New science, old convictions — Texas Senate Bill 344: identifying further necessary reform in forensic science

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ABSTRACT
In June 2013, Texas Senate Bill 344 (SB 344) was signed into law after strong Innocence Project support. SB 344 has since transformed the Texan judicial landscape. Known as the ‘Junk Science Writ’, SB 344 enables the court to grant habeas corpus relief based on scientific evidence that ‘(1) was not available to be offered by a convicted person at the convicted person’s trial; or (2) contradicts scientific evidence relied on by the state at trial’. Inmates, such as the ‘San Antonio Four’, whose convictions were based upon what is now considered ‘faulty’ medical and forensic testimony, have been released under SB 344. Yet, science, as a field dependent on innovation, is inherently prone to debunking the scientific and forensic methods the law has relied upon to convict individuals. This commentary identifies policy behind SB 344, how SB 344 may influence the perception of science in the courtroom, and how ‘junk science’ is defined and/or limited. Furthermore, this commentary concludes that to achieve justice in the legal system through habeas relief based on ‘junk science’, it is necessary to revitalize and standardize forensic science.

KEYWORDS: forensics, habeas, junk, justice, science, SB 344

INTRODUCTION
In the past decade or so, forensic science techniques have come under scrutiny, due to a lack of nationwide laboratory standards, scarce research and methodology,

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incompetent and even unethical examiners, and overburdened laboratories.\footnote{Brent E. Turvey \& Craig M. Cooley, Miscarriages of Justice: Actual Innocence, Forensic Evidence, and the Law, 191 (2014).} As a result, individuals and organizations, such as defense counsel, scientists, and the Innocence Project, have been advocating for reform not only within the discipline of forensic science, but also within the justice system itself.\footnote{Id. at 191.} Recognizing the need for criminal justice reform, and continuing his mission to ‘bring about needed changes to the adult and juvenile criminal justice systems’\footnote{The Senate of Texas, Senator John Whitmire: District 15, http://www.whitmire.senate.state.tx.us/ (accessed Dec. 04, 2014).}, in February of 2013, Texas Senator, John Whitmire (Dem.) authored Texas Senate Bill 344 (SB 344), allowing courts to grant convicted individuals habeas corpus relief based on faulty or discredited scientific evidence.\footnote{Bill Analysis, http://www.capitol.state.tx.us/tlodocs/83R/analysis/html/SB00344F.htm (accessed Dec. 04, 2014).}

The passing of SB 344 into law represents a major development in the US criminal justice system, since other states address relief for outdated scientific evidence through routine writs for habeas corpus relief.\footnote{Maurice Chammah, Bill Addresses Changing Science in Criminal Appeals, The Texas Tribune, Feb. 04, 2013, http://www.texastribune.org/2013/02/04/criminal-justice-advocates-renew-call-flawed-scientific-evidence/ (accessed Jan. 27, 2015).} Thus, as SB 344 is the first law of its kind, it is worth examining the judicial and political environment in which it was passed, its initial and potential future implementation, and possible ramifications. SB 344 brings the ongoing tension between science and the courts into sharp relief, and an analysis of this new law may provide insight into that conflict and how it may be addressed now and in the future. Of particular importance is the public’s understanding of this new law and how that may shape future attempts at reform. The current labeling of SB 344 as the ‘Junk Science Writ’ misinforms the public as to the true nature of the law, and although proponents may like to tout SB 344 as strong defense against ‘junk science’, it only serves as a starting point for reform.

