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ONCE THE JURY SEES IT, THE JURY CAN'T UNSEE IT: THE CHALLENGE TRIAL JUDGES FACE WHEN AUTHENTICATING VIDEO EVIDENCE IN THE AGE OF DEEPPAKES

ABSTRACT: The proliferation of deepfake videos has resulted in rapid improvements in the technology used to create them. Although the use of fake videos and images is not new, advances in artificial intelligence have made deepfakes easier to make and harder to detect. Basic human perception is no longer sufficient to detect deepfakes. Yet, under the current construction of the Federal Rules of Evidence, trials judges are expected to do just that. Trial judges face a daunting challenge when applying the current evidence authentication standards to video evidence in this new reality of widely available deepfake videos. This article examines the gatekeeping role trial judges must perform in light of the unique challenges posed by deepfake video evidence. This article further examines why the jury instruction approach and the rule change approaches proposed by other scholars are insufficient to combat the grave threat of false video evidence. This article concludes with a discussion of the affidavit of forensic analysis (“AFA”) approach, a robust response to the authentication challenges posed by deepfakes. The AFA approach preserves most of the current construction of the Federal Rules of Evidence while reviving the gatekeeping role of the trial judge in determining the admissibility of video evidence. The AFA provides the trial judges with the tools necessary to detect and exclude deepfake videos without leaving an everlasting taint on the juries that would have otherwise seen the falsified videos.

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*172 I. INTRODUCTION

The proliferation of deepfake videos has resulted in rapid improvements in the technology used to create them.¹ “While fake videos, images and recordings have been around for decades, advances in [artificial intelligence] have made deepfakes easier to make and harder to detect.”² Basic human perception is no longer sufficient to detect deepfakes.³ Trial courts face a daunting challenge when applying the current evidence authentication standards to video evidence in this new reality of widely available deepfake videos.

Devious actors have already used deepfakes to commit wire fraud and interfere with official proceedings.⁴ A number of scholars have weighed in on the unique challenges deepfakes pose for legal proceedings offering various approaches for how best to respond.⁵ Proposals have varied from moderate rule changes to jury instructions.

*173 This article examines the gatekeeping role trial judges must perform in light of the unique challenges posed by deepfake video evidence. This article further examines why the jury instruction approach and the rule change approaches proposed by other scholars are insufficient to combat the grave threat of false video evidence. This article concludes with a discussion of the affidavit of forensic analysis approach, a robust response to the authentication challenges posed by deepfakes. The “affidavit of forensic analysis” (“AFA”) approach preserves most of the current construction of the Federal Rules of Evidence while reviving the gatekeeping role of the trial judge in determining the admissibility of video evidence. The AFA provides the trial judges with the tools necessary to detect and exclude deepfake videos without leaving an everlasting taint on the juries that would have otherwise seen the falsified videos.

A. What are Deepfakes?

A deepfake is a type of synthetic audiovisual media that has been either manipulated or wholly generated by artificial intelligence technology and is used maliciously as disinformation or is used as misinformation.⁶ A deepfake is created or altered to appear to a reasonable observer as a genuine account of the speech, conduct, image, or likeness of an individual or an event.⁷ “They create a fake reality by superimposing a person's face on another's body by changing the contents of one's speech.”⁸

The word deepfake is derived from combining the terms “deep learning” and “fake.”⁹ “Deep learning is a ‘subset of [artificial intelligence],’ and refers to arrangements of algorithms that can learn and make intelligent decisions on their own.”¹⁰ Using deep learning, a persuasive counterfeit is produced by studying photographs and videos of a target person from multiple angles, and then mimicking the behavior and speech patterns.¹¹ Researchers in both the public and private sector have been searching for a solution to the deepfake problem for some time now.¹² The challenge, *174 though, is that as detection technology continues to improve, so does the ability to evade the detection technology.¹³

B. This is Not a Novel Challenge

The challenges faced by the proliferation of deepfakes are daunting, but they are not novel.¹⁴ With the increased use of digital images, rather than analog images, came the advent of digital photo editing software such as Adobe Photoshop.¹⁵ Adobe Photoshop, and similar software, allows for both superficial and substantive alterations to digital images.¹⁶ The advent of digital images presented many of the same concerns the legal profession now faces with the advent of deepfake video technology.¹⁷ “Digital images are easier to manipulate than traditional photographs and digital manipulation is more difficult to detect.”¹⁸ Nevertheless, courts responded to the challenge of digital images by excluding evidence that could not be satisfactorily authenticated.¹⁹ Likewise, courts will continue to weed out inauthentic evidence as they have in the past without imposing overwhelming changes to the standards for authentication of video evidence.²⁰

II. THE THREAT OF DEEPPAKES

The dangerousness of deepfake videos lie in the incomparable impact these videos have on human perception. Videos are not merely illustrative of a witnesses' testimony, but often serve as independent sources *175 of substantive information for the trier of fact.²¹ Since people tend to believe what they see, "images and other forms of digital media are often accepted at face value."²² "Regardless of what a person says, the ability to visualize something is uniquely believable."²³ Video evidence is more cognitively and emotionally arousing to the trier of fact, giving the impression that they are observing activity or events more directly.²⁴

"[V]ideo evidence enjoys a ring of truth."²⁵ In fact, one study found that nearly all of the subjects who viewed "fake-video evidence" falsely confessed to an act that they did not commit.²⁶ In the controlled experiment, the subjects completed a computerized gambling task, and later were falsely accused of cheating by stealing "money" from a fictional bank.²⁷ "[R]esearchers used digital editing equipment to fabricate video evidence of subjects taking money that did not belong to them."²⁸ "Presented with this doctored evidence, all subjects confessed, and most internalized the belief in their guilt."²⁹ The doctored videos were so compelling that one of the subjects, when the true nature of the study was revealed, replied to the researcher, "You're kidding? I really thought I did that!"³⁰

