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CRIME SCENE INVESTIGATION UNDER BSA 2023: A NEW ERA OF SCIENTIFIC CRIMINAL JUSTICE IN INDIA

~Anisha Bharat Parkar

ABSTRACT

The criminal justice system of any nation rests upon the reliability of evidence gathered at crime scenes. In India, the transformation from the Indian Evidence Act, 1872 to the Bharatiya Sakshya Adhiniyam (BSA), 2023 represents far more than a legislative housekeeping exercise. It signals a philosophical reorientation: away from confession-centric policing rooted in colonial tradition, and toward a forensic-first, science-backed evidentiary culture. This paper critically examines how the BSA reshapes crime scene investigation in India its provisions on electronic records, forensic expert testimony, chain of custody, and authentication of digital evidence against the backdrop of a country that simultaneously boasts a growing forensic science infrastructure and struggles with severe capacity deficits at the ground level. Drawing on the provisions of the BSA alongside comparative insights from the United States, the United Kingdom, Australia, and the European Union, this paper argues that while the BSA is a structurally sound and constitutionally aligned law, its transformative promise will only be realised through sustained investment in forensic laboratories, standardised protocols, and judicial training. The paper concludes with concrete, actionable recommendations for bridging the gap between the aspirations written into law and the realities encountered at crime scenes across India.

I. INTRODUCTION: WHERE EVIDENCE BEGINS

There may be many intricate details in any given criminal case, yet all criminal trials have a fundamental common point the crime scene. At such a site a robbed apartment, a highway, a digital server banks all the facts of the case start being physically represented. And what investigators would uncover there, or not, would make the difference between justice and injustice. The scientific activity of converting physical objects into evidence, therefore, cannot but raise the question of constitutional rights, which according to Article 21 of the Constitution of India should be upheld.

For more than a century and a half, Indian courts functioned under the provisions of Indian Evidence Act (IEA), 1872 a colonial legislation penned by Sir James Fitzjames Stephen, who despite his good intentions in drafting it, did not foresee how much technological advancement would occur and how evidence would evolve from fingerprints to cloud storage data.¹ One may even say that the Act was written in the era of a magnifying glass and thus could not have anticipated DNA profiling or chain-of-custody tracking using blockchain technology.

The Bharatiya Sakshya Adhinyam, 2023 (hereinafter “BSA” or “the Act”), introduced as part of the wider criminal law reform trilogy along with the Bharatiya Nyaya Sanhita (BNS), 2023 and the Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023, is the most ambitious legislative effort by the Indian Parliament to usher in modernization in the realm of evidentiary law in India.² With effect from July 1, 2024, the BSA brings down the total number of sections from 167 (in the IEA) to 170 not a significant reduction numerically, but a major substantive departure nonetheless.

In the present paper, the provisions in the BSA relating to the investigation of crime scenes will be contextualized through a discussion of India’s current forensic capacities, the constitutional backdrop and international comparison as well.

¹ The Indian Evidence Act, No. 1 of 1872 (India). See also James Fitzjames Stephen, *A Digest of the Law of Evidence* (1st ed. 1876).

² Bharatiya Sakshya Adhinyam, No. 47 of 2023 (India).

LITERATURE REVIEW

The increasing reliance on forensic science and digital evidence in criminal investigations has fundamentally transformed the nature of evidentiary law across jurisdictions. Scholars have consistently emphasized that effective crime scene investigation serves as the foundation of a fair criminal justice system because the quality of evidence collected at the scene directly influences the accuracy of judicial outcomes. The emergence of the Bharatiya Sakshya Adhiniyam, 2023 (BSA) has therefore generated significant academic interest concerning the future of forensic evidence and crime scene management in India.

The theoretical foundations of modern crime scene investigation can be traced to Edmond Locard's Exchange Principle, which postulates that every contact leaves a trace. Paul L. Kirk further expanded this principle by demonstrating the significance of physical evidence in reconstructing criminal events and establishing links between offenders, victims, and crime scenes. Contemporary forensic scholars continue to regard these principles as the scientific basis of evidence collection and crime scene reconstruction.

