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## Forensic Science May Be Evolving, but the System Is Broken

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In 2008, Kennedy Brewer was ushered into the same Mississippi courthouse where, 13 years earlier, he had been sentenced to death for the brutal rape and murder of a 3-year-old girl. This time, Brewer was there to be exonerated. DNA evidence had cleared him of the crime. The original jury's verdict had been substantially swayed by the testimony of Steven Hayne and Michael West. Hayne, a pathologist, had found wounds on the child's arms resembling human bite marks. West, a forensic jack-of-all-trades, testified that the bite marks "were indeed and without doubt inflicted by Kennedy Brewer." Hayne and West had also used bite marks to help convict Levon Brooks of the rape and murder of a different 3-year-old girl in the same rural Mississippi county. Brooks was also exonerated after the real perpetrator—who committed both crimes—was identified.

Forensic crime-solving techniques such as bite-mark analysis have come under fire in recent years for not being science at all, a problem I unpacked extensively in a recent investigation into forensics for the Nation with Meehan Crist. Our work led me to Radley Balko, a libertarian-leaning opinion journalist at The Washington Post (previous stints include policy analyst at the Cato Institute, senior editor at Reason, and FoxNews.com columnist), who has been on the bad forensics beat for over a decade. Now, in a new book, he's teamed up with Tucker Carrington, director of the Mississippi Innocence Project, to paint a horrifying portrait of the problems plaguing forensics. *The Cadaver King and the Country Dentist: A True Story of Injustice in the American South* chronicles the sagas of Brewer and Brooks to illustrate how the state of Mississippi allowed two men (Hayne and West) to amass power and prestige by peddling quackery. As Balko and Carrington put it:

The primary antagonists in this story are Steven Hayne, the state's former de facto medical examiner, and Michael West, a prolific forensic dentist. A third is the state of Mississippi itself—not its people, but its institutions. In a larger sense, blame rests on courts—both state and

federal—media, and professional organizations that not only failed to prevent this catastrophe but did little to nothing even after it was clear that something was terribly wrong. What you're about to read didn't happen by accident.

*The Cadaver King and the Country Dentist* is a densely reported book that highlights not only the cases of Brewer and Brooks but also a dizzying array of other wrongful convictions. The authors conducted more than 200 interviews and reviewed thousands of pages of court documents, letters, memos, case reports, and media accounts to trace the contours of a corrupted system. Hayne, they note, performed 80 percent of Mississippi's state-ordered autopsies, or about 1,700 annually. This stands in contrast to guidelines from the National Association of Medical Examiners, which states that performing more than 325 annually is tantamount to malpractice. Hayne's pace was likely a problem. In one autopsy report, Hayne described removing the uterus and ovaries—from a man. But quality, perhaps, wasn't the point. With West as a sidekick, the duo could be counted on to deliver the "evidence" prosecutors needed for convictions. Hayne would discover "bite marks" on a victim's body, and West would be called in to match them to the suspect's teeth.

In a story full of antagonists, the authors single out West, a charlatan of the first order. West got into forensic dentistry in 1982 after attending a conference presentation about identifying bite marks using ultraviolet photography. When he returned home to Hattiesburg, Mississippi, he recruited a colleague to sedate him and bite him in the thigh to test out the technique. He then enlisted assistants and local students to bite one another. From these "experiments," West concluded he could identify marks left on skin from bites months earlier. The local paper wrote a flattering profile, calling Hattiesburg a "hotbed of scientific research." At some point, West started a company called Dental Disaster Squad, and by 2006, he claimed to have investigated 5,800 deaths in and around Mississippi.

Over the years, his "expertise" metastasized, and he proffered opinions not only on bite marks, but also on gunshot reconstruction, wound pattern analysis, fingernail scratch reconstruction, trace metal analysis, video enhancement, pour pattern analysis, tool-mark analysis, cigarette burns, arson investigations, and shaken baby syndrome. West called his ultraviolet method the "West Phenomenon" because he could see what no one else could. He matched an abrasion on a murder victim's body to a suspect's shoelaces. He matched a bruise on the victim's abdomen to a specific pair of hiking boots. He declared that simply by looking at a suspect's palm, he could tell that the individual had been holding a particular screwdriver several days earlier. West likened his virtuosic talents to those of violinist Itzhak Perlman and once described his error rate as "something less than my savior, Jesus Christ." As Balko and Carrington write, "West is either a master bullshit artist or an autodidact for the ages."

The authors are being generous. West peddled unconscionable pseudoscience in court. Typically, a bite-mark examiner would take a plaster mold of the suspect's teeth and then compare the mold to photographs of the victim's skin. If the pattern sufficiently matches up, the examiner could exclude everyone in the world except the suspect. Or at least that's how the theory goes: Bitemark matching has never been scientifically proven. West's practices in this

already scientifically-shaky field were even more dubious. In Brewer's and Brooks' cases, as in many others, West pressed a plaster mold of the suspect's teeth directly against the victim's skin. With this method, West could have been creating the bite mark he was then claiming to have matched. In one case, West even pressed a dental mold into the hip of a comatose woman. A forensic dentist and longtime West critic posted a video of the examination on his blog. "Tampering with the evidence on the skin is likely a crime," the dentist later said. "But to create those marks on a woman who was comatose, and who hadn't given consent, is also an assault."

