



Forensic Evidence and the Constitutional Architecture of Criminal Justice in India: Reliability due Process and Institutional Accountability

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ABSTRACT

Forensic evidence occupies an increasingly influential position in Indian criminal justice, but scientific appearance does not itself establish scientific validity or legal reliability. This article argues that the constitutional legitimacy of forensic proof depends upon an integrated architecture connecting collection, preservation, laboratory analysis, disclosure, adversarial testing and judicial evaluation. The Bharatiya Nagarik Suraksha Sanhita, 2023 expands the institutional role of forensic investigation, particularly for serious offences, while the Bharatiya Sakshya Adhiniyam, 2023 recognises expert and electronic evidence within a framework formally directed toward fair trial. These reforms create an opportunity to reduce confession-centred and testimonial policing, yet they may also enlarge coercive collection, laboratory backlogs and uncritical reliance on expert conclusions. Drawing upon constitutional doctrine, evidentiary jurisprudence and interdisciplinary research, the article examines reliability, self-incrimination, privacy, bodily integrity, chain of custody, digital authenticity, defence access, expert independence and judicial gatekeeping. It proposes a National Forensic Reliability Framework built upon accreditation, method validation, probabilistic reporting, blind verification, disclosure of limitations, defence-accessible retesting, error reporting and independent

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oversight. Forensic modernisation will strengthen justice only if scientific capacity is matched by constitutional restraint and institutional accountability.

1. Introduction

Forensic evidence promises to displace intuition, coercion and testimonial uncertainty with observable traces. DNA, toxicology, fingerprints, ballistics, questioned documents, pathology and digital artefacts can connect persons, objects, places and events in ways unavailable to unaided perception. Yet a laboratory report is neither neutral merely because it is technical nor conclusive because it is difficult for lay participants to contest. The Constitution requires criminal process to be non-arbitrary, fair and respectful of the privilege against compelled self-incrimination.ⁱ Forensic proof must therefore be located within constitutional procedure, not placed above it.

The central distinction is between admissibility and reliability. Admissibility asks whether the law permits a category of material to enter the record. Reliability asks whether the technique was valid for its stated purpose, applied competently, and interpreted without exaggeration. Weight asks how the result fits the remaining evidence. Conflating these inquiries produces what may be called the authority effect: scientific vocabulary substitutes for demonstrated validity.ⁱⁱ

This article argues that forensic justice is a chain of constitutional responsibility. A valid method can be defeated by contaminated collection; an uncontaminated sample can be mislabelled; a technically accurate result can be overstated; and an appropriately qualified conclusion can become unfair if underlying data are withheld from the defence. Reliability is therefore systemic. It belongs neither exclusively to the scientist nor exclusively to the judge.

2. The New Statutory Setting

The Bharatiya Sakshya Adhiniyam, 2023 (BSA) describes evidence to include statements given electronically and documents including electronic or digital records. Section 39 preserves the relevance of expert opinion on science, art, foreign law, handwriting and finger impressions, while sections 61 to 63 regulate electronic records.ⁱⁱⁱ The Act's long title expressly associates evidentiary rules with fair trial. That formulation should inform interpretation: technological inclusion cannot be separated from procedural equality.



The Bharatiya Nagarik Suraksha Sanhita, 2023 (BNSS) marks a more conspicuous forensic turn. Section 176(3) requires a forensic expert to visit the crime scene and collect forensic evidence in offences punishable with seven years or more, with videography of the process, subject to the statutory implementation arrangement.^{iv} The provision can improve contemporaneous documentation and reduce avoidable loss of traces. Its success, however, presupposes trained first responders, sufficient laboratories, transport and storage, standard kits, validated methods and rapid reporting.

Mandatory collection must not become mandatory credence. The BSA does not declare expert opinion infallible. The Supreme Court has repeatedly explained that an expert assists the court and must supply the scientific criteria and reasons enabling independent evaluation.^v Earlier handwriting cases likewise caution against conviction resting mechanically on comparison opinion without careful corroboration.^{vi} The new statutes alter scale and medium more clearly than they settle the epistemic standard by which scientific claims should be judged.

