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CONSTITUTIONAL CHALLENGES IN THE USE OF FORENSIC TECHNIQUES IN CRIMINAL JUSTICE ADMINISTRATION

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Abstract

The increasing reliance on forensic techniques in criminal investigation has fundamentally altered the landscape of criminal justice administration in India. While scientific methods promise greater accuracy and efficiency, their expanding use has exposed significant constitutional tensions relating to personal liberty, privacy, bodily autonomy, and the right against self-incrimination. While these techniques promise greater efficiency in crime detection, their expanding use has raised profound constitutional concerns relating to personal liberty, bodily autonomy, privacy, and the right against self-incrimination. The absence of a comprehensive statutory framework governing forensic practices has further intensified these concerns. This paper critically examines the constitutional challenges associated with the use of forensic techniques in India. It analyses the tension between the State's obligation to ensure effective law enforcement and the individual's fundamental rights under Articles 14, 20(3), and 21 of the Constitution. Special emphasis is placed on judicial responses to involuntary forensic procedures and the evolving jurisprudence on privacy and consent. Through a doctrinal and analytical approach, the study evaluates whether existing legal safeguards adequately protect constitutional values or whether forensic science has outpaced constitutional regulation. The paper argues that while forensic techniques are indispensable to modern criminal justice, their use must be constitutionally disciplined to prevent arbitrariness and abuse. It concludes by emphasizing the need for legislative clarity, procedural safeguards, and informed consent mechanisms to ensure that scientific investigation operates within the framework of constitutional morality, human dignity, and due process of law.

Keywords

Forensic Techniques, Constitutional Rights, Criminal Justice Administration, Scientific Evidence, Article 20(3), Right against Self-Incrimination, Right to Privacy, Bodily Autonomy, Due Process of Law, Consent in Criminal Investigation, DNA Profiling, Narco-Analysis, Polygraph Test, Brain Mapping, Digital Forensics

Literature Review

The intersection of forensic science and constitutional rights has attracted growing scholarly attention in recent years. Legal scholars have debated whether the increasing reliance on scientific techniques strengthens the criminal justice system or poses a threat to individual liberties.

K.N. Chandrasekharan Pillai highlights that forensic evidence, while scientifically persuasive, must be evaluated through the lens of constitutional safeguards, particularly the protection against compelled self-incrimination.¹ He cautions that unregulated forensic practices may undermine the voluntariness essential to a fair criminal process. Similarly, Ratanlal and Dhirajlal observe that scientific techniques cannot be treated as infallible and must be subjected to strict legal scrutiny to prevent miscarriages of justice.

Upendra Baxi has critically examined the expanding powers of the State in criminal investigation, warning that technological advancements often outpace constitutional accountability.² He argues that investigative efficiency cannot justify erosion of personal liberty and dignity. In the context of forensic psychology and truth-serum techniques, scholars such as **Aparna Chandra** have questioned their compatibility with Article 20(3), emphasizing that indirect forms of compulsion may be as constitutionally problematic as direct testimonial coercion.

Judicial scholarship has also played a crucial role in shaping the discourse. The Supreme Court's decision in *Selvi v. State of Karnataka* has been widely analysed for its recognition of mental privacy and bodily integrity. Scholars have praised the judgment for reinforcing the principle that scientific advancement cannot override constitutional consent. At the same time, concerns have been raised regarding compulsory DNA collection, particularly after legislative initiatives aimed at expanding DNA databases.³

This research builds upon existing scholarship by systematically analysing forensic techniques through an integrated constitutional lens, focusing on dignity, privacy, and procedural fairness within the Indian context. Despite this growing body of scholarship, there remains a lack of integrated constitutional analysis that examines forensic techniques collectively through the lenses of dignity, consent, and proportionality. This research is seeking to address this gap.

Research Methodology

This research adopts a **doctrinal and analytical methodology** to examine the constitutional challenges arising from the use of forensic techniques in criminal justice administration. The study is primarily based on secondary legal sources and seeks to critically evaluate the compatibility of modern forensic practices with fundamental rights guaranteed under the Constitution of India.

1. Nature of Research

The research is **qualitative and jurisprudential in nature**. It does not involve empirical surveys, laboratory-based scientific testing, or statistical data analysis. Instead, it focuses on interpretative legal reasoning, constitutional analysis, and doctrinal evaluation of judicial trends concerning forensic techniques such as narco-analysis, polygraph tests, brain electrical activation profile (BEAP), DNA profiling, and other scientific investigative methods.

The objective is to analyse how courts have addressed constitutional concerns relating to self-incrimination, privacy, bodily integrity, due process, and fair trial within the framework of criminal justice administration.

