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FORENSIC INVESTIGATION UNDER THE BHARATIYA NAGARIK SURAKSHA SANHITA, 2023: CHALLENGES IN IMPLEMENTATION AND ITS IMPACT ON FAIR TRIAL IN INDIA

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I. INTRODUCTION

A criminal trial is only as reliable as the evidence on which it rests. In an adversarial system, where the prosecution must prove guilt beyond reasonable doubt, the quality of investigation largely decides whether the trial is fair to the accused, to the victim and to society. For decades, Indian investigations leaned heavily on oral testimony, confessions and recoveries, forms of evidence that are open to coercion, fabrication and retraction. Scientific and forensic evidence, such as DNA profiles, fingerprints, ballistic and toxicological reports, and the contents of digital devices, offers a more objective basis for adjudication, but only when it is collected, preserved and examined properly.

The Bharatiya Nagarik Suraksha Sanhita, 2023 (BNSS), which replaced the Code of Criminal Procedure, 1973 and came into force on 1 July 2024, expressly places forensic science and electronic means at the centre of criminal investigation. Its most visible forensic reform is Section 176(3), which requires a forensic expert to visit the crime scene in serious offences. Alongside it, the BNSS requires audio-video recording of searches and seizures, recognises electronic modes of reporting and trial, and widens the scope of specimens that a Magistrate may order.

The reform is well intended, but a statute that demands scientific investigation cannot deliver it without laboratories, trained experts and reliable procedures. The central argument of this assignment is that the BNSS forensic provisions strengthen the fairness of trial where they are implemented properly, but that gaps in capacity, standards and safeguards can turn the same provisions into a source of delay, unreliable evidence and prejudice to the accused.

A. Objectives

1. To explain the forensic provisions of the BNSS, 2023 and their purpose.

ISSN: 2582-6433

2. To identify the practical and legal challenges in implementing them.
3. To assess their impact on the right to a fair trial under Articles 14, 20(3) and 21 of the Constitution.
4. To suggest measures for effective and rights-respecting implementation.

B. Research Methodology

The assignment follows a doctrinal method. It relies on the BNSS, 2023, the Bharatiya Sakshya Adhiniyam, 2023 (BSA), the Constitution of India, and decisions of the Supreme Court, supported by secondary sources including journal articles, commentaries and news reports. Because the BNSS is recent and its forensic mandate is being phased in by the States, some observations on implementation are necessarily provisional.

II. FORENSIC INVESTIGATION: MEANING AND IMPORTANCE

Forensic investigation means the application of scientific methods to the detection and proof of crime. It covers the examination of the crime scene, the collection and preservation of physical samples, laboratory analysis (for example DNA, fingerprints, blood, ballistics, toxicology and handwriting), and digital forensics, which deals with computers, mobile phones, storage media, call records, location data and CCTV footage.

Forensic evidence matters for three reasons. First, it can independently corroborate or contradict witness accounts, reducing dependence on testimony that may be hostile or unreliable. Second, it can exonerate the innocent, since a DNA or fingerprint result may exclude a wrongly suspected person. Third, it discourages custodial violence, because investigators who can prove a case through objective material have less reason to extract confessions. These benefits depend, however, on the integrity of the entire chain, from the moment a sample is collected until it is produced in court.

III. FORENSIC PROVISIONS UNDER THE BNSS, 2023

A. Mandatory Forensic Visit to the Crime Scene: Section 176(3)

Section 176(3) provides that on information of an offence punishable with imprisonment of seven years or more, the officer in charge of the police station shall cause a forensic expert to visit the crime scene to collect forensic evidence, and shall also cause videography of the process on a mobile phone or other electronic device. The duty applies from a date notified by the State Government within five years of the commencement of the Sanhita. A proviso provides for a State without its own forensic facility to notify the use of a facility in another State until it

ISSN: 2582-6433

develops one. Offences such as murder, rape, dowry death and trafficking fall within the class. Commentators note that the provision converts what was earlier a matter of investigating officers' discretion into a statutory duty for serious offences.