Indian scholarship has extensively examined the shortcomings of the Indian Evidence Act, 1872 in addressing modern forms of evidence. The Law Commission of India's 185th Report highlighted several deficiencies in the colonial evidentiary framework, particularly its inability to adequately regulate electronic records and scientific evidence. Similar concerns have been expressed by legal scholars who argue that the Indian legal system struggled to keep pace with technological advancements and the increasing complexity of digital crime.

A substantial body of literature focuses on the admissibility of electronic evidence. The Supreme Court's decisions in *Anvar P.V. v. P.K. Basheer* and *Arjun Panditrao Khotkar v. Kailash Kushanrao Gorantyal* generated extensive academic debate regarding the interpretation of Section 65B of the Indian Evidence Act. Scholars such as Justice B.N. Srikrishna and other commentators have noted that procedural requirements relating to electronic certificates often created practical obstacles to the admission of reliable digital evidence. Recent analyses of the Bharatiya Sakshya Adhiniyam suggest that its recognition of electronic records as primary evidence and its flexible authentication mechanisms may overcome many of these challenges.

Research concerning forensic infrastructure in India reveals significant implementation concerns. Reports published by the National Forensic Sciences University, Bureau of Police Research and Development, and various governmental committees consistently identify shortages of trained forensic personnel, inadequate laboratory facilities, delays in forensic reporting, and the absence of uniform crime scene management standards. According to these studies, legislative reforms alone cannot improve criminal investigations unless supported by substantial institutional investment and capacity building.

Privacy concerns associated with forensic technologies have also received considerable scholarly attention. Following the Supreme Court's landmark judgment in Justice K.S. Puttaswamy (Retd.) v. Union of India, scholars such as Usha Ramanathan have examined the constitutional implications of collecting and analysing digital evidence. Their work highlights the tension between effective criminal investigation and the protection of informational privacy, particularly in relation to smartphones, cloud storage systems, biometric databases, and DNA profiling technologies.

Although the current literature extensively discusses forensic science, digital evidence, privacy rights, and evidentiary reform, there remains a significant gap regarding the practical implications of the Bharatiya Sakshya Adhinyam, 2023 for crime scene investigation. Most existing studies focus either on electronic evidence or on broad criminal law reforms without comprehensively analysing the relationship between crime scene investigation, forensic science, digital evidence, chain of custody, and constitutional safeguards under the new legal framework. This paper seeks to bridge that gap by critically examining the provisions of the BSA relating to crime scene investigation while evaluating their practical feasibility in light of India's forensic capabilities and international best practices.

II. THE ARCHITECTURE OF CRIME SCENE INVESTIGATION: PRINCIPLES AND PROCESS

2.1 The Foundation: Locard's Exchange Principle

Any discussion of crime scene investigation should always start from the basis that is the exchange theory of Edmond Locard who lived during the early part of the twentieth century: Every contact

leaves a trace.³ The Exchange Theory, propounded by Locard, postulates that whenever there is interaction between a person and the environment, he would invariably take something away and leave something behind - a fibre, a print, a strand of hair, a digital trail. It is this seemingly innocent statement which forms the crux of all forensic investigations, and the foundation of the legal principles governing admissibility of evidence in most nations today including India.

In reality, the application of Locard's Principle of Exchange can be divided into two classes of evidence. One is the associative evidence comprising items like fingerprints, blood stains, DNA, fibres and weapons that help establish links between an individual and the scene/victim and answers the fundamental question Who did this? The other category is that of reconstructive evidence comprising patterns of blood spatter, trajectories of bullets, tyre marks, etc., that help unravel the chronological sequence of events that took place at the crime scene and answer the question How did it happen?

2.2 The Seven-Step Process

The crime scene investigation process as carried out by the professional forensics team from all over the world involves seven general steps.⁴ In the first step, dimensions of the crime scene are established along with the identification of any potential threats such as biological hazards, chemicals, and any form of trap set up to harm the investigators themselves.

Step two involves securing the scene with cordons along with access records and only one single entry into the scene. This step also works on the reverse application of the Locard's principle.

In step three, the crime scene investigators plan and communicate in order to coordinate their efforts at the scene before touching anything there. The theory of the offense needs to be developed with the help of consulting witnesses and other preliminary information. The fourth step in crime scene investigation is conducting a walkthrough, whereby the lead investigator photographs and

³ Edmond Locard, *L'enquête criminelle et les méthodes scientifiques* (1920). See also Paul L. Kirk, *Crime Investigation: Physical Evidence and the Police Laboratory* 4 (1953).