**LEGISLATIVE HISTORY**

Under SB 344, convicted individuals are able to provide the court with scientific evidence that ‘(1) was not available to be offered by a convicted person at the convicted person’s trial; or (2) contradicts scientific evidence relied on by the state at trial’.\footnote{S.B. 344 (Tex. 2013).} If the court finds that had this scientific evidence been presented at trial, ‘on the preponderance of the evidence the person would not have been convicted’,\footnote{Id.} then that individual may be granted habeas relief under SB 344. In his statement of intent, Sen. Whitmire specifically identified forensic evidence including dog-scent lineups, arson, and infant trauma as evidence that has been debunked and is faulty. As a result, contrary scientific evidence would be sufficient to grant a convicted individual habeas corpus relief.\footnote{Bill Analysis, supra note 4.
SB 344 was co-sponsored by two Democratic Texas Representatives, Reps. Sylvester Turner and Gene Wu, and overwhelmingly passed in both the Texas Senate and House of Representatives. Republican Governor Rick Perry signed the bill into law on June 14, 2013, and SB 344 has been effective in Texas since September 1, 2013. While SB 344 was passed without much opposition, Texas lawmakers, including Sen. Whitmire, attempted to pass bills similar to SB 344 twice before. In 2009, Sen. Whitmire authored a nearly identical bill to SB 344 that passed through the Senate, but died in the House amidst voter identification law debates. Similarly, in 2011, a bill similar to SB 344 took backseat to reform directed specifically toward eyewitness identification practices in the Senate and House.

Judicial Climate During the Passing of SB 344
A probable factor in the quick and easy passage of SB 344 in the 2013 session was the recent Texan judicial climate and attitude toward scientific evidence. In the two years between 2011, the last time a similar bill was introduced, and 2013, appellate and district judges in Texas have penned decisions in which they cite their mistrust of forensic evidence used to convict individuals. One such opinion was issued in December 2012 in the case of Cathy Henderson, a woman who had been sentenced to death in 1994 for the capital murder of an infant, Brandon Baugh, she had been babysitting. In Ms Henderson’s case, the state medical examiner, Dr Roberto Bayardo, re-evaluated his opinion as to the cause and manner of death based on a change in the underlying science. Calling for a new trial, Court of Criminal Appeals Judge Cathy Cochran wrote, ‘Changing science has cast doubt on the accuracy of the original jury verdict’ and deprived Ms. Henderson of a ‘fundamentally fair trial based upon reliable scientific evidence.’ Continuing, Judge Cochran stated, ‘This…is a case that should be retried to ensure the accuracy of our verdicts and the integrity of our system.’

Ms Henderson’s case was not the first in which Judge Cochran had lambasted science. Ten months prior to Ms Henderson’s appeal, in February of 2012, the Court of Criminal Appeals heard the case of Hannah Overton. A jury convicted Ms Overton in...
2007 for murdering her foster son by poisoning him with salt.\textsuperscript{21} However, Dr Michael Moritz, a leading expert on salt intoxication, recently concluded that the child likely ate something himself, since he was a chronic overeater, which caused his salt overdose, thereby refuting the scientific testimony given in Ms Overton’s original trial.\textsuperscript{22} Specifically, Judge Cochran wrote, ‘The disconnect between changing science and reliable verdicts that can stand the test of time has grown in recent years as the speed with which new science and revised scientific methodologies debunk what had been thought of as reliable forensic science has increased.’\textsuperscript{23}

Both the Henderson and Overton decisions came a year after the Court of Criminal Appeals received a lot of public criticism for its decision in the case of Neal Robbins.\textsuperscript{24} In 1999, Neal Robbins was convicted of capital murder for the death of his girlfriend’s infant child.\textsuperscript{25} Originally, the medical examiner testified at Mr Robbins’s trial that the child died from asphyxiation by compression\textsuperscript{26}, but in 2007, she recanted her testimony and amended the autopsy report to reflect that the cause of death was undetermined.\textsuperscript{27} Nonetheless, although the medical examiner and other experts agreed that her original testimony was not supported by science, the Court of Criminal Appeals, in a 5–4 opinion declared that the medical examiner’s original testimony ‘has not been proven false’.\textsuperscript{28} Unsurprisingly, Judge Cochran wrote a dissenting opinion in Mr Robbins’s case, stating, ‘given...serious concerns about the impact of [the medical examiner’s] testimony at trial on the critical and hotly disputed issue of [the child’s] cause of death, I agree that applicant did not receive a fundamentally fair trial based upon reliable scientific evidence’.\textsuperscript{29}

### USE OF SB 344

After SB 344 became effective, Mr Robbins filed a subsequent application for a writ of habeas corpus under SB 344.\textsuperscript{30} On October 21, 2013, 20 days after SB 344 became effective, Judge K. Michael Mays recommended a new trial for Mr Robbins.\textsuperscript{31} Under SB 344, like Mr Robbins, it is very likely that both Ms Henderson and Ms Overton would have also received new trials, if the Court of Criminal Appeals had originally ruled against them as they did for Mr Robbins. Most famously, the ‘San Antonio Four

\textsuperscript{21} Tom Dart, Texas Mother’s Murder Conviction Overturned in Salt Poison Case, THE GUARDIAN, Sept. 18, 2014, 5:21 PM, http://www.theguardian.com/world/2014/sep/18/texas-mother-murder-conviction-overturn -salt-poison-overturn (accessed Jan. 27, 2015).