3. Reliability as a Constitutional Requirement

Article 14 prohibits arbitrary state action; Article 21 requires a just, fair and reasonable procedure. When forensic evidence materially determines arrest, bail, charge or conviction, unreliable science becomes a constitutional injury rather than a merely technical evidentiary defect. The risk is asymmetric: the prosecution ordinarily controls the crime scene, sample, laboratory request and expert, while the accused may encounter only a conclusory report after degradation or consumption of the original material.

Indian law has no single codified reliability test comparable to the factors articulated in Daubert, such as testability, peer review, error rate, standards and acceptance.^{vii} Those comparative factors should not be transplanted mechanically. They nevertheless illuminate questions already implicit in sections 39 and 45 of the BSA framework: Does the witness possess relevant expertise? Is the method validated for the task? Were protocols followed? What uncertainty attaches to the result? Could another competent examiner reproduce it?

Forensic disciplines differ radically. DNA profiling may rest on population genetics and quantified likelihoods, while bite-mark comparison, microscopic hair comparison, handwriting, voice identification or toolmark opinion may involve substantial subjective judgment. Human-factors research demonstrates that contextual information, expectations and task-irrelevant facts can influence expert decisions.^{viii} Courts should therefore assess the proposition actually supported by the method rather than accept the generic label ‘forensic science’.



4. Self Incrimination Bodily Integrity and Consent

Forensic investigation often requires state access to the body. Kathi Kalu Oghad distinguished compelled testimonial communication from physical identifying material such as fingerprints and handwriting. Selvi held involuntary narcoanalysis, polygraph examination and brain electrical activation profiling constitutionally impermissible, emphasising testimonial compulsion, mental privacy and substantive due process.^{ix} The distinction remains foundational but cannot end the inquiry.

Even non-testimonial collection implicates privacy and bodily integrity. After Puttaswamy, any invasion must possess legal authority, pursue a legitimate aim, satisfy necessity and proportionality, and contain safeguards against abuse.^x The degree of intrusion, sensitivity of information, retention period, secondary use and availability of less restrictive means matter. A buccal swab and extraction of an entire mobile device are not constitutionally equivalent simply because both may yield identifying evidence.

Judicially ordered medical or DNA examination has been sustained where necessary to resolve a material issue, but courts have also recognised the need to balance privacy, accuracy and the interests of justice.^{xi} In criminal cases, consent forms should specify the sample, purpose, authority, retention and possible testing. Refusal may have consequences only where law permits; it must not be converted casually into guilt. Samples collected for one investigation should not enter indefinite or unrelated databases without clear legislation, access controls and deletion rules.

5. DNA Evidence and the Problem of Overstatement

DNA evidence is powerful because exclusion can be decisive and a properly calculated match can sharply alter probability. It is not a narrative of guilt. The probative value depends upon the biological material's connection to the offence, the integrity of collection, mixture interpretation, laboratory quality and the statistical proposition reported. Pattu Rajan cautions that DNA opinion must be assessed with other evidence, while Rahul illustrates that grave doubts in collection and evidentiary linkage cannot be cured by scientific terminology.^{xii}

Three reasoning errors are especially dangerous. The prosecutor's fallacy equates the rarity of a profile with the probability that the accused is innocent. The source-level fallacy assumes that establishing whose DNA is present determines how or when it was deposited. The activity-level fallacy moves from presence to participation without contextual evidence. Expert reports should state whether they address source, activity or offence level and should avoid categorical expressions such as 'to the exclusion of all others' unless scientifically justified.



Quality safeguards include duplicate or independent review, contamination elimination databases, documented interpretation thresholds, population databases appropriate to Indian diversity, preservation of electropherograms and probabilistic-software versions, and defence access to underlying files. Where testing consumes the sample, the process should be recorded and, where practicable, observed by an independent expert.