⁴ National Institute of Justice, U.S. Dep't of Justice, *Crime Scene Investigation: A Reference for Law Enforcement Training* (2004).

annotates evidence without touching it. The fifth step consists of documenting everything and then processing all the evidence with the help of digital cameras, videos, and even three dimensional laser scanner technology if it is available.

2.3 Gauging Evidentiary Value

Not all items recovered at the crime scene can be considered useful evidence. An assessment of the probative value of an item is made based on four aspects: uniqueness (is it narrowing down the list of the suspects and their methods?); low probability of accidental presence; environmental mismatch (is it misplaced in the environment in question?); and physical compatibility, that is whether the item can be physically linked to something in the suspect's possessions through fracture markings, tooling or chemical makeup.⁶ This approach to the analysis of items, which is used by detectives, translates into the language of legal definitions of relevancy and admissibility of evidence.⁵

III. PROVISIONS OF THE BSA ON CRIME SCENE EVIDENCE

3.1 Physical Evidence: Forensic Reports and Expert Testimony

Section 52 of the BSA lays down the foundational clause regarding the forensic evidence obtained through investigations at crime scene.⁶ The Section acknowledges the importance of expert opinion based on knowledge of scientific disciplines like DNA analysis, fingerprint, ballistics, toxicology, and forensics pathology as admissible evidence during criminal proceedings.

It mandates that the forensic reports must be produced by competent experts using scientific methodology.⁷ Importantly, it guarantees the opposite party an opportunity to challenge the expert opinion on issues of methodology, assumptions, and results so as to ensure that scientific evidence

⁵ Peter D. Barnett, *Ethics in Forensic Science: Professional Standards for the Practice of Criminalistics* 22–29 (2001).

⁶ *Bharatiya Sakshya Adhiniyam* § 52(2) (2023).

⁷ Law Commission of India, *185th Report on Review of the Indian Evidence Act, 1872*, 1.2–1.7 (2003).

is not accepted uncritically leading to miscarriage of justice as has happened several times due to unscientific evidence both in India and abroad.

The second sub-section of Section 52 clearly stipulates that the forensic report must be produced by accredited laboratories. Such accreditation involves meeting rigorous criteria in respect of technical competence, traceability of measurements, and quality management as per international standards by the National Accreditation Board for Testing and Calibration Laboratories (NABL).

But, as discussed later in Section V of this paper, the coverage of NABL accreditation across forensic laboratories in India is still limited. In this regard, section 52(3) provides for the safeguarding of privacy rights in relation to DNA material, requiring the use of proper security arrangements in the maintenance of DNA databases so as to ensure that no unauthorised person gains access to or abuses the data.

This clause is in line with the Supreme Court's recognition in Justice K.S. Puttaswamy v. Union of India that genetic material requires the utmost protection under privacy laws.⁸

3.2 Electronic and Digital Evidence

Section 57 of the BSA represents an important innovation in the law regarding the use of digital evidence in court. The extensive definition of "electronic records," which includes records generated, stored, or transferred in electronic form, covers any form of digital communications and documentation such as emails, text messages, social media communications, GPS location data, financial transaction data, and metadata contained within digital photos.⁹ The scope of the provision is wide because it is intended to cover all categories of digital evidence. At a time when criminal activity frequently occurs in multiple devices, platforms, and even jurisdictions, this broad coverage of the provision is not only essential but also appropriate.

⁸ Justice K.S. Puttaswamy (Retd.) v. Union of India, (2017) 10 SCC 1.

⁹ Bharatiya Sakshya Adhiniyam § 57 (2023).

The section 57(2) relates to cyber forensics, which involves the process of extracting usable information from partially damaged or corrupted devices and those that have been intentionally deleted in order to make the process difficult.¹⁰ The provision is particularly relevant in situations involving organized crime, terrorism, and corporate fraud because criminals often destroy their evidence as part of their criminal activities. The authentication process of electronic evidence under Section 63 is a practical step up from the certification process of Section 65B of the IEA.¹¹

The flexibility of the former in using one of four ways to authenticate electronic evidence, which are producing the original source from where the electronic record was made, testimonial evidence, expert opinion, and certification, has solved the problem of bottlenecks caused by the latter.