In this new reality of deepfake videos, witness may no longer be able to determine whether a video is a fair and accurate depiction of their memory. The improved technology used to create deepfakes reduce the likelihood that the witness will be able to reliably authenticate the video evidence. "Although jurors and judges may have a general awareness that deepfakes exist, understanding the processes by which digital audiovisual images (fake *176 or real) are created is well beyond the knowledge of most judges, jurors, and lawyers."³¹

A. New Technology Making Deepfakes More Accessible

Deepfake videos have grown at an unprecedented speed during the past few years.³² What once required expensive computing equipment now only requires a smartphone and an app.³³ The wide availability of images, audio, and videos from social media platforms coupled with the increased use of deep learning approaches pose serious threats to the security of individuals and governments.³⁴ Indeed, the FBI warned employers that "[t]he momentary recording of a single phone call, video conference or webinar may provide sufficient training material for a nefarious party to impersonate management's likeness using nothing more than free software or features found on social media platforms."³⁵ With the widespread use of social media platforms, nearly anyone is susceptible to becoming the subject of a deepfake video.

B. Deepfakes are Becoming More Difficult to Detect

The advances in artificial intelligence and machine learning have resulted in high-quality deepfakes that are more believable and are becoming more accessible.³⁶ Even the Director of the FBI has acknowledged that, without the right kind of training, it is very hard to distinguish deepfakes from genuine videos.³⁷ "Trust in evidentiary information from photos, body cam footage, surveillance camera footage, and other forms of content could be challenged as [deepfakes] improve in accessibility and quality."³⁸ What *177 is more, as deepfakes improve in quality, it may become more difficult to convince jurors that legitimate videos are authentic.³⁹

III. THE AUTHENTICATION RULE

A. Federal Rule of Evidence 901

“[T]he bar for authentication of evidence is not particularly high.”⁴⁰ Federal Rule of Evidence 901(a) states that “[t]o satisfy the requirement of authenticating or identifying an item of evidence, the proponent must produce evidence sufficient to support a finding that the item is what the proponent claims it is.”⁴¹ This low threshold allows a party to fulfill its obligation to authenticate non-testimonial evidence by a mere preponderance, or slightly better than a coin toss.⁴² “Authenticity is closely related to relevance, for if an item is not what it purports to be then it may not be relevant to the inquiry.”⁴³

Rule 901 does not expressly describe how video evidence is to be authenticated.⁴⁴ Rule 901(b) provides a non-exhaustive list of methods sufficient to authenticate evidence.⁴⁵ “Over time, courts have distilled the elements of an adequate foundation into criteria that they apply routinely.”⁴⁶ There are two theories of relevance under which video evidence is admitted: either as illustrative evidence of a witness's testimony (the pictorial evidence theory) or as independent substantive evidence to prove the existence of what is depicted (the silent witness theory).⁴⁷

Under the pictorial evidence theory, video evidence may be authenticated by any witness who was present when the video was made and *178 perceived the events depicted.⁴⁸ Generally, the percipient witness need only offer testimony that the video evidence fairly and accurately represents the events perceived by the witness.⁴⁹ The video may be admissible even if the witness is not aware of who created the video or when the video was created.⁵⁰

Under the silent witness theory, video evidence is subjected to more scrutiny since there is no percipient witness to testify as to its accuracy. The recorded video becomes the “witness” to the events depicted.⁵¹ An example would be a video submitted from an automatic surveillance camera which could be authenticated as the accurate product of an automated process under Federal Rule of Evidence 901(b)(9).⁵² Courts have treated such videos as independent sources of substantive evidence and as unimpeachable eyewitnesses “testifying” to the true version of what happened.⁵³

B. When Authenticity of Video Evidence is Disputed

When there is plausible evidence of both authenticity and inauthenticity of video evidence, the court must engage in a two-step process governed by Federal Rule of Evidence 104(b).⁵⁴ Rules 104(a) and (b) state, in relevant part:

(a) In General. The court must decide any preliminary question about whether a witness is qualified, a privilege exists, or evidence is admissible. In so deciding, the court is not bound by evidence rules, except those on privilege.

*179 (b) Relevance That Depends on a Fact. When the relevance of evidence depends on whether a fact exists, proof must be introduced sufficient to support a finding that the fact does exist. The court may admit the proposed evidence on the condition that the proof be introduced later.⁵⁵

When the authenticity of video evidence is disputed, courts do not require conclusive proof of authenticity prior to the admission of the disputed evidence.⁵⁶ Once the proponent produces sufficient evidence to convince a reasonable juror that the video evidence is authentic, the burden of production shifts to the party objecting to the introduction of the video evidence as inauthentic to prove facts demonstrating that the video evidence is clearly inauthentic.⁵⁷ “This standard does not require the proponent of the evidence to rule out all possibilities inconsistent with authenticity.”⁵⁸ In applying this standard, judges are

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limited to the role of screening for sufficiency.⁵⁹ Unless the proponent's showing is so weak that no reasonable juror could consider the evidence to be what the proponent purports it to be, the trial judge should admit the evidence and allow it to be considered by the jury.⁶⁰ “The ultimate responsibility for determining whether evidence is what its proponent says it is rests with the jury.”⁶¹ “In fact, the jury even may conclude that admitted evidence is not authentic and should be completely disregarded.”⁶²

Recently, the Court of Appeals of Michigan intimated that during the first step of the analysis, even though it is not a particularly rigorous one, a trial court faced with the question of authentication of posts from a social media account must be mindful of the fact that we are in the age of deepfakes.⁶³ In *People v. Smith*, the agent testified that he went to the social media pages of the defendant's affiliates and that several posts on the social media account were “accurate depictions of what he claimed they were--four Facebook posts that he had viewed when investigating defendant's possible connection with the shooting.”⁶⁴ Although the court concluded that trial judge did not abuse its discretion by authenticating the social media *180 posts, the court cautioned that the holding did not “discount the possibility that evidence from social media might, in fact, be inaccurate, hacked, or faked.”⁶⁵ The court further noted that “[a]s technology advances, trial courts and lawyers will need to be vigilant when considering questions of authenticity, at both the first and second stages.”⁶⁶

C. Witness Suggestibility Will Create False Testimony

Courts have trended toward admitting video evidence using the simpler foundation allowed for the admission of photographs, requiring only testimony by a witness with knowledge that the video evidence fairly and accurately represents the scene or activity depicted.⁶⁷ For example, the First Circuit recently held that the surveillance footage of a robbery was properly authenticated based on the store manager's testimony that the security cameras were working, and the manager personally viewed the surveillance footage several hours after the robbery was committed.⁶⁸ This low bar of authentication does not adequately take into account the ease in which the video may have been altered even by an unsophisticated individual.