6. Crime Scene Integrity and Chain of Custody

Forensic reliability begins before the laboratory. BNSS provisions concerning medical examination, audio-video recording of search and seizure, crime-scene visits and sexual-offence examination create a procedural basis for better documentation.^{xiii} But statutory form cannot substitute for scene control. First responders must protect life, secure the area, prevent cross-contamination, identify transient evidence and record every transfer.

Chain of custody is not ceremonial paperwork. It establishes that the item examined is the item recovered and that its condition remained materially unchanged. Vijay Pandey demonstrates that a forensic result without a proved link between the seized sample and the tested substance cannot sustain the prosecution; Daulat Ram similarly underscores the consequence of an unexplained break in custody.^{xiv} In narcotics prosecutions, where statutory presumptions may operate, Noor Aga and Bal Mukund reinforce strict scrutiny of safeguards.^{xv}

India needs a single interoperable evidence identifier from scene to courtroom. Tamper-evident packaging, time-stamped barcodes, seal images, storage logs, environmental records and immutable audit trails should accompany physical exhibits. Digital systems should record, not obscure, human responsibility. Courts should distinguish minor clerical irregularities from breaks that create a realistic risk of substitution, contamination or manipulation, explaining why a defect does or does not affect weight.

7. Electronic and Digital Forensics

Digital evidence combines exceptional richness with exceptional fragility. Devices and cloud accounts contain communications, location, metadata, browsing, photographs and deleted material; acquisition itself may alter data. Anvar and Arjun Panditrao insist upon statutory compliance for secondary electronic evidence and clarify the certificate requirement under the predecessor section 65B framework.^{xvi} Sections 61 to 63 BSA retain a special route for electronic records, and their fair-trial purpose requires attention to authenticity as well as form.^{xvii}



A credible digital-forensic process should document lawful seizure, device state, isolation from networks, use of write blockers, cryptographic hash values, forensic images, tool names and versions, examiner actions, time-zone assumptions and recovery limitations. The original should ordinarily remain preserved. Hash equality supports integrity of copies but does not prove the truth of content, authorship of a message, or lawfulness of acquisition.

Cloud and platform evidence complicates territoriality and control. Data may be distributed across jurisdictions, generated by proprietary algorithms or available only through an intermediary. Digital-evidence scholarship stresses the mismatch between conventional search doctrine and networked information.^{xviii} Disclosure must include machine-generated provenance and material processing steps. Where an AI system detects faces, voices, deepfakes or behavioural patterns, the prosecution should disclose validation studies, relevant error rates, model version, thresholds and known subgroup performance.

8. Laboratories Independence and Quality Assurance

India's forensic system is institutionally plural: central and state laboratories, medical colleges, police units and specialised agencies operate with uneven capacity. The Directorate of Forensic Science Services administers central laboratories, while accreditation commonly draws upon ISO/IEC 17025 through the National Accreditation Board for Testing and Calibration Laboratories.^{xix} Accreditation is important but not self-executing. It certifies a defined scope at a defined time; it does not prove that every case followed every method.

International scientific reviews show why method-level validation matters. The National Research Council and PCAST identified weak empirical foundations in several feature-comparison disciplines and called for research, standards and realistic testimony.^{xx} Historical and wrongful-conviction scholarship shows that overstated forensic claims, invalid methods and misleading testimony can contribute to grave error.^{xxi} These lessons are relevant to India even when their datasets arise elsewhere because the underlying risks-subjectivity, contextual bias, poor validation and adversarial asymmetry-are institutional rather than national.

Operational independence requires more than administrative separation. Laboratories need protected scientific decision-making, transparent appointment criteria, adequate staffing, blind proficiency testing, equipment calibration, corrective-action systems and a duty to disclose non-conformities. Linear sequential unmasking can reduce contextual bias by controlling when examiners receive potentially prejudicial



information.^{xxii} Case managers should transmit only task-relevant facts unless additional context is scientifically necessary and documented.