3.3 Chain of Custody Requirements

Perhaps the single most practically important provision made in the BSA with regard to crime scene investigations is the introduction of chain of custody requirements, which are outlined in Section 52. Chain of custody refers to the sequential account of the seizure, custody, control, analysis, transfer, and disposition of any type of evidence whether physical or digital. The chain of custody helps the courts verify that evidence produced in the course of a legal proceeding is the same evidence collected during the investigation and that no contamination or alteration has occurred to this end. Under Section 52 of the BSA, any disruption in the chain of custody is not enough reason to render evidence inadmissible but might affect the probative value of the evidence.¹²

This careful balancing act recognizing that procedural errors in some cases should not exonerate a defendant while ensuring judicial supervision over evidence collection process constitutes high-caliber evidence law and is similar to that employed by other common law jurisdictions. Section

¹⁰ Bharatiya Sakshya Adhiniyam § 57(2) (2023).

¹¹ Renjith Thomas, Bharatiya Sakshya Adhiniyam, 2023: A Critical Perspective, SSRN (2024), at 12–15.

¹² Bharatiya Sakshya Adhiniyam § 52 read with Bharatiya Nagarik Suraksha Sanhita § 193(2)(i) (2023).

193(2)(i) of the accompanying legislation, the BNSS Act 2023, further corroborates this point by requiring police reports to provide chronology of forensic evidence collection process.

IV. THE BNSS, 2023: MANDATING FORENSIC SCIENCE AT THE SCENE

It is important to recognize that the provisions in the BSA are not standalone. They are intrinsically linked to the procedural provisions of the Bharatiya Nagarik Suraksha Sanhita, 2023. Section 176(3) of the BNSS, which may be regarded as the most significant provision in any law concerning forensic science in India, provides that the forensic scientist must visit the site of the crime if it involves the commission of an offense which carries a minimum punishment of seven years' rigorous imprisonment, conduct a forensic investigation and film the whole process.¹³

This section signifies a complete paradigm shift. From an era where forensic investigation was simply not compulsory to a point where it became mandatory for serious crimes, Section 176(3) of the BNSS would usher in a revolution in the way in which criminal investigations are carried out in India. The importance of physical evidence over confession would become entrenched in the criminal procedure. The problem with Section 176(3), however, is that it imposes a mandatory obligation where the states lack the necessary forensic manpower.

V. THE IMPLEMENTATION GAP: CHALLENGES CONFRONTING THE NEW FRAMEWORK

5.1 Infrastructure Deficiencies

However, the difference between the lofty ideals of BSA and the state of the crime scene investigations in India is particularly pronounced in terms of the forensic science infrastructure of the country. India has a poorly resourced, under-staffed system of Central Forensic Science Laboratories (CFSLs) and State Forensic Science Laboratories (SFSLs) plagued by a huge backlog

¹³ Bharatiya Nagarik Suraksha Sanhita § 176(3) (2023). Lex Scripta Magazine, Scientific Investigation Under the New Criminal Laws: A Study of Forensic Science in India (May 2026) (describing Section 176(3) as "the most consequential provision for forensic science in any Indian statute").

of cases, which often can stretch to months or even years.¹⁴ Moreover, in smaller states or rural areas, the infrastructure is so weak that even such basic forensic procedures as fingerprint analysis or blood type testing may not be readily available.

These deficiencies have a very concrete impact on the effectiveness of the BSA's requirements. For example, Section 52 requires that the reports on forensic findings are to be issued by accredited laboratories; however, in many cases such facilities may not even exist close enough to all crime scenes. Nevertheless, the creation of the National Forensic Sciences University in 2020, as well as the growth of the network of the CFSLs, represents some notable improvements, although the number of qualified professionals still lacks drastically.

5.2 Training Deficits

While the presence of well-equipped laboratories is necessary, crime scene investigation relies heavily on the training levels of first responders the police officers responsible for attending to the scene in the initial stages. Contamination of the scene before forensic investigators arrive renders any analysis from even the most advanced laboratories useless. There is currently no standardized crime scene management curriculum across the various state police organizations in India.¹⁵ Training standards differ tremendously not only across different states but also urban versus rural postings in the same state.