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*The Cadaver King and the Country Dentist* is a welcome wake-up call, and will likely challenge many people's CSI-fueled perception of forensic analysts as near-infallible seers of truth. It's also possible that by choosing Hayne and West as the antagonists—a particularly egregious pair practicing what can fairly be called junk science—readers could walk away thinking all forensic examiners are quacks and all forensic science is bunk. In reality, it's more complicated. Fingerprint analysts aren't astrologers, and most of them act in good faith using what they believe to be reliable expertise. In 2009, legal scholar Michael Risinger wrote, "These disciplines are probably best understood as being like folk medicine—they may be efficacious sometimes, maybe even most times, but we don't really know for sure." In other words, much of forensic science isn't so much *unscientific* as it is *prescientific*.

However you classify it, judges are supposed to keep unproven techniques out of court. Yet they've failed repeatedly. In Mississippi, judges fell hard for West's hucksterism. Balko and Carrington interviewed Edwin Pittman, former chief justice of the Mississippi Supreme Court, who upheld West's testimony and Brooks' conviction. Despite hearing eight cases in which West was challenged, Pittman never questioned West's expertise or the scientific basis of his methods. "Looking back," Pittman said, "I can't believe that I bought into to all of that—that I believed West's 'science' was really science. I wish I had voted differently." One justice did vote differently, and when he was up for re-election, an opposition group ran attack ads accusing the justice of supporting murderers, citing the justice's dissent in Brooks' case. Given the political climate, judges had a strong incentive not to question past convictions or the inappropriate practices used to secure them. According to Balko and Carrington, not a single Mississippi judge in 20 years even held a hearing to evaluate the scientific legitimacy of the "West Phenomenon." No trial judge ever refused to let Hayne testify.

The intertwined stories of Brooks, Brewer, Hayne, and West are easily whipped up into a clear and devastating narrative. But *The Cadaver King and the Country Dentist* really shines when it reveals exactly how the system contorts itself to protect convictions made possible by pseudoscience. "It's often said that the wheels of justice grind slowly," Balko and Carrington write, "That isn't always true. When it comes to convicting people, they can move pretty swiftly. It's when the system needs to correct an injustice—admit its mistakes—that the gears tend to sputter to a halt." This, the authors argue, is by design. In one particularly maddening example, a defendant filed a petition in federal court for post-conviction relief after Steven Hayne had been

discredited, which can be considered grounds for a new trial. According to federal law, a defendant must file within one year of the discrediting. The federal court agreed Hayne had been discredited but disagreed on the timing. It ruled against the defendant because the media had been criticizing Hayne for five years and the Innocence Project had previously filed a complaint.

The imprisoned defendant “should have discovered this information,” the justices wrote. In one fell swoop, the federal court acknowledged that the medical examiner performing 80 percent of Mississippi’s autopsies for years was a fraud, yet it also affirmed that it was now too late to revisit any of those cases.

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Balko and Carrington’s book arrives at a critical moment for forensic reform. In 2009 and 2016, major reports from the National Academy of Sciences and the President’s Council of Advisors on Science and Technology (PCAST) raised serious concerns that many of the “patternmatching” disciplines—bite marks, footprints, firearms, even fingerprints—had little, if any, empirical support. But the momentum for reform is slowing now that Jeff Sessions, a former prosecutor, is at the helm of the DOJ and the country is governed by the most anti-science administration in recent memory. One of Sessions’ first moves was to let the charter expire on the National Commission on Forensic Science, an interdisciplinary oversight body created partly in response to the scathing 2009 report. Sessions instead moved oversight in-house, which is troubling because the DOJ failed to police some of its own examiners for years, even though the agency later admitted analysts gave flawed testimony in almost every case. The DOJ doesn’t have direct control over the states’ criminal justice systems, but, troublingly, many prosecutors take their cue from national leaders.

Last week, Deputy Attorney General Rod Rosenstein offered a taste of what in-house “reform” might look like. He announced that the DOJ would prohibit its fingerprint examiners from using the misleading and meaningless phrase “reasonable degree of scientific certainty,” or testifying to zero error rates. These restrictions are an improvement. But a closer look at the guidelines shows the changes are likely to have little practical effect. The DOJ will still allow “a statement of an examiner’s belief” that the “probability” of a mismatch “is so small that it is negligible.” The subtle distinction is likely to be lost on a jury. This kind of “reform” is dangerous: It has the veneer of progress, yet utterly fails to address the core problem. While it’s tempting to pin this on Sessions, it’s really a prosecutor problem. After PCAST released its critical 2016 report, then–Attorney General Loretta Lynch retorted, “While we appreciate their contribution to the field of scientific inquiry, the department will not be adopting the recommendations related to the admissibility of forensic science evidence.” It’s not surprising that a prosecutorial agency such as the DOJ resists meaningful forensic reforms.

“Many of these forensics fields have largely avoided subjecting themselves to scientific scrutiny,” Balko and Carrington write. “It’s easy to see why. There’s no incentive for them to do so. The purpose of forensics is to solve crimes. The end game is to testify in court and persuade a

judge or jury. Once the courts begin accepting analysts from a new area of forensics as experts, there's no upside to those analysts then subjecting their methods and analysis to scientific scrutiny. They already have everything they need: the approval of the courts." Owing up to the flaws in forensics could also call into question thousands of past convictions.

Conspicuously absent in the DOJ's new testimony reform was any mention of reviewing past cases that had used the same testimony that is now outlawed. This tension between science's ever-evolving consensus and the law's stubborn insistence on finality is a central theme in *The Cadaver King and the Country Dentist*. Hayne and West might not be representative of the broader forensic community, but the justice system that allowed them to flourish is all too familiar.