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FINGERPRINT AND FOOTPRINT IDENTIFICATION: A Legal Analysis

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FINGERPRINT AND FOOTPRINT IDENTIFICATION: A Legal Analysis

Sundaram Bharti*

[Abstract: The area of forensic science dealing with the examination of footprint and fingerprint identification is an emerging concept of law. This basic concept trace backs its origin to Asia. In India, it has evolved as a part of medico-legal development in order to administer justice. Apart from ridge classification, the impressions have been categorized into some prints namely latent, visible and others for recording it into the data. The Investigating Officer under such departmental procedure is required to take the impressions from the place of incidence and subsequently, send it to the Fingerprint Bureau. The present legislation admits the genuineness of evidence of Fingerprint only after testifying the expert's opinion. However, Pros copy is the study of pores in order to identify the source of finger and foot impressions. The taking of finger impression cannot be categorized under testimonial compulsion, as it does not amount to "witness against self". Therefore, recording such impressions does not violate the fundamental right embodied under Article 20(3) of the Constitution of India. The provisions laid down under the Identification of Prisoners Act, 1920 provide that a police officer can record or take impressions of any prisoner for investigation. However, in no case, it violates the personal liberty of a person as provided under Article 21 of the Constitution. This paper attempts to explore all the germane aspects of Fingerprint and Footprint law with the help of some decided cases and disputed incidences.]

I

Introduction

Fingerprints, palm-prints, and footmarks have been widely recognized and accepted as a reliable means to identify a person.¹ A repercussion of the friction ridge arrangements on a fingerprint or a footprint may be left on an object when it is touched. This permits the impression to be used for the personal identification of individuals in a criminal investigation. Thus, the forensic science of fingerprints, palm-prints, and footprints is utilized by law enforcement agencies in support of their investigation in order to identify the person committing the crime. This article

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¹ Palash Kumar Bose & Md. Jubaidul Kabir, *Fingerprint: A Unique and Reliable Method for Identification*, 7(1), J. OF ENAM MED. C. 29 (2016)

deals with the historical background and evolution of the medical jurisprudence in India with specific reference to the evidentiary value of the impression ridges, landmark judicial observations related to application of the impression identification, and the testimonial compulsion of such application. The term "ridge impression" will be used to refer to any impression made from human friction ridge. The pragmatic approach of this research paper will include the legal aspects associated with expert, evidence and legal challenges regarding the admissibility of the ridge impression evidence.

II

Evolution of Medico-Legal Evidence in India

Forensic or legal medicine deals with the medical aspect of law. However, the word 'forensic' has been derived from a Latin word '*forensis*' which means 'forum', a meeting place in Rome where civic and legal matters were discussed. In India, Kautilya's *Arthashastra* gives the list of forensic evidence in order to prove the cause of death. According to him, death can be caused by strangulation, asphyxia, hanging, drowning, poisoning, and physical injury.² Kautilya described the necessity of autopsy and investigation in cases of death due to poisoning or suicide.³ The first-ever autopsy performed in the medico-legal history of India was by Dr. Edward Bulkely.⁴ However, currently the application of science and technology assists the courts in such matters. This assistance helps in ascertaining the perpetrator, the victim of the crime, the weapon used in crime, etc. Similarly, the role of medical jurisprudence is to assist in the administration of justice. A medical professional, in course of his duty, enters the arena of law and examines cases of injuries, murder, rape, sodomy, insanity, poisoning, etc. The medical evidence consists of the report of doctor, experts, serologist, chemical examiner and oral evidence of doctors and experts. The opinion of a doctor or an expert is subject to corroboration.⁵

The science of fingerprint has its origin in Asia. The support from archaeological and historical evidence establishes that the application of fingerprint was used for the identification of individuals in ancient Babylon, China, and Japan. The old documents show that during Hammurabi's reign in ancient Babylon, finger seals

² Kautilya, *ARTHASHASTRA*, Translated by R. Shamasastri, Bangalore: Government Press, 308 (1915).

³ *Id.*, 370.

⁴ Aditi R., *Iconic doctor's tomb a picture of neglect*, THE HINDU (Jun., 24, 2016, Chennai).

⁵ See, Sections 45-51, Indian Evidence Act, 1872 (Act No. 01 of 1872); See, *S. Gopal Reddy v. State of Andhra Pradesh*, A.I.R. 1996 S.C. 2184, para 27.

were used on contract.⁶ In India, though not documented, the ancient Hindu police used to trace the culprit out of their finger ridges. The study of markings on the human palm was known as '*Hasthasamudrika*'.

