

Death Row Defender

UC Irvines William Thompson exposes the soft underbelly of ironclad DNA evidence

Bobbi Murray

published: October 14, 2004

William Thompson is thinking about the troubles of a man he's never met, and it won't be the first time. Curtis McCarty sits on death row in Oklahoma, convicted of the 1982 murder of Pamela Willis, the 18-year-old daughter of a police officer.

Thompson doesn't know McCarty but is intimately acquainted with his DNA profile. McCarty was convicted before DNA testing was available and when forensic blood typing was state-of-the-art. McCarty's tests, as it turns out, were performed by a now-notorious crime-lab technician, Joyce Gilchrist, currently facing charges of scientific fraud in cases other than McCarty's.

There is some suspicion she may have spun her findings against McCarty in his case.

But even that possible malfeasance isn't why Thompson's involved. The New York-based Innocence Project, famous for its DNA-based exonerations in 151 cases, called him in to review DNA results from a test long after McCarty was convicted. Only two clear genetic markers in the DNA test are consistent with McCarty's, removing the results from the realm of slam-dunk certainty. State attorneys argued the evidence was still enough to include McCarty as a suspect, but in Thompson's eyes, it was a bad match.

"It's an absurd case," Thompson exclaims, discussing the case on a breezy, golden, late-September day in his home office in Irvine. He's miles from Oklahoma, but that doesn't make the stakes of McCarty's case any less remote to him.

"I'm organizing a team of experts from all over the country to review this case," he explains energetically, "and state the opinion that the profile is more consistent with its NOT being the guy's that they're fixing to kill . . . something that hopefully the courts in Oklahoma take into account before they 'needle the guy,' as they like to put it."

In early October, an Oklahoma judge agreed with Thompson and his team of experts, concluding that the DNA evidence excludes McCarty. It's not yet over—the next legal issue is whether other evidence is enough for the state to execute him anyway, but the finding was a definite victory for the defense.

McCarty's case is one of hundreds that Thompson, a professor at the UC Irvine Department of Criminology, Law and Society, has scrutinized and gotten deeply involved in since 1988, when he first began studying and writing about forensic DNA. His specialty is the study of human judgment and decision-making, especially in the interpretation of scientific evidence. As DNA analysis began its rapid evolution in the late 1980s, Thompson became increasingly involved in looking at the ways in which forensics experts, lawyers and juries reached conclusions about the DNA results—

sometimes the wrong ones.

Thompson's Ph.D. in psychology from Stanford and law degree from UC Berkeley are not the "hard science" credentials one would associate with the interpretation of DNA test results, but those who know and appreciate Thompson's work have no doubt of his abilities. "He certainly has a good grasp of what's going on. He understands the technology and how powerful it is," says Dr. Robert Shaler, director of forensic biology with New York City's Chief Medical Examiner Office. Shaler, the forensic scientist who moved the New York lab's DNA capacity from a horse-and-buggy level to among the foremost in the nation, calls Thompson "a skeptic by nature," a characteristic considered an asset in scientific analysis.

Thompson has analyzed DNA labs around the nation and world. He reviewed the DNA evidence for the defense in the O.J. Simpson trial, the case that put forensic DNA on the public's radar screen. In perhaps his most spectacular enterprise, Thompson was central in blowing open one of the biggest DNA scandals in the country after he scrutinized the DNA evidence in eight cases handled by the Houston Police Department Crime Laboratory and found sloppy science, fudged test interpretations, skipped steps and bad records. The lab serves Harris County, Texas, which produces more death-penalty cases than any other county in the U.S. A state audit triggered by Thompson's investigation, which was instigated by local television station KHOU after years of rumors, led to the shutdown of the crime lab's DNA unit in December 2002.

Other state crime labs in Texas have come under investigation as evidence mounts that the Houston lab was not alone in foisting shoddy science. The problem also extends beyond the Lone Star state: an Oklahoma forensics specialist was found to have cooked her findings, and an FBI staffer admitted to having testified to findings for tests she hadn't even conducted. She was ultimately found to have used spurious methods in more than 100 cases.