9. Expert Testimony and Judicial Gatekeeping

Section 39 BSA renders expert opinion relevant; it does not transfer adjudicative power to the expert.^{xxiii} The judge must determine whether the witness is qualified for the specific task, whether the method is reliable, whether the data are sufficient, and whether the conclusion stays within demonstrated limits. A degree or government designation is not a substitute for validation.

Every report should state the question received, materials examined, methods, quality controls, observations, inferential reasoning, uncertainty, limitations, alternative explanations and records available for review. Terms such as ‘match’, ‘consistent with’ and ‘identical’ should have discipline-specific definitions. Where an error rate is unknown, the expert should say so. Courts should prohibit claims of absolute certainty where the empirical basis supports only a qualified opinion.

Judicial gatekeeping must coexist with the accused’s right to challenge prosecution evidence. A fair trial requires meaningful disclosure, effective cross-examination and an impartial search for truth.^{xxiv} Trial judges should be empowered to convene pre-trial reliability hearings in contested or novel disciplines, appoint neutral experts in exceptional cases, and formulate agreed propositions so juristic disagreement is not disguised as scientific fact.

10. Defence Access and Equality of Arms

Forensic evidence can intensify inequality because expertise is expensive and laboratories are usually controlled by the investigative state. Article 39A and the fair-trial guarantee require legal assistance that is practical and effective, not merely nominal.^{xxv} An indigent accused who receives a technical report without raw data, time or expert assistance cannot meaningfully test it.

A statutory disclosure schedule should require the prosecution to provide laboratory notes, photographs, chromatograms or electropherograms, calculations, software output, validation material, quality incidents, chain records and communications that may reveal contextual influence. Protective orders can address privacy and security without suppressing material necessary to challenge reliability. Legal-services authorities should maintain panels of independent forensic experts and fund testing where the issue is material.^{xxvi}



Preservation is equally important. Biological and digital exhibits should remain available through appeal and, for serious convictions, for a defined post-conviction period. Courts should possess authority to order retesting when new methods materially improve discrimination or when laboratory misconduct comes to light. An innocence claim should not fail merely because the state destroyed an exhibit after obtaining conviction without a transparent retention policy.

11. Mandatory Forensics Capacity and Federal Inequality

Section 176(3) BNSS may reshape serious-crime investigation by requiring forensic attendance and collection.^{xxvii} Its ambition also exposes a capacity paradox: a legal mandate can increase submissions faster than laboratories can recruit, validate, analyse and testify. Backlogs lengthen detention and trial; rushed work increases error; outsourcing without governance may fragment accountability.

The Parliamentary Standing Committee identified infrastructure and implementation as central concerns during scrutiny of the new procedure code.^{xxviii} Readiness varies across States and districts. A nominally uniform mandate may thus create unequal justice: metropolitan scenes receive specialist teams while remote or conflict-affected regions rely on delayed transport and generalist officers. Federal grants should be tied to workload, geography, discipline-specific demand and measurable quality, not simply to laboratory buildings or equipment purchased.

Forensic expansion should prioritise trained crime-scene personnel and sample quality before increasing laboratory throughput. Regional hubs can support rare disciplines, while mobile units can preserve transient evidence. Tele-forensic consultation may assist remote officers, but physical collection remains a local responsibility. Performance indicators should include turnaround distribution, inconclusive rates, contamination incidents, proficiency outcomes, court attendance and correction notices-not conviction rates, which would create an improper institutional incentive.

12. Custodial Violence Death Investigation and Public Accountability

Forensics has a dual constitutional role. It assists prosecution, but it can also test the conduct of law-enforcement personnel. Injury documentation, toxicology, scene reconstruction, ballistics and post-mortem examination are indispensable in allegations of custodial violence or encounter death. NHRC guidance and the Supreme Court's directions in *People's Union for Civil Liberties* emphasise documentation and independent investigation safeguards.^{xxix}



Independence is especially vulnerable when the agency implicated in a death controls the scene, inquest, exhibits and laboratory request. Such cases require an external investigative team, independent forensic pathologist, comprehensive videography, prompt preservation of weapons and communications, and access for the deceased's family to reports and lawful representation. Standardised autopsy forms should not reduce examination to box-ticking; they should ensure that injuries, medical interventions, samples and differential explanations are recorded.