*181 “[S]cientists have argued that false suggestions could induce people to testify about events they never witnessed.”⁶⁹ The memories of witnesses are so malleable that entire events can be implanted into the witnesses' memory due to post event information.⁷⁰ Witnesses are also susceptible to having their memories of an event altered by either adding to that memory or inhibiting that memory by post event information.⁷¹

In one study, researchers planted childhood memories of events that never occurred in subjects from ages eighteen to fifty-three.⁷² The subjects were told that the details of the false event were supplied by a close relative.⁷³ The false event was constructed using information provided by the relative, including where the family would have shopped when the subject was about 5 years old, which family members usually went along on such trips, and what kind of stores the subject would have attracted the subject's interest.⁷⁴ The subjects “remembered” the false event, either fully or partially, at a rate of 25%.⁷⁵ “Other studies used similar methods to plant a false memory that as a child the subject had had an accident at a family wedding, had been a victim of a vicious animal attack, or that he or she had nearly drowned and had to be rescued by a lifeguard.”⁷⁶

Research studies have also demonstrated how false video evidence can even change a person's memory of recent, self-involving events.⁷⁷ When a person encounters information after an event, that information can interfere with the person's memory of the self-involved event through a process called retroactive interference.⁷⁸ These false memories are created by simple exposure to post-event misinformation combined with the human tendency to incorporate subsequently acquired information into a person's recollection of events. “Researchers are not certain whether this new information changes original memory or instead creates a new memory that *182 ‘overlies’ the original memory.”⁷⁹ Regardless, the result is the same, a witness with a compromised memory and perhaps an unwitting jury that receives tainted testimony. Moreover, because of the insidious nature of the influence of post-event misinformation, the witness may not even be aware of its influence on their recollection of the events.⁸⁰

The more times a person is exposed to divergent post-event information, the more likely a person's memory will be tainted.⁸¹ If a witness is exposed to a deepfake video purporting to portray self-involved events, research suggests that after viewing the deepfake (the post-event information) the person can no longer distinguish between what they themselves observed and what has been suggested to them by the deepfake.⁸² Consequently, “[a] liberal policy for authentication of photo and video evidence [] leaves room for a witness ... to unwittingly vouch for a forgery.”⁸³ For example, a witness familiar with the events portrayed in a deepfake may attest to the video's authenticity while being unaware that the deepfake has contaminated the witness's memory of the events.

IV. ALTERNATIVE APPROACHES

Scholars have offered a number of well-reasoned approaches to combat the grave threat that deepfakes pose on the evidence authentication process in American courts. This section explores several of those approaches and explains why the approaches may not sufficiently address the problem.

A. Delfino's Rule Change Approach

Professor Delfino's proposal includes amending [Federal Rule of Evidence 901](#) to add a new subdivision (c) which would provide:

901(c). Notwithstanding subdivision (a), to satisfy the requirement of authenticating or identifying an item of audiovisual evidence, the proponent must produce evidence that the item is what the proponent claims it is in accord with subdivision (b). The court must decide any question about whether the evidence is admissible.⁸⁴

***183** Professor Delfino argues that “the proposed Rule 901(c) would expand the gatekeeper functions of the court by assigning the responsibility to decide authenticity issues solely to the judge.”⁸⁵ Under this approach, the trial judge would inform the jury that it must accept the video evidence as authentic during jury instructions.⁸⁶

The concern with Professor Delfino's approach is that it completely shifts the responsibility of being the arbiter of authenticity to the trial judge. Jurors are stripped of their responsibility to make the ultimate determination of whether to believe the evidence that has been admitted.⁸⁷ This may be especially problematic in a case where the jury's determination of facts may well drive their conclusion on the culpability or liability of a party.⁸⁸ The determinations regarding weight and credibility of the video evidence should not be uncoupled from considerations of the authenticity of that video evidence.

Further, the approach fails to adequately equip the trial judge with the tools necessary to make such a determination. Requiring that trial judges make final authentication determinations of video evidence in the age of deepfakes is essentially “[imposing] on them either the obligation or the authority to become amateur scientists in order to perform that role.”⁸⁹

B. McPeak's Middle-Ground Approach

Professor McPeak advocates for a middle-ground approach for assessing deepfake evidence that rests between the Maryland and Texas standards of authentication.⁹⁰ The Maryland standard of authentication “[requires] the proponent of social media evidence to prove its authenticity through more definitive means such as the testimony of the creator, a forensic expert, or the hosting platform.”⁹¹ Conversely, the Texas standard of authentication “only requires the party proffering the evidence to make a ***184** threshold showing of authenticity.”⁹² Once the threshold showing is made, the fact-finder makes the ultimate determination of authenticity.⁹³

“Under [McPeak's] middle-ground approach, circumstantial evidence [is used to] provide particular context of how a video or image originated, who it purports to depict, and what features of the video or image support authenticity--without necessarily requiring computer forensics and analysis in every case.”⁹⁴ The concern for adopting this approach is that trial judges and jurors lack the special skills necessary to sufficiently evaluate the authenticity of potential deepfakes. Even the author notes that, “[Trial judges] will need to assume a strong gatekeeping role to ensure that the quantum of circumstantial evidence is sufficient for a jury to make a more nuanced decision about authenticity in the age of deepfakes.”⁹⁵ Moreover, as the title of this article suggests, once the jury has viewed a deepfake video, the taint of that false evidence will remain throughout the trial and verdict.