And yet despite those failures, DNA evidence still enjoys iconic status. The idea permeates our culture that DNA technology is science and science can't be wrong. "Because of the science," Thompson says, "people want to believe in it. It would be so convenient if it were true, if you could trust the technology. Maybe that's the secret of the success of [television's] *CSI*—that you know for certain."

Californians may find Thompson's experience and perspective all the more interesting as they ponder a DNA-related measure on the November ballot. Proposition 69, called the DNA Fingerprint, Unsolved Crime and Innocence Protection Act, proposes to expand California's DNA database, the collection of genetic profiles now collected only from violent felons. The law here already mandates that DNA samples be collected from felony offenders convicted of murder, rape, child molestation and other serious crimes.

Contra Costa Times called Prop. 69 a "no-brainer." But Thompson is concerned there are risks involved that voters need to understand before making a decision. For example, Thompson says there is a distinct possibility that expansion of the DNA database will disproportionately include the poor and minorities, "an outcome that Prop. 69 guarantees." **Many of us feel we know a fair bit about forensics—the perp leaves DNA at a crime scene, the cops and/or roaming forensic scientists collect it and pop it into a system, and out comes an**

identification. And sometimes—many times, in fact—that happens. No, the results don't come in the 40 minutes (or occasionally, 40 seconds) implied on TV, but technicians can produce a clear enough DNA profile that identification can be indisputable, clear-cut, open and shut, sealed by science. But sometimes—lots of times, in fact—results are ambiguous, open to interpretation: there can be extra genetic markers in an evidence sample that are difficult to account for or maybe there isn't enough material to come up with a complete genetic profile; then again, there could be a mixture of DNA from many people on an item of evidence, so that technicians have to piece together possible DNA profiles of all the people who left the DNA evidence. The way lab people and law enforcement interpret those shades of gray is Thompson's area of expertise. "There's a strong human tendency to look at something ambiguous to interpret it to supporting your theory, either the ambiguities or uncertainties," he says. "There tends to be such a mindset about here's the guilty guy and here's the evidence that they don't even think that there's a number of alternative interpretations." That attitude has made him a well-respected and welcome ally for some. Peter Neufeld is founder, with Barry Scheck, of the Innocence Project at Benjamin N. Cardozo School of Law in New York, an institution famed for using DNA evidence to exonerate 151 people wrongfully convicted of capital crimes. "We're living in a time when crime-lab scandals are the reality and CSI is the myth," Neufeld says. "Bill is one of the key players in unmaking that myth." And that makes him anathema to much of the tight-knit national forensic community—and a lightning rod for an acrimonious debate about forensic DNA that tends to split along the lines of prosecution and defense Dr. Paul Ferrara runs the forensic crime lab for the state of Virginia, considered by many to be the forensic gold standard. He is among the nation's forensic DNA leaders, a scientist who pried \$69,000 out of the Virginia Legislature in 1989 to launch the country's first state crime lab and who has pioneered the use of DNA in criminal investigations and prosecutions in the U.S. Cops from all over Virginia enthusiastically send Ferrara's state crime lab everything from blood and semen samples to identify rapists to cigarette butts that help identify car thieves. Ferrara calls Thompson a naysayer and adds that in forensics, "there are two camps more or less—my camp, which recognizes the tremendous power of this technology, and the other camp that tries to undermine it in the minds of the general public." He puts Thompson squarely in the latter. He differs with Thompson philosophically, but Ferrara may also be miffed on a personal level: Thompson and two other experts—one of them New York's Robert Shaler—independently of one another, reviewed DNA evidence from a notorious Virginia murder case and concluded that it was flawed. Thompson's withering quote in the *Virginian-Pilot* newspaper called the lab work "a mess" and "an enormous botched job." Ferrara has said that he stands by the results and refers to the criticisms as "chewing on my staff." "Sure as hell," he declares, "if there's a lab that's performing substandard work, I want to see it revamped because it hurts all of us." Other Thompson critics are more caustic. "There's a non-laboratory cottage industry of quibblers and debaters, and that's where all the money goes," sneers Rock Harmon, senior deputy district attorney of Alameda County, California, and a prosecutor for some 30 years. He