Modern Concept

In 1823, Johannes Evangelist Purkinje, a physiologist in Breslau, Prussia drew the attention of the world to the subject of finger impressions.⁷ However, in India, it was introduced by Sir William Herschell, an Indian Civil Services officer in Hoogly, a district in West Bengal.⁸ In a criminal investigation, the role of finger impression these days has become eminent and it has proved its importance in aiding the detection of crime and identification of the offender. The system is new and it is quite lately that the conclusive nature of the evidence which is appreciated in courts.⁹ Fingerprint recognition or fingerprint authentication refers to the automated method of verifying a match between two fingerprints. It is one of the many forms of biometrics used to identify an individual and verify his identity.

Legislative Evolution

The words 'finger impression' were added to the present legislation¹⁰ by Act 5 of 1899, on account of the decision made by the Calcutta High Court in *Queen Empress v. Fakir Md. Sheikh*,¹¹ where it was held that the comparison of thumb impression must be made by the Court itself and that the opinion of an expert was not admissible under section 45 of the Indian Evidence Act, 1872. In another case of, *R v. Sahdeo*,¹² the Hon'ble Court held that under section 45 as amended by Act 5 of 1899, the expert evidence may be given of finger print. However, evidence on finger impression is now admissible subject to the opinion given by the person, who must be a finger impression analyst expert and, the comparison is to be made by the finger impression which is either admitted or proved beyond reasonable doubt. In the case of, *Ahmad Reshi v. State*,¹³ it was held that genuineness of a finger impression can be proved only by having the same compared with an admitted finger impression and for the same expert opinion is necessary. Therefore, the

⁶ Bhuvaneshwar Singh, BHUVAN'S EXAMINATION OF DISPUTED DOCUMENTS ALONGWITH FOOTPRINT AND FINGERPRINT IDENTIFICATION 27 (2010).

⁷ Johannes Evangelist Purkinje, *Commentatio de Examine Physiologico Organi Visus et Systematis Cutanei* (A Commentary on the Physiological Examination of the Organs of Vision and the Cutaneous System), 1823.

⁸ See generally, Michele Triplett, MICHELE TRIPLETT'S FINGERPRINT DICTIONARY (2006).

⁹ See generally, B.R. Sharma, SCIENTIFIC CRIMINAL INVESTIGATION (2016).

¹⁰ Indian Evidence Act, 1872 (No. 1 of 1872).

¹¹ Reported in (1896-97) 1 CWN, 33.

¹² 3 N.L.R., 1: 5 Cr.L.J. 220.

¹³ A.I.R. 2008 J&K 5 (6).

Court pronounced some tests for the identification of finger impression¹⁴. However, the judges are not bound to accept the opinion made by the expert until the same is not corroborated.

III

Classification of Finger Impressions

Finger impressions are the papillary ridges especially on the skin of terminal phalanges.¹⁵ Classification of finger impressions is a method by which a set of ridge impressions may be suitably filed in a record and easily recuperated for future use. Finger impressions are classified into two systems viz.:

- a. Single-Digit System of Classification: *the Battely System*.
- b. Ten-Digit System of Classification: *the Henry System*.

Battley System

This single-digit system was primarily devised for search and comparison of single prints found at the scene of a crime. It was invented by the chief Inspector Battely of Scotland Yard. In this system of classification, all prints from one particular finger are filed together, one finger per drawer, on 3" * 5" card size that contained a rolled print of one finger¹⁶. In interpreting pattern, this system uses a 'special cores'.¹⁷

Henry System

The ten-digit system of classification of finger impression is based on Henry principle¹⁸ and is used in almost all parts of the country. For classification, all types

¹⁴ *Kamla v. Ratanlal* A.I.R. 1971 All. 304.

¹⁵ See generally, K. Bonnevie, *Studies on Papillary Patterns on Human Fingers*, J. GENETICS 1-112 (1924).

¹⁶ Dr. Sarla Gupta & Beni Prasad Agarwal, *FORENSIC SCIENCE IN CRIMINAL INVESTIGATION AND TRIAL* 332 (2013).

¹⁷ Laura A. Hutchins, *Systems of Friction Ridge Classification*, 11 available at: <https://www.ncjrs.gov/pdffiles1/nij/225325.pdf> (last visited 20 Jan., 2020).

¹⁸ The Ten Digit classification system mainly developed by Edward Henry. In developing this classification, he experimented with Herschel's finger print system. He then visited Galton and later developed his own classification system. It is based on the recognition of certain fundamental structures like Arch, Loops, Whorl and Composite which are variants of the fundamental structure along with their distribution pattern of occurrence on the finger. In this type of classification all the ten-digit fingerprint are analyze under the mentioned *seven* rubrics: Primary classification system; Major divisions system;

of patterns are divided into groups, the numerical and the non-numerical. The formula is based on a study of ten finger impressions of an individual. Each pattern is first identified and marked on the slip.¹⁹

Patterns

The composite patterns are a combination of any of the arch, loop or whorl pattern. The common composite patterns are:

- *A Central Pocket Loop Pattern:* It is a combination of loop and whorls.
- *A Double Loop Pattern:* It has two loops mixed up either to form a lateral pocket loop or a twinned loop.