Public accountability also requires error correction. Laboratories must notify prosecutors, courts and affected persons when a method, analyst or instrument is found unreliable. Independent case audits should identify past convictions potentially affected. Concealing a quality failure converts scientific error into institutional wrongdoing.

13. A National Forensic Reliability Framework

India should adopt a statutory or nationally coordinated Forensic Reliability Framework with discipline-specific standards. International crime-scene guidance demonstrates the value of clear roles for non-forensic first responders.^{xxx} The framework should integrate scene protocols, laboratory accreditation, method validation, testimony standards, disclosure, defence access and post-conviction review.

First, no method should be used for inculpatory identification without published validation appropriate to the task. Studies should measure accuracy, repeatability, reproducibility and limitations on realistic samples. Independent research must be encouraged; reliability cannot rest entirely on studies conducted by technique users or vendors. The documented association between false or misleading forensic evidence and wrongful convictions makes governance a justice imperative.^{xxxi} A durable research culture is essential.^{xxxii}

Secondly, reports should use calibrated conclusions. Probabilistic evidence must distinguish random-match probability from the probability of guilt. Subjective comparison should identify the examiner's reasoning and empirical basis. Automated systems require algorithmic documentation, human-review records and challengeable outputs.

Thirdly, blind proficiency testing and non-punitive error reporting should operate alongside sanctions for concealment or fabrication. Laboratories should publish anonymised performance and corrective-action data. An independent national council comprising scientists, judges, defence and prosecution lawyers, statisticians, ethicists and civil-society representatives should set standards and hear systemic complaints.



Fourthly, privacy governance must accompany forensic databases. Legislation should define entry criteria, familial searching, access, audit, retention, expungement and breach remedies. Puttaswamy and Selvi require the state to justify both initial collection and later informational use.^{xxxiii} Vulnerable communities should not become overrepresented in forensic databases merely because they are disproportionately policed.

Fifthly, serious convictions should remain scientifically reviewable. India lacks a general innocence commission. Capital-case scholarship documents the consequences of inadequate representation and procedural inequality.^{xxxiv} High Courts should establish specialised post-conviction forensic review procedures where new technology, non-disclosure or laboratory failure creates a substantial question of innocence.

14. Conclusion

Forensic modernisation can reduce dependence on coercive interrogation and fragile eyewitness memory. It can also intensify state power by rendering bodies, homes and digital lives continuously searchable. The constitutional question is therefore not whether India should use more forensic science, but under what conditions forensic claims deserve public authority.

Reliability, due process and institutional accountability are mutually dependent. Scientific validity without intact custody is useless; intact custody without disclosure is unfair; disclosure without defence expertise may be formal; and expertise without judicial scrutiny risks deference. Reform must treat the forensic process as one auditable system extending from the first responder to post-conviction preservation.^{xxxv}

The BSA and BNSS create a significant opportunity, but statutory expansion must be matched by capacity, independence and rights safeguards. A constitutional forensic architecture would prefer measured probability to categorical assertion, transparent error correction to institutional defensiveness, and contestable expertise to scientific authority by designation. Only then can forensic evidence serve its proper purpose: not securing conviction as an administrative outcome, but enabling accurate and fair adjudication under Articles 14, 20(3) and 21.^{xxxvi}

Endnotes:

i Constitution of India, arts. 14, 20(3), 21, 22 and 39A.