\textsuperscript{22} Id.

\textsuperscript{23} Chammah, supra note 5 (emphasis added).

\textsuperscript{24} Scott Henson, ME Testimony False According to Science but not Texas Law, GRITS FOR BREAKFAST, Jul. 19, 2011, http://gritsforbreakfast.blogspot.com/2011/07/me-testimony-false-according-to-science.html (accessed Jan. 27, 2015).

\textsuperscript{25} Id.

\textsuperscript{26} Id.

\textsuperscript{27} Id.

\textsuperscript{28} Id.

\textsuperscript{29} Id.

\textsuperscript{30} Mary A. Robbins, New Texas State Law Takes Capital Murder Case Back to Court, ALM EXPERT WITNESS BLOG, Dec. 09, 2013, http://blogs.almexperts.com/index.php/2013/12/ (accessed Jan. 27, 2015).

\textsuperscript{31} Id.
had their convictions overturned and were freed thanks to SB 344. In 1994, one of the four women’s nieces accused them of sexually abusing and raping them over the course of a weekend. At their original trial, a pediatrician testified that the victims exhibited physical signs of sexual abuse. However, due to a better understanding of pediatrics today, such medical testimony has been debunked. Additionally, the victims have recanted their original testimony. Thus, the effect of SB 344 has arguably been beneficial, especially with the case of the San Antonio Four, who were wrongly convicted due to faulty science and false testimony from ‘victims’.

Interpretation of SB 344
Although SB 344 has enjoyed success so far, differing interpretations of the law may cause problems in the future. The law requires the courts to determine whether relevant evidence could be reasonably ascertained, scientific knowledge had changed, and the new evidence would be admissible at a trial. These requirements place large demands on the courts, which may not have sufficient scientific background, for implementation of the law. Furthermore, ambiguity in the language of the law may yield unintended effects. As Roe Wilson, an Assistant District Attorney in Texas, stated, ‘The bill’s language concerning contested scientific evidence is overbroad as opposing experts can be found for nearly all expert testimony and evidence.’ The language of SB 344, as is, increases the load on an already overburdened system. If an individual finds an expert that can state that the original science was faulty or debunked, then they are granted habeas relief, which in most cases would constitute new trials with the new expert’s testimony. Although proponents of the law believe that it will not significantly burden the justice system, it is nearly impossible to know how quickly science may progress or how forensic evidence standards may change. Additionally, the role of SB 344 may change with broader reform of expert witness testimony. At this stage, SB 344 does not have a set interpretation, and the Texas courts will have a major role to play in deciding the impact of SB 344 on the judicial system.

IMPACT OF SB 344 ON THE CRIMINAL JUSTICE SYSTEM AND BEYOND
While SB 344’s intent is noble and it has been beneficial in the short term, it is unclear how SB 344 will impact the justice system down the road. SB 344 may drastically increase the burden of evidence for prosecutors and law enforcement officials, leading to untold consequences. Additionally, SB 344 will change the use of science in the courtroom and how it may shape the public’s, and therefore the jury’s, perceptions of science, the forensic process, and expert witnesses. Finally, SB 344 should be examined in the context of its stated goals and its role in criminal justice reform.