2. Sources of Data

The study relies on both primary and secondary sources of law:

Primary Sources

- The Constitution of India, particularly Articles 14, 20(3), 21, and 22.
- Statutory provisions such as the Indian Evidence Act, the Code of Criminal Procedure, and relevant forensic regulations.
- Judicial decisions of the Supreme Court and various High Courts dealing with forensic evidence and constitutional safeguards. Special emphasis is placed on landmark judgments such as *Selvi v. State of Karnataka*, *State of Bombay v. Kathi Kalu Oghad*, and *Justice K.S. Puttaswamy v. Union of India*, which have shaped the jurisprudence on self-incrimination and privacy.

Secondary Sources

- Scholarly articles, commentaries, and books on constitutional law and criminal procedure.

- Reports of the Law Commission of India and expert committee reports on forensic science reforms.
- Academic critiques on the reliability, admissibility, and ethical implications of scientific investigative techniques.
- Comparative constitutional jurisprudence from jurisdictions such as the United States, the United Kingdom, and South Africa.

3. Method of Legal Analysis

The research employs multiple analytical tools:

- **Doctrinal Analysis:** Systematic examination of statutory provisions and case law to identify legal principles governing the admissibility and constitutionality of forensic techniques.
- **Critical Analysis:** Evaluation of judicial reasoning to assess whether courts have struck an appropriate balance between individual rights and the state's interest in effective investigation.
- **Comparative Method:** Limited comparative reference to foreign jurisprudence to contextualize India's approach within global constitutional standards concerning compelled testimony, bodily evidence.

4. Scope and Limitations

The scope of this research is confined to the **constitutional validity of forensic techniques within the Indian legal framework**. While comparative references are used for contextual clarity, the primary focus remains on Indian jurisprudence.

The study is limited to judicial and doctrinal analysis and does not engage in empirical assessment of forensic accuracy, laboratory practices, or statistical conviction rates. The research concentrates on constitutional principles rather than technical scientific validation of forensic methods.

Hypothesis

This research is based on the hypothesis that:

“The increasing reliance on forensic techniques in criminal investigation, in the absence of a comprehensive regulatory framework, poses serious constitutional challenges, particularly to the rights against self-incrimination, privacy, and personal liberty.”

Sub-Hypotheses:

1. Involuntary or coercive forensic techniques may amount to indirect testimonial compulsion, thereby violating Article 20(3).
2. Intrusive forensic procedures raise serious concerns under Article 21 with respect to privacy, dignity, and bodily autonomy.
3. Judicial safeguards, though significant, are insufficient without clear legislative regulation governing forensic practices.

Introduction

The modern criminal justice system increasingly depends on science and technology to investigate crime and establish culpability. Forensic techniques are often perceived as objective and reliable tools capable of reducing investigative errors and enhancing evidentiary certainty. However, the integration of scientific methods into criminal investigation has also generated complex constitutional questions, particularly when such techniques intrude upon the body or mind of the accused.

In India, the Constitution functions not merely as an enabling instrument for State power but as a restraint upon it. Articles 20 and 21 impose substantive limitations on investigative practices, ensuring that the pursuit of truth does not come at the cost of human dignity or personal liberty. Techniques such as narco-analysis, polygraph examination, and brain mapping directly challenge traditional notions of voluntariness and consent, while compulsory collection of biological samples raises concerns relating to privacy and bodily integrity.

The recognition of the right to privacy as a fundamental right has further intensified scrutiny of forensic practices. The constitutional discourse has shifted from mere admissibility of evidence to the legitimacy of the methods used to obtain it. This paper seeks to critically examine these constitutional challenges, focusing on whether forensic science in India has developed within the framework of due process and constitutional morality, or whether it risks becoming an instrument of coercive State power.

1. Forensic Techniques: Conceptual Foundations & Classification

The term *forensic* is derived from the Latin word *forensis*, meaning “of the forum,” indicating its close association with judicial proceedings. Forensic techniques refer to the application of

scientific principles and methods to matters of law, particularly in the investigation and adjudication of criminal cases. These techniques aim to assist courts by providing objective and expert evidence derived from scientific analysis rather than subjective human perception. In the context of criminal justice administration, forensic techniques function as an interface between science and law. They are employed to establish facts such as identity, cause of death, time of occurrence, authorship of documents, and links between the accused and the crime scene. Unlike traditional testimonial evidence, forensic evidence is often perceived as neutral and reliable. However, this perception does not automatically place forensic techniques beyond constitutional scrutiny.

Types of Forensic Techniques and Their Constitutional Implications

DNA Profiling

DNA profiling is widely regarded as one of the most reliable forensic techniques for establishing identity. It is used in cases involving sexual offences, homicide, disaster victim identification, and paternity disputes. While DNA evidence can significantly enhance accuracy in criminal trials, compulsory collection and storage of DNA samples raise serious concerns regarding privacy, data protection, and misuse.