has tangled with Thompson on and off for the past decade. "He's wrong to characterize Dr. Thompson and the defense in that way," says head deputy public defender for Los Angeles County Mark Windham. "There are real cases where injustice has been done by DNA technology or failure to use the technology. Who else would challenge defective use of DNA?" Thompson would also argue Harmon's assertion about a lot of money going his way. Other than the occasional consulting fee, Thompson gets nothing out of his expertise other than easing the sense of indignation he feels over the plight of those accused or convicted based on scant or badly handled DNA evidence. That combines with an almost boyish enthusiasm for being part of the cutting-edge enterprise of making sure a powerful technology is used correctly. His explanations, as he points out discrepancies and inconsistencies in DNA evidence, are punctuated by triumphant chuckles and exclamations of "Isn't that great?" With his lanky frame and an energetic intellect trained on forensic science, Thompson evokes a 21st-century Sherlock Holmes—and like Holmes, he finds that Scotland Yard isn't overjoyed when his findings prove their theories incorrect. He seems genuinely puzzled by detractors' suggestions he's a hack or an anti-science naysayer. "I'm all for DNA evidence, but I also think that forensic scientists will not do the hard work of establishing the validity of their methods unless somebody makes them do it," Thompson says. It's not the science he opposes; it's the lack of science, a failure of rigor that he attacks when some labs base conclusions on incomplete DNA analysis. And he's not uniformly for the defendant—in discussing a rapist convicted using DNA evidence that Thompson had reviewed, he recalled that the testing results looked sound. "He belongs locked up," he says of the convicted. Thompson's work is bound to provoke strong reactions, given the way that the stakes related to forensic DNA have risen over the past decade. The technology has swiftly and dramatically improved—for a comparison, think about the way the room-sized computers of the 1960s evolved into the small, sleek palm-sized technology of today. And now, DNA analysis wears the halo bestowed by CSI and other TV dramas and reality shows. That halo could propel Prop. 69 to victory, thereby widening the DNA net to include all felons, not just those convicted of violent crimes, and individuals arrested for rape or murder. In 2009, all people arrested—not convicted—for any felony would have DNA collected for the database. Whose DNA profile goes into the system is a critical question because databases are where the rubber hits the road with forensic DNA—they provide the identifying "matches" we hear about. When we watch CSI and the cops or forensics guys enter a DNA sample into the "system," that's what they are doing—entering a DNA profile to see if they get a "hit," a match, against one in the database, one that can identify whose DNA was left at the crime scene. In real life, the system is made up of local and state DNA databases that link up to the FBI's Combined DNA Index System (CODIS), which concentrates the records of some 1.8 million DNA profiles. That means that biological evidence from a rape in Orange County can be analyzed to generate a genetic profile of the attacker that is then compared to the local, state or national database to see if they can ID a suspect. If the rapist has a prior conviction for a violent felony, his DNA profile is likely to be on file, and the database turns up what's called a "cold hit," an identifying match.