32 Mark Godsey, Breaking: With Today’s Release of the San Antonio Four, Texas Now On the Cutting Edge of Efforts to Free the Innocent, HUFFINGTON POST: CRIME, Jan. 23, 2014, 6:58 PM, http://www.huffingtonpost.com/mark-godsey/with-todays-release-of-th_b_4296813.html (accessed Jan. 27, 2015).
33 Id.
34 Id.
35 Id.
36 House Research Organization, http://www.hro.house.state.tx.us/pdf/ba83R/SB0344.PDF (accessed Dec. 23, 2014).
37 Chammah, supra note 5.
SB 344 and the Perception of Science in the Courtroom

SB 344 itself never mentions the term ‘junk science’, and only uses the term ‘scientific evidence’. Yet, news articles discussing SB 344 and proponents of SB 344, especially the Innocence Project, have taken to calling SB 344 the ‘Junk Science Writ’. This is greatly problematic and incorrectly conveys the true purpose of SB 344.

‘Junk science’ was first used in courtrooms as a disparaging term directed toward paid expert witnesses that attorneys hire to testify on behalf of their clients. Thus, junk science is typically a term hurled at science and scientists that the speaker dislikes. However, not all science is junk science, although the definition of junk science varies person to person.

According to lawyer Nathan A. Schachtman, junk science is ‘science that lacks an epistemic warrant and pretends to be something it is not’. Similarly, junk science according to JunkScience.com is ‘faulty scientific data and analysis used to advance special interests and agendas’. Importantly, ‘wrong science becomes junk science only when it’s obvious or easily determined flaws are ignored and it is then used to advance some special interest’. A more developed definition of junk science comes from Joseph M. Price and Ellen S. Rosenberg. Price and Rosenberg deem junk science as science that is ‘(1) at the limits of scientific detectability or beyond, (2) of marginal statistical significance, (3) proposing hypothesis disregarding established theory, (4) embracing untested mechanisms for the effect reported on, and (5) without testing to see if the hypothesis is in any way false’. Similarly, Peter Huber states, ‘junk science is the mirror image of real science, with much of the same form but none of the same substance...it is a hodgepodge of biased data, spurious inference, and logical legerdemain…’

For all of these definitions, it is important to note that the science is junk science only if it advances or is used to advance a position even though it is unfounded at that time. Hence, junk science does not accurately apply to the science that was originally used in the trials of Mr Robbins or the San Antonio Four. If the medical examiners in either case were to testify today depending on the science they relied on in the original trials, then it would be accurate to say that this testimony was grounded in junk science. At its very core, junk science is science ‘that is not consistent with generally accepted scientific views’, and it is not science that may or may not be debunked one day in the future.

Hence, to call SB 344 the ‘Junk Science Writ’ is to further undermine the public’s trust of all science, especially science that is used in the context of litigation.

38 S.B. 344 (Tex. 2014).
39 Id.
40 Her Institute, Junk Science, http://www.herinst.org/envcrisis/science/uncertainty/junk.html (accessed Dec. 04, 2014).
41 Nathan A. Schachtman, The Rise and Rise of Junk Science, http://schachtmanlaw.com/the-rise-and-rise-of-junk-science/ (accessed Dec. 04, 2014).
42 Id.
43 What is Junk Science, JUNKSCIENCE, http://junkscience.com/what-is-junk-science/ (accessed Dec. 04, 2014).
44 Id.
45 Joseph M. Price & Ellen S. Rosenberg, The War Against Junk Science: The Use of Expert Panels in Complex Medical-Legal Scientific Litigation, 19 BIOMATERIALS 1425, 1432 (1998).
46 Id. at 1426.
47 PETER HUBER, GALILEO’S REVENGE: JUNK SCIENCE IN THE COURTROOM 2, 3 (1993).
48 ROBIN T. BOWEN, ETHICS AND THE PRACTICE OF FORENSIC SCIENCE 47 (2009).
Individuals, including the President, have recognized the disintegration of scientific integrity because of the politicization of science, including the use of science in courtrooms. In fact, results from a 2013 Huffington Post poll indicate that only 36 per cent of Americans reported having “a lot” of trust that information they get from scientists is accurate and reliable. An overwhelming 51 per cent said they trust that information only “a little”. Additionally, 26 per cent of respondents said they do not trust journalists at all to accurately report on scientific studies. Thus, it is already likely that several members of the jury will be skeptical of the evidence that is presented during trial. While the judiciary should promote the jury’s educated consumption and evaluation of the scientific evidence that is presented during a trial, the jury should not walk into the courtroom already thinking that all science presented is junk and faulty, an attitude that is promoted by advancing SB 344 as a ‘junk science’ writ.