C. The Jury Instruction Approach

Venema and Geradts suggested that jurors will have to be instructed on how to assess deepfake video evidence.⁹⁶ They indicate that juries may need to be informed of generic standards of digital and multimedia evidence.⁹⁷ Jury instructions will have to be more of a reflection of the altered reality of deepfakes, especially considering that jurors are likely to be inclined to believe what they see.⁹⁸ Similarly, McPeak discussed how a special jury instruction could supplement the Middle-Ground Approach.⁹⁹ McPeak suggests that the jury instruction should provide detailed guidance for the jury on gauging the authenticity of video evidence.¹⁰⁰

The challenge with the jury instruction approaches is that once a juror has seen the deepfake video, the damaging impact cannot be cured. What is more, jurors will be placed in the difficult position of making a determination on the authenticity of a deepfake video without the tools necessary to properly assess the authenticity. “[I]f jurors cannot agree on *185 their authenticity, the same video could exonerate someone--or send them to prison for years.”¹⁰¹

D. Breen's Pictorial Evidence Theory Approach

Breen offers three alternative recommendations to confront deepfake video evidence.¹⁰² First, Breen recommends that deepfake regulation legislation be passed requiring states to enforce specific methods of video verification.¹⁰³ Breen argues that courts would then be able to continue using the silent witness theory without dangerously risking the admission of false video evidence.¹⁰⁴ Second, Breen recommends, in the alternative, that the focus be on attacking the silent witness theory if no deepfake regulation legislation is enacted.¹⁰⁵ Finally, in the absence of significant deepfake legislation, courts should adopt the pictorial evidence theory to combat heightened public skepticism of video evidence.¹⁰⁶ Under this approach, visual evidence would only be admissible when a witness can testify before the jury that the evidence is a fair and accurate representation of what it depicts.¹⁰⁷

To be sure, deepfake regulation legislation will likely be preferred by most scholars in this field. Even assuming legislation is passed in the near future, that legislation is not likely to alter the important dynamic of trial judges serving as gatekeepers, jurors serving as fact-finders, and the final arbiters of authenticity of video evidence.

V. RESPONDING TO THE CHALLENGE OF DEEPPAKES

The varying approaches by scholars discussing the authenticity challenges posed by deepfake video evidence present thought-provoking and fruitful questions. This article offers a different approach that preserves most of the current construction of the Federal Rules of Evidence while reviving the gatekeeping role of the trial judge in determining the admissibility of video evidence.

***186 A. Affidavit of Forensic Analysis Approach**

The recommendation is that proponents of video evidence be required to submit with their proffered video evidence an AFA that will be used to assist the trial judge in performing the gatekeeping function under [Rule 104\(b\)](#).¹⁰⁸ Before the trial or hearing, a party offering video evidence must submit an affidavit from an expert whose testimony regarding forensic video analysis would be admissible at the trial or hearing under [Federal Rule of Evidence 702](#).¹⁰⁹ The expert's affidavit must state an opinion regarding the authenticity of the proffered video evidence, the method used to analyze the video, and the chain of custody of the video as reported by the proffering party.

The AFA is provided only as a tool to assist the trial judge in deciding whether there is sufficient evidence to support a reasonable jury's finding that the video evidence is what the proponent purports it to be. The AFA shall not be introduced as evidence for the trier of fact.¹¹⁰ Additionally, the AFA does not create a presumption of admissibility. The trial judge retains the discretion to decide whether the minimum standard under [Rule 901\(a\)](#) has been met as well as whether the video evidence should be excluded for another reason, including unfair prejudice that substantially outweighs the probative value under Rule 403.¹¹¹

1. AFA Modeled After the Affidavit of Merit

This approach is modeled after the affidavit of merit statutes that has been adopted by a growing number of states.¹¹² Affidavit of merit statutes ***187** generally require plaintiffs in professional malpractice claims to submit an affidavit from an appropriate licensed person stating that there is a reasonable probability that the care which is the subject of the complaint falls outside acceptable professional standards.¹¹³ “The intent of these statutes is to deter and reduce frivolous lawsuits, mostly in actions alleging medical malpractice by health care professionals, and thus to respond to the public concern over increased health care costs and the integrity of the health care system.”¹¹⁴

Undoubtedly, this approach will increase the cost of litigation.¹¹⁵ However, on the balance, the goal of preventing the introduction of inauthentic evidence warrants a modest increase in the litigation costs where video evidence is used for substantive information for the trier of fact to decide a material issue. In professional malpractice cases, the cost of an affidavit of merit can be as low as \$500.¹¹⁶ However, the AFA should not require the same depth of review that would be required by an expert making a determination that a plaintiff has a viable professional malpractice claim.

B. Expansion of Judicial Gatekeeping

“Judges in American courts have served as gatekeepers of evidence since the adversary process became dominant in the second half of the 18th century.”¹¹⁷ Gatekeeping has never been just blind discretion, but discretion based on training and experience. The performance of the gatekeeping function has been fraught with hardships because “[trial judges] are often making evidentiary rulings on subjects that are outside of their legal expertise and general knowledge base.”¹¹⁸ The performance of the gatekeeping function has also been burdened because when “scientific processes are difficult to understand, [trial judges] resort to what they do understand.”¹¹⁹

***188** The proliferation of deepfake videos has occasioned the expansion of the gatekeeping role of trial judges. As a result, trial judges must be properly equipped to face the grave threat deepfakes pose on the authentication process of video evidence. Unlike the suggestion of some scholars, the AFA approach does not require trial judges to become experts in forensic video analysis. Instead, trial judges are provided with an expert analysis of the proffered video upon which the trial judge may rely when determining whether the sufficiency standard has been met. The trial judge's gatekeeping role is expanded, but it does not replace the important function of the jury in making the final determination regarding authenticity.