The need for judicial training constitutes yet another urgent issue. The BSA provides instructions concerning expert witness statements and the interpretation of scientific evidence that require judges' adequate scientific literacy. Although the National Judicial Academy of India and its counterparts in individual states are working on modules pertaining to the interpretation of scientific evidence, this training effort falls significantly short of what is needed.

¹⁴ National Forensic Sciences University, Annual Report on Forensic Infrastructure Development 18–24 (2023).

¹⁵ Bureau of Police Research and Development, Guidelines on Cyber Crime Investigation 34–37 (2021).

5.3 Chain of Custody Failures in Practice

It should be noted that the chain of custody, at least according to theory, is continuous. In reality, especially when dealing with digital evidence, the chain is often interrupted or fragmented. Digital equipment used at crime scenes may change hands multiple times before going through a number of law enforcement offices and spending a considerable amount of time under conditions which could lead to the corruption of the information stored on them without leaving a trace of it in their documentation.

It goes without saying that the murder of Aarushi Talwar in 2008, which took place prior to the enactment of the BSA, is yet another vivid example of how improper handling of forensic evidence leads to a wrongful judgement.¹⁶

The problem in question is especially complicated by the peculiarities of digital evidence itself, since electronic records are easy to alter or encrypt, while the necessary level of expertise needed to do it is quite uncommon in Indian investigation services.

5.4 Constitutional Dimensions: Privacy and the Right to Fair Trial

However, it has been argued that the BSA does not answer a number of questions which raise important constitutional implications regarding the collection and utilization of digital evidence. For instance, the Supreme Court of India unanimously held in Justice K.S. Puttaswamy v. Union of India¹⁷ that the right to privacy constitutes a fundamental right under Article 21 and that such state intervention in relation to personal data should conform to the principle of the "triple test": legality, necessity, and proportionality.¹⁸ Consequently, the confiscation of the suspect's

¹⁶ Tapesh Meghwal, *Crime Scene Investigation in India: Legal Framework, Procedures & Challenges*, SSRN Working Paper (2025), at 22–25.

¹⁷ Justice K.S. Puttaswamy (Retd.) v. Union of India, (2017) 10 SCC 1, 178–186.

¹⁸ Justice K.S. Puttaswamy (Retd.) v. Union of India, (2017) 10 SCC 1, 178–186.

smartphone at the crime scene, in light of its potential to store several years' worth of intimate personal data, becomes an issue in this context.¹⁹

VI. COMPARATIVE PERSPECTIVE

6.1 The United States: Daubert and Its Gatekeeping Function

A few aspects of the U.S. federal rules of evidence, which include the Federal Rules of Evidence (FRE) can offer lessons for India in the same area. Firstly, the use of the Daubert standard, whereby the Supreme Court decided in *Daubert v. Merrell Dow Pharmaceuticals*²⁰ that the trial judge has the responsibility of being the gatekeeper for the admission of scientific evidence. Under rule 702 of FRE, the methodology used in producing the expert testimony must be tested, peer reviewed, capable of having an error rate analysis performed, and generally accepted in the field. The implementation of the gatekeeping mechanism in the U.S. has led to the improvement of the forensic evidence. However, it has been subject to some debate concerning the consistency of its application. Unlike in the U.S., the Indian forensic practice, according to the BSA, does not have the Daubert-type of gatekeeping requirement for the admission of the expert testimony. In India, the forensic expert testimony will be admitted based on the expert's qualification, and when the evidence is produced in a recognized laboratory.

6.2 The United Kingdom: Standardised Protocols and Expert Independence

Indeed, the British approach toward digital evidence through the ACPO Good Practice Guide for Digital Evidence (which has since been replaced by the Digital Forensics guidelines of the College of Policing) is a prime example of developing standard protocols that can be effectively used by India as well.²¹ The four principles stated in the Good Practice Guide that no act should alter data in a computer that may be presented in evidence; that anyone who examines original data should

¹⁹ *Riley v. California*, 573 U.S. 373 (2014).

²⁰ *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993).

²¹ Association of Chief Police Officers (UK), *Good Practice Guide for Digital Evidence*, Version 5 (2011), Principles 1–4.

have the necessary competence and explain their actions; and that all actions undertaken throughout the process should be documented and recorded are very practical indeed.