B. Audio-Video Recording ofi Search and Seizure: Sections 105 and 185

Section 105 requires the process of search and seizure to be recorded through audio-video electronic means, preferably by mobile phone, and the recording must be forwarded promptly to the District Magistrate, Sub-Divisional Magistrate or Judicial Magistrate of the first class. Section 185, dealing with searches by a police officer, similarly requires the search to be recorded. These provisions aim to create an objective record of what was found and where, and to guard against planted evidence and fabricated recoveries.

C. Electronic Infiormation, Summons and Records

Section 173 permits information of a cognizable offence to be given by electronic communication, to be taken on record on being signed within three days, and recognises Zero FIR. Section 94 empowers a court or police officer to require the production of documents, electronic communications and communication devices likely to contain digital evidence. Section 193 governs the police report on completion of investigation, including the duty to keep the informant and victim informed of progress, and Section 230 requires copies of the police report and documents to be supplied to the accused, including in electronic form.

D. Specimens and Medical Examination

Section 349 empowers a Magistrate to order any person, including one who has not been arrested, to give specimen signatures, handwriting, finger impressions, and, as an addition to the earlier position under the CrPC, voice samples. Section 51 allows medical examination of an arrested person at the request of the police. The widening of specimen powers supports scientific comparison but also raises questions of consent and bodily integrity, discussed below.

E. Electronic Evidence under the Bharatiya Sakshya Adhiniyam, 2023

The BSA, which accompanies the BNSS, treats electronic and digital records as documents and prescribes conditions for their admissibility in Section 63, including a certificate in the prescribed form signed by the person in charge of the device and by an expert. Section 39 deals with the opinion of experts. Section 329 of the BNSS allows reports of specified Government scientific experts to be used as evidence in proceedings, although the court may summon the expert for

ISSN: 2582-6433

examination. Together, these provisions form the statutory basis on which forensic material becomes proof in court.

IV. CONSTITUTIONAL AND JUDICIAL FRAMEWORK OF FAIR TRIAL

The right to a fair trial is part of the guarantee of life and personal liberty under Article 21, read with Article 14 and the protections of Article 20. In *Zahira Habibulla H. Sheikh v. State of Gujarat* ((2004) 4 SCC 158), the Supreme Court described a fair trial as one in which neither the prosecution nor the accused is prejudiced, and in which the process is impartial and free from manipulation. The Court has repeatedly stressed that a defective investigation can prejudice the trial, and in *Dayal Singh v. State of Uttaranchal* ((2012) 8 SCC 263) it also warned that an accused should not be acquitted merely because of an investigative lapse where the evidence otherwise establishes guilt, a balance that shows why the quality of investigation concerns both fairness and justice to victims.

On forensic techniques specifically, the leading decision is *Selvi v. State of Karnataka* ((2010) 7 SCC 263), which held that the involuntary administration of narco-analysis, polygraph and brain-mapping tests violates Article 20(3) and the guarantee of personal liberty under Article 21, and that results obtained through such tests cannot be admitted without voluntary consent. By contrast, in *Ritesh Sinha v. State of U.P.* ((2019) 8 SCC 1), the Supreme Court held that a Magistrate can direct a person to give voice samples for investigation even in the absence of an express provision then, a position the BNSS has now codified in Section 349. The distinction between compelling physical or material samples and compelling testimonial communication goes back to *State of Bombay v. Kathi Kalu Oghad* (AIR 1961 SC 1808), which held that giving fingerprints, handwriting or specimen signatures is not testimony within Article 20(3).

On electronic evidence, *Anvar P.V. v. P.K. Basheer* ((2014) 10 SCC 473) and *Arjun Panditrao Khotkar v. Kailash Kushanrao Gorantyal* ((2020) 7 SCC 1) held that a certificate under Section 65B of the Evidence Act was a condition for admitting secondary electronic evidence. The BSA has carried the idea forward in Section 63 with a more detailed certificate. In *Tomaso Bruno v. State of U.P.* ((2015) 7 SCC 178), the Court emphasised the importance of CCTV footage as primary evidence and drew an adverse inference against the prosecution when available footage was not produced, underlining that non-production of available electronic material can itself prejudice a fair trial. The Court's decision in *Paramvir Singh Saini v. Baljit Singh* ((2021) 1 SCC 184) directed installation of CCTV in police stations to curb custodial abuse, a concern linked to forensic evidence because objective records reduce the need for coerced statements.