C. Continuing Judicial and Legal Education Should Include Training on Deepfakes

The final recommendation is that bar associations include in their curriculum for continuing judicial education and continuing legal education training on the deepfake videos and their potential to be offered as evidence in legal proceedings. The requirement would be unprecedented, but it is closely aligned with a recent requirement adopted in New York, which requires all attorneys to complete one hour of training every two years in either the ethical obligations surrounding cybersecurity, privacy, and data protection, or in the technological and practice-related aspects of protecting data and client communications.¹²⁰

1. Prevents Litigators from Unwittingly Violating Rules of Professional Responsibility

Just as deepfake videos create challenges for trial judges, they also create challenges for attorneys. As deepfakes become more prevalent, it will be more important than ever for attorneys to verify a video's authenticity as early as possible.¹²¹ The admission of false evidence presents serious problems for the attorney that may have unwittingly offered the false evidence for admission. Under the Model Rules of Professional Conduct, an attorney “must not allow the tribunal to be misled by false statements of law or fact or evidence that the [attorney] knows to be false.”¹²²

As a result of the rules governing professional ethics, if an attorney discovers that a client has offered a deepfake video as evidence, the attorney is required to disclose the false character of the video to the court *189 immediately after discovering the falsity.¹²³ The trial judge would then have to decide whether a statement of the falsity should be made to the jury, whether a mistrial should be ordered, or whether nothing should be done.¹²⁴ Since there are serious consequences for offering false evidence, the AFA approach serves as an important safeguard for attorneys seeking to avoid the admission of deepfake videos.

VI. CONCLUSION

“Be afraid, be very afraid.”¹²⁵ To date, there does not appear to be nearly enough concern for the dangers created by deepfake videos under the current construction of the Federal Rules of Evidence. Although deepfakes may not be the existential threat to our democratic institutions that some scholars have predicted, it is clear that deepfakes will require a more robust response than what was required by technological changes in the past. The Affidavit of Forensic Analysis provides a path forward that expands the gatekeeping function of the trial judge, preserves the fact-finding function of the jury, and prevents the unwitting attorney from offering false video evidence.

Footnotes

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¹ See generally Geoffrey A. Fowler, *Anyone with an iPhone Can Now Make Deepfakes. We Aren't Ready for What Happens Next.*, WASHINGTON POST (Mar. 25, 2021, 8:00 AM), <https://www.washingtonpost.com/technology/2021/03/25/deepfake-video-apps>.

² 39 No. 16 Emp. Alert NL 1.

- 3 See Agnieszka McPeak, *The Threat of Deepfakes in Litigation: Raising the Authentication Bar to Combat Falsehood*, 23 VAND. J. ENT. & TECH. L. 433, 448 (2021).
- 4 David Dorfman, *Decoding Deepfakes How Do Lawyers Adapt When Seeing Isn't Always Believing?*, OR. ST. B. BULL., April 2020, at 18, 20, <https://www.osbar.org/bulletin/issues/2020/2020April/offline/download.pdf>.
- 5 See generally Agnieszka McPeak, *The Threat of Deepfakes in Litigation: Raising the Authentication Bar to Combat Falsehood*, 23 VAND. J. ENT. & TECH. L. 433 (2021); Rebecca Delfino, *Deepfakes on Trial: a Call to Expand the Trial Judge's Gatekeeping Role to Protect Legal Proceedings from Technological Fakery* (Feb. 10, 2022), <https://ssrn.com/abstract=4032094>; John Channing Ruff, *The Federal Rules of Evidence Are Prepared for Deepfakes. Are You?*, 41 REV. LITIG. 103 (2021); Danielle C. Breen, *Silent No More: How Deepfakes Will Force Courts to Reconsider Video Admission Standards*, 21 J. HIGH TECH L. 122 (2021); Agnes E. Venema & Zeno J. Geradts, *Digital Forensics, Deepfakes, and the Legal Process*, 16 SCITCH LAW. 14, 17 (2020).
- 6 NINA SCHICK, DEEPFAKES: THE COMING INFOCALYPSE 8-9 (2020).
- 7 Rebecca Delfino, *Deepfakes on Trial: a Call to Expand the Trial Judge's Gatekeeping Role to Protect Legal Proceedings from Technological Fakery*, 74 HASTINGS L.J. 293 (2023), https://repository.uchastings.edu/hastings_law_journal/vol74/iss2/3.
- 8 *Id.*
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- 11 *Id.*
- 12 FED. TRADE COMM'N., COMBATTING ONLINE HARMS THROUGH INNOVATION 9 (2022), https://www.ftc.gov/system/files/ftc_gov/pdf/Combating%20Online%20Harms%20Through%20Innovation%20B%20Federal%20Trade%20Commission%20Report%20to%20Congress.pdf.
- 13 FED. TRADE COMM'N., *supra* note 12, at 12.
- 14 See MATTHEW FEENEY, REGUL. TRANSPARENCY PROJECT, DEEPFAKE LAWS RISK CREATING MORE PROBLEMS THAN THEY SOLVE (2021), <https://regproject.org/wp-content/uploads/Paper-Deepfake-Laws-Risk-Creating-More-Problems-Than-They-Solve.pdf>.
- 15 See George L. Paul, *The "Authenticity Crisis" in Real Evidence*, 15 PRAC. LITIG., Nov. 2004, at 45, 48.

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- 16 Bobby Chesney & Danielle Citron, *Deep Fakes: A Looming Challenge for Privacy, Democracy, and National Security*, 107 CAL. L. REV. 1753, 1759 (2019).
- 17 See Christine A. Guilshan, *A Picture Is Worth a Thousand Lies: Electronic Imaging and the Future of the Admissibility of Photographs Into Evidence*, 18 RUTGERS COMPUT. & TECH. L.J. 365, 373-78 (1992) (“Because of the new generation of products for image manipulation, a broader group of people can take advantage of this power. The more people taking advantage of image manipulation, the less certain one can be as to how it will be used.”).
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- 20 *Id.* at 258.
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- 26 Robert A. Nash & Kimberley A. Wade, *Innocent but Proven Guilty: Eliciting Internalized False Confessions Using Doctored-Video Evidence*, 23 APPLIED COGNITIVE PSYCH. 624, 633 (2009).
- 27 *Id.*
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32 Hina Fatima Shahzad, Furqan Rustam, Emmanuel Soriano Flores, Juan Luís Vidal Mazón, Isabel de la Torre Diez & Imran Ashraf, *A Review of Image Processing Techniques for Deepfakes*, SENSORS, June 16, 2022, at 23, <https://doi.org/10.3390/s22124556>.