- ii Paul Roberts and Michael Stockdale, eds., *Forensic Science Evidence and Expert Witness Testimony: Reliability through Reform?* (Cheltenham: Edward Elgar, 2018), pp. 1–24; National Research Council, *Strengthening Forensic Science in the United States: A Path Forward* (Washington, DC: National Academies Press, 2009), pp. 1–33.
- iii Bharatiya Sakshya Adhiniyam, 2023, long title and ss. 2(1)(d), 39 and 61–63, https://www.mha.gov.in/sites/default/files/2024-04/250882_english_01042024_0.pdf (accessed 9 September 2026).
- iv Bharatiya Nagarik Suraksha Sanhita, 2023, s. 176(3), https://www.mha.gov.in/sites/default/files/2024-04/250884_2_english_01042024.pdf (accessed 9 September 2026).
- v *State of H.P. v. Jai Lal* (1999) 7 SCC 280, paras. 17–19; *Ramesh Chandra Agrawal v. Regency Hospital Ltd.* (2009) 9 SCC 709, paras. 11–16.
- vi *Murari Lal v. State of Madhya Pradesh* (1980) 1 SCC 704, paras. 4–12; *Magan Bihari Lal v. State of Punjab* (1977) 2 SCC 210, para. 7.
- vii *Daubert v. Merrell Dow Pharmaceuticals, Inc.* 509 US 579 (1993), pp. 589–95; *Kumho Tire Co. v. Carmichael* 526 US 137 (1999), pp. 147–52. These authorities are comparative, not binding in India.
- viii Gary Edmond et al., ‘How to Cross-Examine Forensic Scientists: A Guide for Lawyers,’ *Australian Bar Review* 39 (2014), pp. 174–97; Itiel E. Dror, ‘Cognitive and Human Factors in Expert Decision Making,’ *Analytical Chemistry* 92, no. 12 (2020), pp. 7998–8004.
- ix *State of Bombay v. Kathi Kalu Oghad* AIR 1961 SC 1808, paras. 10–17; *Selvi v. State of Karnataka* (2010) 7 SCC 263, paras. 145–65, 179–93 and 217–64.
- x *K.S. Puttaswamy v. Union of India* (2017) 10 SCC 1, especially paras. 297–325 (Chandrachud J); *Modern Dental College and Research Centre v. State of Madhya Pradesh* (2016) 7 SCC 353, paras. 57–65.
- xi *Sharda v. Dharmpal* (2003) 4 SCC 493, paras. 74–81; *Rohit Shekhar v. Narayan Dutt Tiwari* (2012) 12 SCC 554, paras. 26–33.
- xii *Pattu Rajan v. State of Tamil Nadu* (2019) 4 SCC 771, paras. 50–54; *Rahul v. State of Delhi, Ministry of Home Affairs* (2023) 1 SCC 83, paras. 38–42.
- xiii *Bharatiya Nagarik Suraksha Sanhita*, 2023, ss. 51–53, 105, 176(3), 184 and 185.



