Reggie to admit what he had done was science. In a pretrial hearing in December 2008, just weeks before he was to face negligent-homicide charges, Reggie listened to the expert testimony of Dr. Strayer. Reggie realized what he could no longer deny: that he’d been so distracted by his device that he’d not only wandered across the yellow divider but also had been unable to even perceive the situation accurately. He pleaded guilty to two counts of negligent homicide that were removed from his record after he fulfilled his sentence, including serving 18 days in jail and doing community service.

Technology distraction is an issue that scientists say is playing out in many aspects of life — not just behind the wheel, but also at work and at home. In an eye blink, the devices designed to

become productivity tools can, in fact, enslave us and become decidedly counterproductive, even deadly.

Reggie shows the most extreme costs. But, on the other hand, he has made a remarkable transformation.

Don Linton, the prosecutor who brought the case against Reggie in Cache County, Utah, remarks: "I have never seen anybody try to redeem themselves as much as Reggie Shaw. Period. End of story." The judge, Thomas Willmore, says, "He's done more to effect change than anyone I've ever seen."

At the same time, Reggie is, in so many respects, ordinary. Neuroscience backs that up, too. Years after the crash, he submitted to an M.R.I. exam of his brain and to other testing to see if he was more predisposed to distraction than most others. No, the neuroscientists found, his attentional networks and predisposition to distraction weren't outliers by any stretch.

In the auditorium in Brigham City, he asked the students to pledge to put their cellphones away while driving. "Keep in mind," he said, "me and you, we're not different."

*This is adapted from "A Deadly Wandering: A Tale of Tragedy and Redemption in the Age of Attention," by Matt Richtel, to be published by William Morrow, an imprint of HarperCollins Publishers, September 2014.*

*This news article sourced from: The New York Times: <http://www.nytimes.com/2014/09/14/business/a-texting-drivers-education.html>*