33 See Abigail Olson, *The Double-Side of Deepfakes: Obstacles and Assets in the Fight Against Child Pornography*, 56 GA. L. REV. 865, 867-68 (2022).

34 *Id.* at 868-69.

35 *Malicious Actors Almost Certainly Will Leverage Synthetic Content for Cyber and Foreign Influence Operations*, PIN No. 210310-001, FED. BUREAU OF INVESTIGATION (March 10, 2021), <https://www.aha.org/fbi-tlp-alert/2021-03-10-fbi-tlp-white-pin-malicious-actorsal-most-certainly-will-leverage>.

36 *Oversight of the Federal Bureau of Investigation Cyber Division: Hearing Before the H. Comm. on the Judiciary*, 117th Cong. (2022) [hereinafter *Oversight of the FBI Cyber Division*] (statement of Bryan A. Vorndarn, Assistant Dir., Cyber Div.), <https://www.fbi.gov/news/testimony/oversight-of-the-fbi-cyber-division-032922>.

37 *A Conversation with Christopher Wray*, COUNCIL ON FOREIGN RELATIONS (Apr. 26, 2019), <https://www.cfr.org/event/conversation-christopher-wray-0>.

38 *Oversight of the FBI Cyber Division*, *supra* note 36.

39 *Oversight of the FBI Cyber Division*, *supra* note 36.

40 *United States v. El Gammal*, 831 F. App'x 539, 542 (2d Cir. 2020) (holding that the testimony of the custodian for a social media company was sufficient to properly authenticate records pertaining to the defendant's social media account (citing *United States v. Gagliardi*, 506 F.3d 140, 151 (2d Cir. 2007))).

41 FED. R. EVID. 901(a); *see also* *Louis Vuitton S.A. v. Spencer Handbags Corp.*, 765 F.2d 966, 974 (2d Cir. 1985) (holding that the private investigator's testimony that the videotape accurately depicted the events shown was sufficient).

42 *See* Paul W. Grimm, Maura R. Crossman & Gordon V. Cormack, *Artificial Intelligence As Evidence*, 19 NW. J. TECH. & INTELL. PROP. 9, 94 (2021); *see also* *United States v. Pasley*, 629 F. App'x 378, 381 (3d Cir. 2015) ("The burden of proof for authentication is slight." (quoting *United States v. Reilly*, 33 F.3d 1396, 1404 (3d Cir. 1994))); *United States v. Mills*, 194 F.3d 1108, 1112 (10th Cir. 1999) ("[E]xcept for the obvious deletion, the evidence is 'readily identifiable,'

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‘with sufficient completeness to render it improbable that the original item has either been exchanged with another or been contaminated or tampered with.’”(quoting [United States v. Cardenas](#), 864 F.2d 1528, 1531 (10th Cir. 1989))).

43 [United States v. Blanchard](#), 867 F.3d 1, 5 (1st Cir. 2017) (citing [United States v. Browne](#), 834 F.3d 403, 409 (3d Cir. 2016)).

44 See FED. R. EVID. 901.

45 *Id.*

46 MOSTELLER, BROUN, DIX, IMWINKELRIED, KAYE & SWIFT, *supra* note 21, at 529.

47 *Id.* at 538.

48 MOSTELLER, BROUN, DIX, IMWINKELRIED, KAYE & SWIFT, *supra* note 21, at 539.

49 *Id.*

50 See [United States v. Gonzalez](#), 279 F. App'x 806, 810 (11th Cir. 2008) (holding in a prosecution for offenses involving the distribution of marijuana plants, a photograph was properly authenticated where the witness testified that it was the defendant who was featured in the photograph, even though the witness lacked knowledge of who took the photograph and when it was taken).

51 See George Bach, *Moderating the Use of Lay Opinion Identification Testimony Related to Surveillance Video*, 47 Fla. St. U. L. Rev. 445, 449 (2020) (discussing the admission of video-surveillance recordings).

52 See [Gonzalez](#), 279 F. App'x at 810; see also [United States v. Marshall](#), 332 F.3d 254, 263 n.5 (4th Cir. 2003) (“The district court did not abuse its discretion in admitting videotaped footage under a ‘silent witness’ theory, because the Government introduced sufficient evidence establishing the reliability of the footage.”).

53 See Bach, *supra* note 51, at 459 (quoting ROBERT P. MOSTELLER, KENNETH S. BROUN, GEORGE E. DIX, EDWARD J. IMWINKELRIED, DAVID H. KAYE, ERNIE F. ROBERTS & ELEANOR SWIFT, [MCCORMICK ON EVIDENCE](#) § 216, at 40 (7th ed. 2013)); see also George Bach, *Lay Identifications Based on Surveillance Video*, EXCITED UTTERANCE PODCAST (Jan. 24, 2022) (episode 114) (discussing the court's treatment of surveillance video recordings).

54 See *id.*; see also Honorable Paul W. Grimm, Lisa Yurwit Bergstrom & Melissa M. O'Toole-Loureiro, [Authentication of Social Media Evidence](#), 36 AM. J. TRIAL ADVOC. 433, 460 (2013) (discussing the admissibility of social media evidence).