- xiv Vijay Pandey v. State of Uttar Pradesh (2019) 18 SCC 215, paras. 8–11; State of Rajasthan v. Daulat Ram (1980) 3 SCC 303, paras. 2–3.
- xv Noor Aga v. State of Punjab (2008) 16 SCC 417, paras. 96–114; Union of India v. Bal Mukund (2009) 12 SCC 161, paras. 36–38.
- xvi Anvar P.V. v. P.K. Basheer (2014) 10 SCC 473, paras. 14–24; Arjun Panditrao Khotkar v. Kailash Kushanrao Gorantyal (2020) 7 SCC 1, paras. 31–61.
- xvii Bharatiya Sakshya Adhiniyam, 2023, ss. 61–63; Tomaso Bruno v. State of Uttar Pradesh (2015) 7 SCC 178, paras. 24–28.
- xviii Orin S. Kerr, ‘Digital Evidence and the New Criminal Procedure,’ *Columbia Law Review* 105, no. 1 (2005), pp. 279–318; Eoghan Casey, *Digital Evidence and Computer Crime*, 3rd ed. (Waltham, MA: Academic Press, 2011), pp. 187–234.
- xix Directorate of Forensic Science Services, Ministry of Home Affairs, ‘Central Forensic Science Laboratories,’ <https://dfs.nic.in/> (accessed 9 September 2026); National Accreditation Board for Testing and Calibration Laboratories, ISO/IEC 17025 laboratory accreditation materials, <https://nabl-india.org/> (accessed 9 September 2026).
- xx National Research Council, *Strengthening Forensic Science*, pp. 184–91; President’s Council of Advisors on Science and Technology, *Forensic Science in Criminal Courts: Ensuring Scientific Validity of Feature-Comparison Methods* (Washington, DC: Executive Office of the President, 2016), pp. 1–22.
- xxi Simon A. Cole, *Suspect Identities: A History of Fingerprinting and Criminal Identification* (Cambridge, MA: Harvard University Press, 2001), pp. 249–86; Brandon L. Garrett and Peter J. Neufeld, ‘Invalid Forensic Science Testimony and Wrongful Convictions,’ *Virginia Law Review* 95, no. 1 (2009), pp. 1–97.
- xxii Itiel E. Dror et al., ‘Context Management Toolbox: A Linear Sequential Unmasking Expansion,’ *Journal of Forensic Sciences* 66, no. 4 (2021), pp. 1119–33.
- xxiii Bharatiya Sakshya Adhiniyam, 2023, s. 39; State of H.P. v. Jai Lal (1999) 7 SCC 280, paras. 17–19.
- xxiv Zahira Habibulla H. Sheikh v. State of Gujarat (2004) 4 SCC 158, paras. 35–36; Manu Sharma v. State (NCT of Delhi) (2010) 6 SCC 1, paras. 187–98.



xxv Constitution of India, art. 39A; Hussainara Khatoon (I) v. Home Secretary, State of Bihar (1980) 1 SCC 81; Mohd. Hussain v. State (Government of NCT of Delhi) (2012) 2 SCC 584, paras. 11–18.

xxvi National Legal Services Authority, Legal Services Authorities Act, 1987 and legal-aid mandate, <https://nalsa.gov.in/> (accessed 9 September 2026).

xxvii Bharatiya Nagarik Suraksha Sanhita, 2023, s. 176(3). The statutory trigger concerns offences punishable with seven years or more and operates subject to State-notified implementation within the statutory transition period.

xxviii Standing Committee on Home Affairs, Report No. 248 on the Bharatiya Nagarik Suraksha Sanhita Bill, 2023 (Rajya Sabha Secretariat, 2023), observations on forensic infrastructure and implementation.

xxix National Human Rights Commission, India, Guidelines on Custodial Deaths and Videography of Post-Mortem Examination, <https://nhrc.nic.in/> (accessed 9 September 2026); People’s Union for Civil Liberties v. State of Maharashtra (2014) 10 SCC 635, paras. 31–32.

xxx United Nations Office on Drugs and Crime, Crime Scene and Physical Evidence Awareness for Non-Forensic Personnel (New York: United Nations, 2009), pp. 4–25.

xxxi National Institute of Justice, ‘The Impact of False or Misleading Forensic Evidence on Wrongful Convictions,’ 28 November 2023, <https://nij.ojp.gov/topics/articles/impact-false-or-misleading-forensic-evidence-wrongful-convictions> (accessed 9 September 2026).

xxxii Jennifer L. Mnookin et al., ‘The Need for a Research Culture in the Forensic Sciences,’ UCLA Law Review 58 (2011), pp. 725–79.

xxxiii K.S. Puttaswamy (2017) 10 SCC 1, paras. 297–325; Selvi (2010) 7 SCC 263, paras. 217–64.

xxxiv Law Commission of India, The Death Penalty, Report No. 262 (2015), pp. 156–213; Project 39A, Death Penalty India Report (New Delhi: National Law University Delhi, 2016), vol. I, pp. 119–53.

xxxv Roberts and Stockdale, Forensic Science Evidence, pp. 385–410; Mnookin et al., ‘Need for a Research Culture,’ pp. 766–79.

xxxvi Constitution of India, arts. 14, 20(3) and 21; BSA, long title; BNSS, s. 176(3).