Implications of SB 344 for Prosecutors and Law Enforcement
Although SB 344 is aimed at providing post-conviction relief, the law will undoubtedly change the manner in which prosecutors, judges, and law enforcement officials practice. Under SB 344, prosecutors may need to limit the evidence they present to more rigorously tested forms of evidence, such as DNA, and police investigators will need to alter the types of evidence they collect and tests they perform. SB 344 may lead to fewer cases being pursued if prosecutors feel that they do not have evidence that would stand the test of time. While SB 344 burdens prosecutors, it does not open the door to malpractice liability, so long as prosecutors do not negligently or intentionally present evidence they know to be debunked or invalid.

Judges will also need to adjust to SB 344. By its nature, the law lends some uncertainty to nearly all scientific evidence presented in court. Although providing relief to innocent individuals is honorable, it is likely that SB 344 will further constrain the evidence a judge deems admissible to court, especially evidence provided by expert witnesses, which may be newer and still developing. In these instances, such evidence that could convict or exonerate a defendant would be excluded from trial completely, based on the risk that the evidence could be contradicted at a later point. The implications of SB 344 are similar to the effects of embracing DNA evidence as a gold standard; other types of evidence may be insufficient to pursue a trial or excluded from trial because they may be debunked at a later date. Ultimately, the law will confine the evidence brought before the court to make a conviction and thereby limit the power of prosecutors and law enforcement in bringing certain criminals to justice.

The Uncertain Role of SB 344 in Criminal Justice Reform
In the same vein, SB 344 highlights the inherent tension between science and the law. As described by Susan Haack, there are ‘crucial differences between the legal and scientific timetables’. Often ‘scientific work is halting and fumbling, slowed sometimes

49 Gordon Gauchat, Politicization of Science in the Public Sphere, 77 AMERICAN SOC. REV. 167, 167–87 (2012).
50 Emily Swanson, Americans Have Little Faith in Scientists, Science Journalists: Poll, HUFFINGTON POST: SCIENCE, Dec. 22, 2013, 10:31 AM, http://www.huffingtonpost.com/2013/12/21/faith-in-scientists_n_4481487.html (last assessed Jan. 27, 2015).
51 Id.
52 Id.
53 SUSAN HAACK, EVIDENCE MATTERS: SCIENCE, PROOF, AND TRUTH IN THE LAW, 92 (2014).
by lack of funds or by political resistance to potentially unwelcome results, and often enough by the sheer intellectual difficulty of the question[s] concerned. And there is always, at least in principle, the possibility of having to go back and start over on questions thought to be settled. By contrast, not without reason, we want the legal system to reach its determinations within a reasonable period of time; and we want those determinations to stand once the appeals process is exhausted.\textsuperscript{54} To do so, it is important to reconcile legal standards with standards for scientific testimony, by first creating standards for science that is first presented at trial, and standards to determine whether science is debunked or not.

The primary purpose of the Innocence Project is to ‘exonerate[] wrongfully convicted people through DNA testing and reform[] the criminal justice system to prevent future injustice’.\textsuperscript{55} Hence, rather than portray SB 344 as something that it is not through the use of a catchy, fear-mongering\textsuperscript{56} term, organizations and advocates should promote meaningful reform within the judicial system, such as working toward efforts to keep junk science out of the courtrooms, as it is incredibly important to ‘protect the public from junk science to assure that real scientific information is respected and valued’, especially in litigation.\textsuperscript{57}

Recently, in addition to the research on faulty eye-witness testimony, scientists and investigators have begun to discuss the faults with various techniques, such as hair microscopy, bite mark comparisons, firearm tool mark analysis, and shoe print comparisons.\textsuperscript{58} Notably, all these forms of scientific analysis fall into the field of forensic science, a field that was really created by the police for use by the police.\textsuperscript{59} With the exception of DNA analysis, ‘no forensic method has been rigorously shown able to consistently, and with a high degree of certainty, demonstrate a connection between evidence and a specific individual source’.\textsuperscript{60}