55 FED. R. EVID. 104(a)-(b).

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- 56 Nester v. Textron, Inc., 888 F.3d 151, 160 (5th Cir. 2018) (quoting *United States v. Jimenez Lopez*, 873 F.2d 769, 772 (5th Cir. 1989)).
- 57 See Grimm, Bergstrom & O'Toole-Loureiro, *supra* note 54, at 456.
- 58 *United States v. Torres-Correa*, 23 F.4th 129, 133-34 (1st Cir. 2022).
- 59 MOSTELLER, BROUN, DIX, IMWINKELRIED, KAYE & SWIFT, *supra* note 21, at 529.
- 60 CHARLES A. WRIGHT & ARUTHUR R. MILLER, 31 FED. PRAC. & PROC. § 7104 (2d ed.).
- 61 *United States v. Okulaja*, 21 F.4th 338, 345 (5th Cir. 2021) (quoting *United States v. Barlow*, 568 F.3d 215, 220 (5th Cir. 2009)).
- 62 WRIGHT & MILLER, *supra* note 60.
- 63 *People v. Smith*, 969 N.W.2d 548, 563 (Mich. Ct. App. 2021), *appeal denied*, 962 N.W.2d 277 (Mich. 2021).
- 64 *Id.* at 566.
- 65 *Smith*, 969 N.W.2d at 566.
- 66 *Id.* at 566-67.
- 67 FED. R. EVID. 901-03; see also *United States v. Torres-Correa*, 23 F.4th 129, 133-34 (1st Cir. 2022) (holding surveillance video depicting robbery authenticated by testimony of store manager who explained how he used checklist to test the system, viewed surveillance footage shortly after robbery, and created recording submitted into evidence, despite fact that checklist was not introduced into evidence; authentication does not require ruling out all possibilities inconsistent with authenticity); *United States v. Cromitie*, 727 F.3d 194, 225 (2d Cir. 2013) (holding video of a bomb explosion was relevant, admissible, and not unfairly prejudicial); *Louis Vuitton S.A. v. Spencer Handbags Corp.*, 765 F.2d 966, 973-74 (2d Cir. 1985) (holding videotape authenticated by testimony that it “accurately depicted the events in the hotel room”); *Nester v. Textron, Inc.*, 888 F.3d 151, 160-61 (5th Cir. 2018) (holding, in product liability case, video of accident involving model of car at issue, produced by manufacturer, was authenticated by un rebutted witness who explained the content of the video but did not witness the events depicted); *United States v. Knowles*, 623 F.3d 381, 386-87 (6th Cir. 2010), *cert. denied*, 131 S. Ct. 613 (2010) (holding, in child porn case, appearance of incriminating copy of DVD, plus testimony that that contents were same as original missing videotape sufficed to authenticate it, witness had viewed original); *United States v. Brewer*, 915 F.3d 408, 417 (7th Cir. 2019) (holding, in bank robbery case, testimony of teller that video accurately depicted events was sufficient to authenticate, even where teller testified that she did not have independent recollection of the day; testimony of witness that video accurately depicted events it recorded is sufficient); *Hendricks v. Swenson*, 456 F.2d 503, 506 (8th Cir. 1972) (holding videotape shown as truly and correctly depicting events and persons shown); *United States v. Durham*, 902 F.3d 1180, 1232 (9th Cir. 2018) (holding cellphone video of defendant's confession sufficiently authenticated where government provided mirror image of phone and individual who made the recording testified to its accuracy and that she had not changed to video in any way; cellphone itself was

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not required to be presented at trial); [People v. Patterson](#), 710 N.E.2d 665, 668 (N.Y. 1999) (holding videotape may be authenticated by person who installed, operated, or maintained machine, or by witness to events depicted).

68 [United States v. Torres-Correa](#), 23 F.4th 129, 133-34 (1st Cir. 2022).

69 Kimberly A. Wade, Sarah L. Green & Robert A. Nash, *Can Fabricated Evidence Induce False Eyewitness Testimony?*, 24 APPLIED COGNITIVE PSYCH. 899, 900 (2010).

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79 J. Brigham, A. Wasserman & C. Meissner, *Disputed Eyewitness Identification Evidence: Important Legal and Scientific Issues*, COURT REVIEW, Summer 1999, at 12, 14.

80 Peter A. Ornstein, Stephen J. Ceci & Elizabeth F. Loftus, *Adult Recollections of Childhood Abuse: Cognitive and Developmental Perspectives*, 4 PSYCH. PUB. POL'Y & L. 1025, 1034 (1998).

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82 *Id.* at 1068-69.

- 83 Pfefferkorn, *supra* note 19, at 260.
- 84 Delfino, *supra* note 7, at 45.
- 85 Delfino, *supra* note 7, at 45.
- 86 *Id.*
- 87 See [United States v. Rubinstein](#), 466 F. App'x 848, 851 (11th Cir. 2012) ("Once a prima facie showing has been made, the evidence should be admitted and the trier of fact is permitted to make further determinations regarding weight and credibility.").
- 88 See Jenny Carroll, [The Jury As Democracy](#), 66 ALA. L. REV. 825, 836 (2015) ("When citizens sit in judgment on a criminal case, they determine the culpability of the defendant. Their factual conclusions may well drive this decision (as opposed to their conclusions about the law), but these *mere* factual determinations carry a weight that conclusions of facts in other contexts lack.").
- 89 See [Daubert v. Merrell Dow Pharms., Inc.](#), 509 U.S. 579, 601 (1993) (Rehnquist, C.J., concurring in part and dissenting in part).
- 90 McPeak, *supra* note 3, at 447-48.
- 91 *Id.* at 446; see also [Griffin v. State](#), 19 A.3d 415, 427-28 (Md. 2011).
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- 93 McPeak, *supra* note 3, at 446.
- 94 *Id.* at 448-49.
- 95 *Id.* at 449.
- 96 Agnes E. Venema & Zeno J. Geradts, [Digital Forensics, Deepfakes, and the Legal Process](#), SCITECH LAW., Summer 2020, at 14, 17.
- 97 *Id.*
- 98 *Id.*
- 99 McPeak, *supra* note 3, at 449.