The right to privacy recognised in *K.S. Puttaswamy v. Union of India* ((2017) 10 SCC 1) also applies,

ISSN: 2582-6433

since the collection of biological samples, phone data and biometric information must satisfy the tests of legality, legitimate aim and proportionality.

V. CHALLENGES IN IMPLEMENTATION

A. Shortage ofi Forensic Infirastructure and Manpower

The most frequently cited obstacle is capacity. Section 176(3) requires a forensic expert at every qualifying crime scene, which means a large number of serious offences each year, yet the number of trained scene-of-crime officers, forensic scientists and accredited laboratories is limited and unevenly distributed. Scholars and press reports warn that the mandate may put immense stress on existing laboratories, and that offences such as murder and rape are spread across districts that lack nearby forensic units. The five-year window for States to notify the date reflects an acknowledgment of this gap.

B. Uneven State-Level Implementation

Because the date from which Section 176(3) applies is to be notified by each State, implementation is staggered. An offence committed in one State may attract the mandatory forensic visit, while a similar offence in another does not yet. This raises a concern of equality under Article 14, since the quality of investigation, and thus the strength of the accused's defence or the victim's case, can depend on the State in which an offence occurs.

C. Backlog and Delay

Laboratory backlogs mean that reports may take months or years, delaying charge-sheets and trials. This conflicts with the right to a speedy trial, which the Supreme Court has treated as part of Article 21 since *Hussainara Khatoon v. State of Bihar* (1980). Undertrial prisoners may remain in custody while forensic reports are awaited, so that delay in the laboratory becomes loss of liberty for the accused.

D. Lack ofi Unifiorm Standards and Chain-ofi-Custody Safieguards

India lacks a single binding national protocol on crime-scene processing, sample packaging, storage and transfer. Differences in local practice lead to contamination, mislabelling and broken chains of custody, which are among the commonest grounds on which forensic evidence is challenged. A mandatory visit by an expert does not ensure that a sample is properly handled thereafter. Poorly collected evidence may be unreliable in either direction: it may wrongly implicate an innocent person or allow the guilty to escape.

ISSN: 2582-6433

E. Technology, Videography and Digital Challenges

Videography of evidence collection depends on equipment, storage, connectivity and tamper-proof preservation of recordings. Government platforms for uploading recordings, such as the e-Sakshya application reported in connection with the BNSS, can help, but police stations in remote or under-resourced areas may lack devices and training. Digital evidence is also fragile: it can be altered or deleted, requires imaging and hash verification, and raises difficult questions of authenticity, particularly with the rise of manipulated media. Certificates under Section 63 of the BSA add a procedural step that, if neglected, may lead to exclusion of crucial material.

F. Training and Awareness ofi Investigators, Prosecutors and Judges

Many investigating officers have limited training in preserving trace evidence, and many prosecutors and judges lack scientific literacy to test expert reports. Without the ability to question methods, error rates and assumptions, courts may overvalue forensic opinion as infallible. Section 329 BNSS, which makes expert reports usable as evidence, increases the need for careful scrutiny.

G. Absence ofi a Comprehensive DNA Law and Data Protection Framework

The DNA Technology (Use and Application) Regulation Bill, introduced to regulate DNA profiling and databanks, was withdrawn from Parliament in 2023 and, to the best of my knowledge, no comprehensive statute has since replaced it. The result is a regulatory gap on consent, retention, deletion, access and purpose limitation for DNA and biometric data. The Digital Personal Data Protection Act, 2023 provides exemptions for State processing in certain cases, which leaves the position on forensic databases a matter for clear legislative treatment.

H. Risk ofi Over-Reliance and Misuse

The emphasis on forensic evidence may encourage a perception that scientific evidence is conclusive. Some techniques, for example certain forms of bite-mark, hair or handwriting comparison, and some voice or facial matching, have limited scientific validation. Expanded powers to obtain voice samples and other specimens may also be used in a routine or oppressive manner unless Magistrates scrutinise the necessity of each order.