6.3 Australia: National Quality Assurance Frameworks

The federal nation's national quality assurance program in the field of forensic sciences managed through the agency ANZPAA and the NIFS presents an excellent example of how a federal nation with numerous states can implement the national forensic standardization policy.²² The NIFS ensures the development and maintenance of best practices related to each type of forensic science including DNA, fingerprints, bloodstain analysis, and digital forensics. As a result, a forensic report from Queensland is methodologically comparable with the one from Western Australia.²⁶ India's BPR&D could serve as a coordinating agency for India as well.

6.4 The European Union: Cross-Border Digital Evidence

The recently adopted e-Evidence Regulation of the European Union, which introduces European Production and Preservation Orders for electronic evidence in cross-border investigations, helps to overcome one of the most challenging practical issues facing modern digital forensics how to timely receive the relevant electronic evidence kept by service providers from other countries before it is erased or tampered with.²³ As criminal activity in India becomes ever more transnational, the lack of such systems for cross-border cooperation in digital evidence can pose a serious threat to the country. India's bilateral MLATs prove inefficient in many cases.

²² Australia New Zealand Policing Advisory Agency, NIFS Practice Guidelines for Forensic Science Disciplines (2022).

²³ Regulation (EU) 2023/1543 of the European Parliament and of the Council on European Production Orders and European Preservation Orders for electronic evidence in criminal proceedings (e-Evidence Regulation), O.J. (L 191) 118 (2023).

VII. THE FUTURE OF CRIME SCENE INVESTIGATION IN INDIA

7.1 Technological Horizons

However, the terrain of crime scene investigations is rapidly changing due to developments in technology, which were not envisioned by the BSA's authors or even its critics when it was adopted. Indeed, artificial intelligence has already started transforming forensics: fingerprint-matching software powered by artificial intelligence can process hundreds of thousands or millions of fingerprint samples in less than a second; facial recognition algorithms can detect suspects among the CCTV video feed; finally, predictive analytics based on crime scene pattern analysis can estimate how the evidence might be scattered around in a given location.

All of these AI-based approaches to criminal investigation present novel issues for evidence law, which have not been considered under the BSA yet. If a suspect has been recognized based on the result of an AI-based face scan, but not on a human witness' testimony or some conventional forensic evidence, then what will be the threshold for admitting this piece of evidence? What kind of "expert" should be subject to cross-examination regarding the algorithm's accuracy, possible errors, and biases in the training dataset?

Blockchain technology promises a potential way to address these problems: with a tamper-proof blockchain record of all transfers, inspections, and handling of evidence items.²⁴

7.2 The Internet of Things as a Crime Scene

With the growing deployment of smart home devices, wearable fitness tracking devices, connected cars, and IoT devices used in industries across Indian society, such devices are emerging as potential sources of digital evidence in criminal cases.²⁵

²⁴ Dr. Aniruddha Rajput, *Digital Evidence under the Bharatiya Sakshya Adhinyam*, *Indian Journal of Law and Technology* (2024), at 67–71.

²⁵ Usha Ramanathan, *Privacy and Digital Evidence in Criminal Trials*, *Economic & Political Weekly* (2023), at 34–38.

VIII. CONCLUSION AND RECOMMENDATIONS

8.1 Assessing the BSA: Promise and Peril

The Bharatiya Sakshya Adhiniyam, 2023 is a progressive statute. Its use of electronic records as primary evidence, its multilayered authentication system, its detailed chain of custody procedure, its enhanced rules on forensic expert evidence, and its provisions for DNA privacy are all together a more evolved scheme for handling evidence than anything India has seen thus far. The act itself is constitutionally defensible, forward-thinking, and relatively well-informed, its authors having apparently studied best practices around the world.

Nevertheless, one could argue that the very aspect that makes this act important is what makes it dangerous too. An act that calls for the accreditation of forensic laboratories, the provision of expert opinions about digital evidence, and a continuous chain of custody for every significant criminal case relies on certain infrastructure that is available only in parts of the country while lacking in many other regions. As a result, such an act may become the source of injustice instead of fairness, since sophisticated offenders will be able to obtain grounds for being acquitted despite their guilt.