So it makes sense that the bigger the database, the more DNA profiles that get included, the more likelihood there is of a cold hit. In Virginia, at Ferrara's state crime lab, they are up to 2,218 cold hits, compared to 30 in 1998, when the database was much smaller. A law mandating collection of DNA from felony arrest suspects went into effect in January in Virginia, and so far, there have been 117 hits implicating arrestees. "It definitely works," says Ferrara. And if the guy's profile hasn't made it into the database, the misstep can have ugly results. Last year in Louisiana, a homicidal rapist terrorized Baton Rouge and left his DNA at the site of five rape/murders. Law enforcement got a DNA profile that linked the crimes. But was his profile in the system? Hard to tell; it evidently didn't turn up, and Louisiana at the time had a backlog of some 4,500 evidence kits containing the DNA of men who had raped women but whose profiles had yet to be entered into the database. Then there were the 15,000 felon profiles that underfunded state forensics workers had as yet not uploaded. If the perpetrator's profile was among either backlog—and since he was a repeat offender, that's likely—it did authorities no good. Prop. 69 was launched by a Newport Beach lawyer and developer with a personal interest fueled by terrible tragedy. Bruce Harrington's brother and sister-in-law were murdered in Laguna Beach in August 1980—long before there were any DNA databases and, in fact, before there was much ability to type DNA at all. The killer left behind biological evidence that has since been linked to 12 rapes, but he's never been found. The crimes in which his DNA turned up stopped abruptly in 1996, a sign that he has possibly either died or left the country; presumably, if he had been incarcerated, his DNA would be in the database. Harrington's rationale is that if the database cast a wider net, the perpetrator of his brother's murder would likely be included and justice would be served. Harrington spent \$1.8 million of his own money to pay signature gatherers—the surest way to qualify a proposition for the ballot in California's money-driven initiative system. An initiative might seem an immutable, if not ham-handed way, to address the issue—it changes the California Constitution and requires a two-thirds vote by the legislature to override it, making it a serious policy step. But Beth Pendexter, a spokeswoman for the campaign, says Harrington had pursued legislation in Sacramento before resorting to the ballot process. He grew frustrated when it died in committee a few times. The voter initiative was written as a collaborative effort between district-attorney associations and law-enforcement organizations and is projected to cost \$20 million annually by 2009-2010. Los Angeles County District Attorney Steve Cooley, state Attorney General Bill Lockyer, Governor Arnold Schwarzenegger and most police organizations have endorsed it. Thompson agrees that expanding the database can be useful, but thinks Prop. 69 goes about it the wrong way. "It's clear that there are dangerous awful people and that DNA testing can help catch them, and it's not only appropriate but also essential that government do that." His problem is that it's not quite fair. "Expansion of government databases will help solve crimes, but it also creates certain risks. It's important that those risks be spread evenly across society and not fall most heavily on the poor and minorities." Who, Thompson asks, are more likely to be arrested for felonies or for anything else? The statistical answer: young African-American and Latino men. Figures for

felony arrests are not available, but in 2000, according to FBI statistics, African-American males constituted 28 percent of all arrests nationally, more than twice the proportion of African-Americans in the population. The California attorney general's office estimates that in 2002, 37.5 percent of arrest subjects were Latino and 17 percent were African-American. Then there's the issue of sloppy data entered into the database. Thompson says he's begun to see cases in which the person identified by a cold hit wasn't the perpetrator. He was called in on a case where the DNA found at a bloody gangland murder in Auckland was matched with a deacon and family man in Christchurch, New Zealand, hundreds of miles and an entire island away from the crime scene. His DNA profile was in the database because he had given a DNA sample as a crime victim. Turned out his DNA sample had been in the lab with the Auckland crime-scene evidence and somehow there was a mix-up. The accused, lucky for him, had been videotaped by an ATM security camera as he withdrew money at the same time the crime was committed, convincing authorities he wasn't a legitimate suspect. "It's not that errors will be happening right and left and all the time—I think the probability of these errors is pretty low," Thompson says. "But what I've tried to show is that if it's your case—the fact that in general the rate of errors is very low doesn't mean that we shouldn't look carefully at these cases." Given that Thompson sees wiggle room in the interpretation of DNA analysis, he's concerned about something else—what he calls inferred mixtures. He cites as an example a robbery case in Virginia. "The lab did not find a unique profile on the evidence item; they found a mixture," he recalls. "It was a fake beard used in a robbery—and they found a mixture of DNA on this, and they had to sort of go through and infer what the different contributors' profiles might be. They had to search these, and they conducted, like, 18 different searches of all the different possibilities." The DNA molecule that we see on the Discovery Channel or Nova shows us an array of genes arranged like beads along the double helix. Only 9 percent of those beads distinguish us as human from other creatures. "Most human DNA is very much the same from one person to another—yours and mine and everybody's," Thompson explains enthusiastically. "The great majority of the genetic sequence is the same in all humans. That why we all have heads and feet and we don't have hooves and claws and we don't look like sea slugs." Less than 1 percent of those genes distinguish one human from another—hair color and texture, eye color, skin shade. Those are the areas along the double helix that are essentially "snipped out" to create a DNA profile. The gene combinations at each location on the double helix twist; a number is assigned to each bead on the string. When there's a mixture of DNA, like the Virginia fake beard, forensic technicians take the numbers of all the genetic markers they find and enter possible combinations into the database in hopes of getting a hit. But that's very different from entering in one possible profile, with a specific set of markers, to see if you get a match—it's more like a fishing expedition. Thompson, in fact, refers to it as "widening out the net." He finds it especially troubling in view of one of Prop. 69's provisions: even if a person is not convicted, it takes a court order to remove a profile from the database, and then there is no legal requirement to remove it. "Wealthy people can get court orders; poor people can't," Thompson points out. The