VI. IMPACT ON THE RIGHT TO A FAIR TRIAL

A. Positive Impact

1. **Objectivity and reliability.** Expert collection and recorded procedures make evidence

ISSN: 2582-6433

more reliable and reduce reliance on interested witnesses.

2. **Protection against fabrication and torture.** Audio-video recording of searches under Sections 105 and 185 gives the accused and the court a means of testing police claims of recovery. Scientific proof reduces the incentive for coerced confessions, supporting Article 21 and Article 20(3).
3. **Transparency and equality of arms.** Supply of documents to the accused under Section 230, including electronically, helps the defence prepare its case.
4. **Justice for victims.** Better evidence in serious offences improves prospects of conviction of the guilty and public confidence in the system.
5. **Faster and more transparent proceedings.** Electronic records and trial in electronic mode can reduce delays caused by paper-based processes.

B. Negative Impact and Risks

1. **Delay and prolonged custody** while awaiting forensic reports, affecting speedy trial.
2. **Unequal access to defence experts.** The prosecution has State laboratories, whereas an accused of limited means may not be able to commission an independent forensic opinion, though Article 39A and legal aid may help in some cases.
3. **Unreliable or contaminated evidence** can lead to wrongful conviction or acquittal, harming both the accused and the victim.
4. **Intrusion on privacy and self-incrimination.** Compelled specimens and digital data seizure, if disproportionate or without safeguards, may infringe Articles 20(3) and 21, particularly after *Selvi* and *Puttaswamy*.
5. **Regional inequality.** Staggered implementation risks different standards of investigation in different States.
6. **Technical non-compliance.** An omission such as failure to record a search or to file a Section 63 certificate may result in exclusion of otherwise important evidence. As commentators observe, a trial need not collapse for an omission alone, but courts must determine the consequences case by case, which brings uncertainty.

VII. SUGGESTIONS

1. **Build capacity first.** Governments should expand forensic laboratories, particularly district and regional units, recruit and train experts, and use institutions such as the National Forensic Sciences University and the central forensic infrastructure schemes to supply trained personnel.

ISSN: 2582-6433

2. **Notify and monitor.** States should notify Section 176(3) in good time with public timelines, and independent bodies should report periodically on compliance, backlog and sample rejection rates.
3. **Uniform national protocols.** Binding standards should govern crime-scene management, sample collection, packaging, chain of custody, laboratory accreditation and reporting.
4. **Secure digital infrastructure.** Tamper-proof storage, hash verification, access logs and training for officers should accompany the videography and electronic-record requirements.
5. **Enact a DNA and forensic data law.** Parliament should legislate on consent, purpose limitation, retention, deletion and oversight for DNA and biometric databases, consistent with *Puttaswamy*.
6. **Protect the accused.** Courts should insist on proportionality in orders for specimens, preserve the right to seek independent expert examination, and apply principles from *Selvi* against any compelled testimonial technique.
7. **Train judges, prosecutors and defence lawyers** in forensic science so that expert evidence is tested, not presumed.
8. **Judicial guidelines on non-compliance.** Courts should clarify when procedural lapses affect admissibility and when they go only to weight, to give predictability.
9. **Legal aid for forensic defence.** Legal services authorities should be able to fund independent forensic opinions where the accused cannot afford them.

VIII. CONCLUSION

The forensic provisions of the BNSS, 2023 reflect a shift from an investigation built on statements and recoveries to one built on scientific, recorded and verifiable evidence. Properly implemented, Sections 105, 176(3) and 185, with the electronic-evidence regime of the BSA, can make trials more reliable and less dependent on coercion, and thereby strengthen the fairness guaranteed by Articles 14, 20 and 21. But the benefit is not automatic. A mandate without laboratories, trained personnel, uniform protocols and data safeguards risks delay, uneven justice between States, unreliable evidence and intrusion into privacy and personal liberty.

The real test of the BNSS will therefore be in its administration. If governments invest in capacity, if standards are made uniform and enforceable, and if courts keep the rights of the accused and the interests of victims in balance, forensic investigation can become a safeguard of fair trial. If not, the promise of scientific justice may remain largely on paper.

ISSN: 2582-6433

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