The extraction of bodily substances such as blood, saliva, or hair directly implicates bodily autonomy under Article 21. Further, the creation of DNA databases without adequate safeguards raises the risk of surveillance and function creep, thereby challenging the constitutional guarantee of informational privacy.⁴

Narco-Analysis

Narco-analysis involves the administration of drugs such as sodium pentothal to induce a semi-conscious state in which a person is believed to reveal suppressed information. This technique has been used during custodial interrogation to extract information from suspects and accused people.

Polygraph Examination

A polygraph test measures physiological responses such as heart rate, blood pressure, and respiration to assess truthfulness. Although often projected as a non-intrusive method, polygraph examination relies on psychological pressure and implied coercion. Without free

⁴Justice K.S. Puttaswamy (Retd.) v Union of India (2017) 10 SCC

consent, they may amount to indirect testimonial compulsion. Courts have consistently expressed caution regarding their evidentiary value and constitutional permissibility.⁵

Brain Mapping

Brain mapping, or Brain Electrical Activation Profile (BEAP), seeks to detect recognition of information by measuring neurological responses. This technique directly intrudes into the cognitive processes of an individual.

The constitutional concern with brain mapping lies in its invasion of mental privacy.

Digital Forensics

Digital forensics involves the collection and analysis of electronic data from devices such as mobile phones, computers, and servers. With the rise of cybercrime and digital communication, this field has gained immense importance.

While digital forensics does not always involve physical intrusion, it significantly affects informational privacy. Access to personal communications, location data, and digital footprints can reveal intimate aspects of an individual's life.

2. Constitutional Framework Governing Forensic Techniques in India

Article 20(3) of the Constitution of India guarantees that no person accused of an offence shall be compelled to be a witness against himself, thereby embodying the foundational criminal law principle against self-incrimination. This safeguard ensures that the prosecution must establish guilt independently, without extracting testimonial evidence through coercion, whether physical or psychological. The increasing reliance on forensic techniques such as narco-analysis, polygraph examinations, and brain mapping directly engages this constitutional protection, particularly when such methods seek to obtain responses rooted in the cognitive processes of the accused. In *Selvi v. State of Karnataka*, the Supreme Court authoritatively held that the involuntary administration of these techniques constitutes testimonial compulsion and violates Article 20(3), as the protection extends not only to courtroom testimony but also to compelled investigative disclosures. While the Court recognized that certain forms of physical evidence, such as fingerprints or handwriting samples, may not amount to testimonial compulsion, it drew a constitutional distinction between physical evidence and communicative responses extracted from the mind. The question of consent therefore becomes central to

⁵Nandini Satpathy v P.L. Dani (1978) 2 SCC 424

determining constitutional validity. Although voluntary consent may reduce objections under Article 20(3), the Court has cautioned that consent obtained in custodial environments is inherently suspected and must be scrutinized for genuine voluntariness. Constitutional consent must reflect informed and free choice, not mere procedural compliance secured under institutional pressure. The selective or unregulated use of forensic techniques, particularly in the absence of clear statutory guidelines, risks violating the equality guarantee by granting excessive discretion to investigative authorities. The Supreme Court has held that arbitrariness is antithetical to equality.⁶

3. Privacy, Bodily Autonomy and Comparative Constitutional Perspectives

The recognition of the right to privacy as a fundamental right in *Justice K.S. Puttaswamy (Retd.) v. Union of India* significantly reshaped the constitutional framework governing forensic techniques by affirming that privacy under Article 21 includes bodily integrity, informational control, and decisional autonomy. This development has profound implications for forensic practices such as DNA profiling and digital forensics, which involve intrusive extraction and analysis of sensitive personal data. DNA evidence, while valuable for identification, contains deeply private genetic and familial information, and its compulsory collection and storage without adequate safeguards raises concerns of profiling, misuse, and erosion of dignity. The proportionality doctrine laid down in *Puttaswamy* requires that any privacy infringement must have statutory backing, pursue a legitimate state objective, and adopt the least restrictive means, a standard many existing forensic practices struggle to satisfy. The constitutional dimension becomes even more complex when forensic techniques intrude upon bodily autonomy and mental privacy. The expansion of digital forensics further intensifies these concerns, as access to electronic devices and Metadata enables detailed personal surveillance. Although procedural safeguards for admissibility of electronic evidence were emphasized in *Anvar P.V. v. P.K. Basheer*, broader constitutional oversight remains essential to ensure that digital investigative practices comply with necessity, proportionality, and data protection standards.⁷

⁶E.P. Royappa v State of Tamil Nadu (1974) 4 SCC 3
⁷Anvar P.V. v P.K. Basheer (2014) 10 SCC 473

4. Comparative Constitutional Perspectives

A comparative analysis reveals that constitutional democracies across the world have grappled with similar challenges, often adopting more explicit safeguards for forensic practices.