whole time a profile is in the database, Thompson argues, the wrongly accused whose profiles were taken in a felony arrest are vulnerable to the "widening net" searches that try for different combinations. While some critics attack him as a virtual arm of the criminal lobby, Thompson breaks with the usual civil-liberties suspects on reasons for opposing the measure. The ACLU is concerned about the revelatory nature of DNA. Unlike a fingerprint, a person's DNA can show predisposition to diseases and information that a person may not want in the hands of insurance companies or employers. But Thompson feels that concern is misplaced. The information in the aggregate is nothing but numbers; the identities of the individuals are not readily available. He and some colleagues have the DNA database from Victoria, Australia, on their computers. It allowed Thompson and his colleagues to discover trends toward double entry of profiles and erroneous data entries. You're not going to see that in California under Prop. 69, he says. He's more troubled by the initiative's provisions that block the release of information to the public. One section even limits disclosure on how exactly the database works and says flat out that legal proceedings cannot compel the state Department of Justice or local labs to disclose their methods and how that data-basing software works. "Even under court order they're not allowed to release about how they run this system? What's that all about?" Thompson asks. "That's not about openness and fairness; that's kind of the fascist approach to science. I really see no need for these secrecy provisions other than to shut down potential critics." Even the defendant's attorney is blocked from finding out about what search procedures produced a match—all that is made available is the profile itself, so that the defense would never know about the fishing expeditions sometimes prompted by mixed DNA samples. "We have things like the Houston crime-lab debacle where crime labs do terrible work for years and it's only exposed by journalists," he says. "The reason we have that is that these are closed systems that aren't open to scrutiny." Thompson's critiques—and the information and analysis that produce them—are not common currency in the debate that produces the policy that sets the standards for DNA analysis. Instead, they tend to get shut out—or, as nearly happened in the case of some recent federal legislation, shouted down. Attorney General John Ashcroft, flanked by rape victims who had lived in fear until DNA analysis identified their attackers, rolled out the Advancing Justice Through DNA Technology Initiative in March 2003. The House of Representatives approved a bill that would have given money and muscle to the initiative, providing more resources to state and local crime labs for DNA analysis. The legislation sailed through the House on a 357-67 vote. But a bipartisan embrace didn't assure success in the Senate, where conservative elements moved to strangle the measure in its cradle. Because, like the House legislation, the twin Senate bill included a portion called the Innocence Protection Act. The measure would increase inmates' ability to get post-conviction DNA testing, called for higher standards in defense in capital cases, and would link funding for enhanced DNA capacity in individual states to "reasonable" procedures for proving post conviction DNA analysis and preserving DNA evidence. The Department of Justice raised a protest against the Innocence Protection section in April, and shortly after that, the legislation was locked up in the Senate Judiciary

Committee where Senator Jon Kyl of Arizona eventually offered a total of 21 amendments aimed at gutting it. But the bill was passed over the weekend. Still, it appears that both Kyl and Ashcroft's Justice Department were willing to scuttle a funding measure to eliminate DNA backlogs rather than see more safeguards built in to ensure integrity in the prosecution of capital cases. It's one example of how politics can creep into the picture of the supposedly "pure science" of forensic DNA. As the technology evolves, there will be more forensics officials who accept shades of gray. Robert Shaler, New York's DNA guru and a member of the American Bar Association's biological-evidence task force along with Thompson, has such a nuanced view. He observes that the day-to-day pressures on crime labs to complete cases and provide evidence for investigations and prosecutions make mistakes inevitable. But it's how the mistakes are handled that makes the difference. "It's good for the field that these things get exposure," he says. Experts such as Thompson, he says, "are an important part of the criminal-justice system. They belong." Thompson couldn't agree more. "The legal system, the criminal-justice system is the strongest when it's wide open." Moves to shut that down, he warns, "reflect a kind of totalitarian mindset that is all too common in forensic science. It's inconsistent with scientific principles."