Within its 2009 report, the National Academies lists numerous recommendations in which forensic science can and should be reformed.\textsuperscript{61} These recommendations include: (1) certification and accreditation should be mandatory, (2) enhancing and standardizing evidence bases among disciplines, (3) court testimony should be grounded in science, acknowledge uncertainties, and (4) strong, independent leadership needed.\textsuperscript{62} Recommendations number two and three are especially important and pertinent in light of SB 344. Disciplines within forensics, such as arson, have never been strongly

\begin{itemize}
\item \textsuperscript{54}Id. at 92.
\item \textsuperscript{55}Innocence Project, About the Innocence Project, http://www.innocenceproject.org/about/ (accessed Dec. 04, 2014).
\item \textsuperscript{56}Sarah Fecht, What Can We Do About Junk Science, POPULAR MECHANICS, Apr. 08, 2014, 6:30 AM, http://www.popularmechanics.com/science/health/what-can-we-do-about-junk-science-16674140 (accessed Jan. 27, 2015) (‘Junk science sticks because it preys on the public’s fear and distrust.’).
\item \textsuperscript{57}Bowen, supra note 48.
\item \textsuperscript{58}Innocence Project, Unreliable or Improper Forensic Science, http://www.innocenceproject.org/understand/Unreliable-Limited-Science.php (accessed Dec. 04, 2014).
\item \textsuperscript{59}Spencer S. Hsu, Forensic Techniques are Subject to Human Bias, Lack Standards, Panel Found, THE WASHINGTON POST, Apr. 17, 2012, http://www.washingtonpost.com/pb/local/crime/forensic-techniques-are-subject-to-human-bias-lack-standards-panel-found/2012/04/17/glQADCoMPT_story.html (accessed Jan. 27, 2015).
\item \textsuperscript{60}National Academies, ‘BADLY FRAGMENTED’ FORENSIC SCIENCE SYSTEM NEEDS OVERHAUL 7 (2009).
\item \textsuperscript{61}Id. at 6.
\item \textsuperscript{62}Id. at 6–14.
\end{itemize}
supported by federal research or closely scrutinized by the scientific community.\textsuperscript{63} Thus, before these disciplines or techniques are used as evidence in litigation, they should undergo scrutiny by independent scientists, who can develop methods and standards for these techniques that can then be used nationwide.\textsuperscript{64}

In the context of the courts, the National Academies concluded that two criteria should guide ‘the law’s admission of and reliance upon forensic evidence in criminal trials: the extent to which the forensic science discipline is founded on a reliable scientific methodology that lets it accurately analyze evidence and report findings; and the extent to which the discipline relies on human interpretation that could be tainted by error, bias, or the absence of sound procedures and performance standards’.\textsuperscript{65} Just as there is a need to standardize forensic science generally, there is a need to standardize and clarify the terms used by forensic science experts who testify, since these terms are not well defined or used consistently.\textsuperscript{66} Additionally, experts should caveat their testimony by describing the limits of their analysis.\textsuperscript{67} Such rules and standards need to be developed in forensic science to ensure that the jury is basing its decision on sound evidence and proof.

\textbf{CONCLUSION}

By nature of its field, science is continuously advancing.\textsuperscript{68} Hence, science that once was ‘good science’ may, sometime later, be debunked. But so long as it meets today’s scientific standards and is consistent with scientific principles, then that science is good science today.

SB 344 does not target junk science, but science that has been debunked or is faulty, and yet it is being described as the ’Junk Science Writ’. Maybe in describing SB 344 as such, individuals have recognized an even greater problem in the justice system—the lack of standards within forensic science, which very well may indicate that several disciplines of forensic science are junk science. Perhaps instead of implementing SB 344, which targets debunked science—something that continuously happens in science by its very nature—the Texan legislature should have first truly gone after junk science, science that never should find its way into the judiciary.

\textsuperscript{63} Id. at 127.
\textsuperscript{64} Id. at 127.
\textsuperscript{65} Id. at 9.
\textsuperscript{66} Id. at 12–13.
\textsuperscript{67} Id. at 53.
\textsuperscript{68} Haack, \textit{supra} note 53 at 85.