United States

In the United States, forensic techniques are evaluated primarily through the lens of the Fourth Amendment, which protects against unreasonable searches and seizures. The U.S. Supreme Court has held that bodily intrusions such as blood tests constitute searches and must satisfy the reasonableness standard. In *Maryland v. King*, the Court permitted DNA collection from arrestees but emphasized the need for statutory safeguards and limited use.

United Kingdom

The United Kingdom has adopted a rights-based approach through the Human Rights Act, incorporating the European Convention on Human Rights. Article 8 of the Convention protects the right to private life, and courts have subjected forensic practices to proportionality review. The retention of DNA profiles has been challenged successfully before the European Court of Human Rights, leading to stricter regulatory standards.⁸

South Africa

South African constitutional jurisprudence places strong emphasis on dignity and bodily integrity. In *Minister of Safety and Security v. Gaaq*, the Constitutional Court recognized that forced bodily intrusion must be carefully balanced against constitutional rights. The South African approach highlights the need for explicit legislative authorization and judicial oversight for forensic practices.

5. Key Constitutional Challenges & Regulatory Gap

Despite their growing importance, forensic techniques in India continue to operate within a fragmented legal framework, giving rise to multiple constitutional challenges.

1. Absence of a Comprehensive Statutory Framework

One of the most significant challenges is the lack of unified legislation governing forensic techniques. Except for scattered provisions under the Code of Criminal Procedure, 1973, there is no comprehensive law regulating the scope, procedure, consent requirements, storage, or

admissibility of forensic evidence. This legislative vacuum places excessive reliance on judicial discretion and post-facto scrutiny, which is inherently limited.⁹

2. Consent and Coercion in Custodial Settings

Another persistent constitutional challenge concerns the voluntariness of consent. The inherent power imbalance between the State and the accused makes it difficult to ensure that consent is free, informed, and voluntary. The Supreme Court has repeatedly emphasized that constitutional rights cannot be waived through coerced consent.

3. Privacy, Data Retention, and Surveillance Risks

The collection and storage of forensic data particularly DNA profiles and digital information pose long-term privacy risks. DNA data is not limited to identification; it reveals intimate biological and familial information. Without strict limitations on retention, access, and sharing, forensic databases risk becoming tools of surveillance rather than justice.

Need for Legislative and Institutional Reforms

To address these constitutional challenges, there is an urgent need for a rights-oriented regulatory framework governing forensic techniques in India.

First, Parliament must enact comprehensive legislation defining the permissible scope of forensic techniques, conditions of use, consent requirements, and safeguards against misuse. Such legislation should incorporate constitutional principles of dignity, proportionality, and due process.

Second, independent oversight mechanisms must be established to regulate forensic laboratories, data storage, and investigative practices. Judicial authorization should be mandatory for invasive forensic procedures, ensuring accountability and transparency.

Third, clear rules on data retention and destruction must be framed to prevent indefinite storage and secondary use of forensic data. These safeguards are essential to protect privacy and prevent surveillance-based misuse.

Finally, training of investigating officers and judicial officers is necessary to ensure constitutional sensitivity in the application and evaluation of forensic evidence.

⁸S and Marper v United Kingdom (2008) 48 EHRR 50

⁹ Law Commission of India, Report No. 271 on Human DNA Profiling (2017)

Conclusion

The increasing reliance on forensic techniques reflects the evolving nature of criminal investigation in a technologically advanced society. Scientific tools undoubtedly enhance the capacity of the criminal justice system to uncover truth and secure convictions. However, in a constitutional democracy, efficiency cannot come at the cost of fundamental rights. This research has demonstrated that forensic techniques pose serious constitutional challenges, particularly in relation to the right against self-incrimination under Article 20(3), the right to life and personal liberty under Article 21, and the guarantee of non-arbitrariness under Article 14. Judicial interventions most notably in *Selvi v. State of Karnataka* and *Justice K.S. Puttaswamy v. Union of India* have played a crucial role in placing constitutional limits on coercive and intrusive forensic practices. Nevertheless, judicial safeguards alone are insufficient in the absence of comprehensive legislative regulation. The constitutional legitimacy of forensic techniques ultimately depends on their alignment with human dignity, autonomy, and due process of law. Forensic science must function as a facilitator of justice, not as an instrument of coercive State power. A balanced approach combining scientific advancement with constitutional restraint is essential to ensure that the pursuit of truth does not erode the foundational values of the Constitution.

In conclusion, the future of forensic techniques in India must be shaped by constitutional morality rather than investigative expediency. Only then can forensic science truly serve the ends of justice while preserving the rights and dignity of individuals. Future research may empirically examine the impact of forensic practices on marginalized communities, thereby complementing the constitutional analysis undertaken in this study.