- 100 *Id.* at 450 n. 109; *but see id.* (“Unfortunately, a jury instruction about ways to spot deepfakes may become obsolete as technology advances.”).
- 101 Brit McCandless Farmer, *The Impact of Deepfakes: How Do You Know When a Video is Real?*, CBS NEWS (July 31, 2022, 6:57 PM), <https://www.cbsnews.com/news/deep-fakesreal-fake-videos-60-minutes-2022-07-31/>.
- 102 Danielle C. Breen, *Silent No More: How Deepfakes Will Force Courts to Reconsider Video Admission Standards*, 21 J. HIGH TECH. L. 122, 153-54 (2021).
- 103 *Id.* at 154.
- 104 *Id.*
- 105 *Id.* at 157-58.
- 106 *Id.* at 160.
- 107 Breen, *supra* note 102, at 126-27.
- 108 *See* FED. R. EVID. 104.
- 109 *See* FED. R. EVID. 702.
- 110 This would improperly place a thumb on the scale as the jury determines the weight and credibility of admitted evidence.
- 111 *See* FED. R. EVID. 403.
- 112 ARIZ. REV. STAT. §§ 12-2602-03 (2022); ARK. CODE ANN. § 16-114-209 (2022); CAL. CIV. PROC. CODE §411.35 (West 2022); COLO. REV. STAT. § 13-20-602 (2022); CONN. GEN. STAT. § 52-190a (2022); DEL. CODE ANN. tit. 18, § 6853 (2022); FLA. STAT. ANN. § 766.104(1) (West 2022); GA. CODE ANN. § 9-11-9.1(a), (b) (2022); HAW. REV. STAT. ANN. § 672B-6(a)(1) (West 2022); HAW. REV. STAT. ANN. § 671-12.5(a)(1) (West 2022); 735 ILL. COMP. STAT. 5/2-622(a)(1) (2022); KAN. STAT. ANN. §60-3501(a) (2022); KAN. STAT. ANN. §65-4901(a) (2022); MD. CODE ANN., CTS. & JUD. PROC. §3-2A-04(b)(1)(i)-(b)(2)(iii) (West 2022); MD. CODE ANN., CTS. & JUD. PROC. §3-2C-01-2(a) (West 2022); MICH. COMP. LAWS ANN. § 600.2912d(1) (West 2022); MICH. COMP. LAWS ANN. § 600.2912e(1) (West 2022); MINN. STAT. §145.682 subdiv. 1-2 (2022); MINN. STAT. § 544.42 subdiv. 3(a) (2022); MISS. CODE ANN. § 11-1-58(1) (West 2022); MO. REV. STAT. § 538.225(1) (West 2022); NEV. REV. STAT. ANN. § 41A.071 (West 2022); NEV. REV. STAT. ANN. § 40.6884(1)-(2) (West 2022); N.J. STAT. ANN. § 2A:53A-27 (West 2022); N.Y. CPLR § 3012-A (McKinney 2022); N.D. CENT. CODE §28-01-46 (2022); OHIO R. CIV. P. 10(D)(2); OR. REV. STAT. ANN. § 31.300, § 31.350 (West 2022); PA. R. CIV. P. 1042.3; S.C. CODE ANN. §15-36-100 (2022); TENN. CODE ANN. §29-26-122 (2022); TEX. CIV. PRAC. & REM. CODE ANN. § 150.002 (West 2022); UTAH CODE ANN. §78B-3-423 (West 2022); VT. STAT. ANN. tit. 12 § 1042 (West 2022); W. VA. CODE §55-7B-6 (2022).

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- 113 See *Seldon v. Rebenack, Aronow & Mascolo, LLP*, 541 F. App'x 213, 215 (3d Cir. 2013) (discussing New Jersey's affidavit of merit statute).
- 114 Deborah F. Buckman, Annotation, *Constitutionality of Affidavit or Certificate of Merit Requirements in Actions Brought Against Licensed Professionals*, 45 A.L.R.7th Art. 1 (2019).
- 115 See McPeak, *supra* note 3, at 448 (“A blanket requirement for forensic expert testimony would unnecessarily increase the cost of litigation.”).
- 116 See Anna Karas, *The Constitutional Strength of Indiana's Medical Review Panel Process: How to Overcome the Inevitable Challenges*, 18 IND. HEALTH L. REV. 189, 205 (2021); Mary Markle, *How Affidavit of Merit Requirements Are Ruining Arizona's Medical Liability System*, 46 ARIZ. ST. L.J. 407, 411 (2014).
- 117 N. J. Schweitzer & Michael J. Saks, *The Gatekeeper Effect: The Impact of Judges' Admissibility Decisions on the Persuasiveness of Expert Testimony*, 15 PSYCH. PUB. POL'Y & L. 1 (2009).
- 118 Esther Nir & Siyu Liu, *What do the Gatekeepers See?: Perceptions and Evaluations of Scientific Evidence Among State Court Judges*, 22 CRIMINOLOGY CRIM. JUST. L. & SOC'Y 20 (2021) (“For example, judges have little training in medicine, methodology, and statistics, yet gatekeeping decisions often rely on the application of knowledge from these fields.”).
- 119 *Id.* (For example, [researchers] found that judges have trouble understanding the concepts of falsifiability and error rates, and attach more weight to “general acceptance”).
- 120 Bob Ambrogi, *New York Becomes First State to Mandate CLE in Cybersecurity, Privacy and Data Protection*, *Lawsites*, LAWSITES (Aug. 4, 2022), <https://www.lawnext.com/2022/08/new-york-becomes-first-state-to-mandate-cle-in-cybersecurity-privacy-and-data-protection.html> (noting Florida and North Carolina allows for training in a range of topics, which can include cybersecurity).
- 121 Pfefferkorn, *supra* note 19, at 273.
- 122 MODEL RULES OF PRO. CONDUCT r. 3.3 cmt. 2 (AM. BAR ASS'N 2023).
- 123 See *Nix v. Whiteside*, 475 U.S. 157, 169 (1986) (discussing an attorney's duty when confronted with a proposal for perjurious testimony) (quoting MODEL RULES OF PRO. CONDUCT r 3.3 cmt 6 (AM. BAR ASS'N 1983)).
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- 125 THE FLY (20th Century Fox 1986).

29 WIDL R 171