8.2 Recommendations

This paper offers the following recommendations for strengthening the BSA's crime scene investigation framework:

Firstly, the Central Government must set up the National Crime Scene Investigation Standards Authority that will develop and mandate standards for scene documentation, evidence collection, packaging, and chain of custody record-keeping to be followed by all state police forces.

Secondly, accreditation by NABL must become compulsory for all forensic laboratories reporting in criminal trials within a specified period of time.

Thirdly, the Supreme Court of India must issue guidelines in regard to the admission of and the criteria for assessing the reliability of scientific evidence through either a practice direction or by invoking its powers under Article 142 of the Constitution. The court should be authorized to

appoint independent court experts in forensic cases to mitigate the effect of the adversarial approach to science.

Fourthly, the Central Government must introduce legislation to regulate the private sector and ensure that standards adopted and enforced for forensic laboratories run by the states and the BSA apply equally to private laboratories.

Fifth, the training of judges on scientific evidence must be greatly increased, including a forensic science certification program by the National Judicial Academy. The topics should include DNA profiling, digital forensics, blood spatter evidence, ballistics, and the probabilistic interpretation of forensic evidence.

Sixth, the obtaining of digital evidence from a person's own device must be authorised by prior court order in all but genuinely emergent situations, with time limits placed upon the extent and duration of that authorisation. These limitations would put Indian procedure in compliance with the standards set forth in the Puttaswamy case and conform to good international practice.

The BSA has held open a door. But whether or not India passes through it successfully will not depend on what has been said in legislation but rather on what the investigating agencies collect, what forensic labs analyze, what experts testify, and how many judges know it. Legislation alone, no matter how beautifully drafted, cannot do the job in the absence of institutions, training, and capacity. And that is both the challenge and the opportunity that lie ahead for India.

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- 11.** Bharatiya Sakshya Adhiniyam § 63 (2023) (providing four alternative modes of authenticating electronic records, replacing the single-mode certification requirement of the Indian Evidence Act § 65B).
- 12.** Bharatiya Sakshya Adhiniyam § 52(2) (2023) (mandating that forensic reports be prepared by qualified experts using scientifically accepted methods in accredited laboratories).
- 13.** Justice K.S. Puttaswamy (Retd.) v. Union of India, (2017) 10 SCC 1 (nine-judge bench unanimously holding that the right to privacy is a fundamental right under Article 21, with informational privacy attracting the highest protection).
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- 22.** Justice K.S. Puttaswamy (Retd.) v. Union of India, (2017) 10 SCC 1, 178–186 (establishing the triple test of legality, necessity, and proportionality for state intrusions into the right to privacy, with particular emphasis on informational privacy).
- 23.** Riley v. California, 573 U.S. 373 (2014) (U.S. Supreme Court holding that warrantless search of a cell phone incident to arrest violates the Fourth Amendment, reasoning that phones hold a vast store of personal information that the framers could never have anticipated).
- 24.** Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 579 (1993) (U.S. Supreme Court establishing the four-factor gatekeeping test for scientific expert testimony: testability, peer review, known error rate, and general acceptance within the scientific community).
- 25.** Association of Chief Police Officers (UK), Good Practice Guide for Digital Evidence, Version 5 (2011), Principles 1–4 (articulating the foundational principles for digital evidence handling that have informed police practice across multiple jurisdictions).
- 26.** Australia New Zealand Policing Advisory Agency, NIFS Practice Guidelines for Forensic Science Disciplines (2022) (providing discipline-specific quality assurance standards applicable across Australian state and territory forensic laboratories).
- 27.** Regulation (EU) 2023/1543 of the European Parliament and of the Council on European Production Orders and European Preservation Orders for electronic evidence in criminal proceedings (e-Evidence Regulation), O.J. (L 191) 118 (2023).
- 28.** Dr. Aniruddha Rajput, Digital Evidence under the Bharatiya Sakshya Adhiniyam, Indian Journal of Law and Technology (2024), at 67–71 (discussing blockchain chain of custody and AI-generated forensic analysis as emerging evidentiary challenges under the BSA).

29. Usha Ramanathan, Privacy and Digital Evidence in Criminal Trials, *Economic & Political Weekly* (2023), at 34–38 (examining the implications of IoT device data as evidence in Indian criminal proceedings against the constitutional privacy framework).