The basic pattern of finger-impression ridges is the arch, loop, whorl, and composites. An *arch* is a pattern where the ridges enter from one side of the finger, rise in the center, forming an arc and then exit from the other side of the finger. The *loop* is a pattern where the ridges enter from one side of the finger, form a curve and tend to exist from the same side they enter. In a *whorl* pattern, the ridges form circularly around a central point on the finger. Scientists have found that family members often share the same general fingerprint patterns, leading to the belief that these patterns are inherited. However, finger impressions can be divided into the following kinds:

- i. *Latent Prints:* The latent prints are formed when the finger comes in direct contact with any smooth surface.
- ii. *Visible Prints:* The visible prints are formed when fingers smeared with fluid are pressed on a smooth surface.
- iii. *Impression (plastic prints):* The impression is formed when fingers press certain pliable material.

IV

Legal Aspects of Fingerprint Evidence

Recording of Finger Impression

The Indian Evidence Act, 1872 (sections 45-51) embodies that the investigating officer or police under such departmental procedure shall take fingerprint impressions and send it to the Fingerprint Bureau for further analysis. The whole sequence is done in a prescribed manner. The fingerprints are recorded for onward transmission to the bureau for records. In case of a deceased, the fingerprints are

Secondary classification system; Sub-secondary classification system; Second sub-secondary classification system; Final classification system; and, Key classification system.

¹⁹ Commentary on Fingerprint Investigation by Henry.

taken in order to aid identification of the deceased on a later date. In case of a suspect, the fingerprint is taken to match it later on a crime scene and it is also useful for comparison of an impression on a disputed document.

Method of Recording Fingerprints

The standard and general method of recording fingerprints of a person involves inking of fingers by rolling it on the inked surface and putting them on a fingerprint form. The types of equipment required for recording fingerprint are a polished metal plate, rubber roller, a tube of printer ink, suitable solvents like petrol or kerosene and the prescribed fingerprint form. While recording fingerprint, the ink is required to be spread over the slab with the help of a roller and subsequently, the fingers are to be rolled over the ink slab and to the appropriate box in the prescribed form. All the details in the form as directed should be filled.

Proscopy

Proscopy is the study of the pores for identification of the common source of the fingerprints. The diameter of the pores varies from 88 microns to 220 microns. The number of pores is nine to eighteen per centimeter. They have special and characteristic shapes and infinite variations. However, proscopy has not been utilized to any extent in criminal investigation mainly because the pores patterns are not available in field conditions.

The Role of Investigation Officer

The finger impression evidence is very sensitive at the crime scene and it can easily be destructed as available in latent prints and invisible. The fingerprints are required to be handled with due care and a fingerprint expert is indispensable to locate, develop and lift the finger impression as evidence. The investigator or the expert must render utmost care as mentioned below:

- Imagine himself in the role of the culprit and decide on which site the culprit would have left an impression on.
- The investigator or the expert shall take due care that his fingerprints are not left at the crime scene.
- One should avoid inhaling powder and chemical used to lift the fingerprints as they are injurious to health.
- The investigator is supposed to lift the fingerprints on an adhesive tape and shall preserve it for evidential use.

A majority of fingerprints found at the scene of the crime or on the crime articles are partially smudged and it is for a skilled and an experienced fingerprint expert to say whether a mark is useable as fingerprint evidence. Similarly, it is for a competent technician to examine and give his opinion whether the identity can be

established and if so whether that can be done on eight or even less identical ridge characteristics in an appropriate case.²⁰

Testimonial Compulsion

The application of fingerprints in the identification of a person does not violate the fundamental rights as enshrined under Article 20(3) of the Constitution.²¹ Article 20(3) states that, 'No person accused of a crime shall be compelled to be a witness against him.' The Supreme Court considered this matter and stated that taking fingerprints even against the consent of a person, is not against the Constitution, as the taking and giving of fingerprints does not amount to be 'witness against himself'.²² The Allahabad High Court held in the case of *Ranjit Ram v. State*²³ that when in pursuance of an order directing him to furnish his fingerprints, the accused furnishes his fingerprint voluntarily, without any protest; the provision of Article 20(3) thus, would not be violated.

In one of the famous cases on Article 20(3), *Selvi v. State of Karnataka*²⁴ the matter arose on the constitutionality of involuntary administration of Narco analysis, Polygraph examination and the Brain Electrical Activation Profile (BEAP). It was considered to be violative of right against self-incrimination. The Court observed that Article 20(3) protects an individual's choice between speaking and remaining silent, irrespective of whether the subsequent testimony proves to be inculpatory or exculpatory. It was further held that the results of the test cannot be admitted in evidence if they have been obtained through the use of compulsion. Furthermore, reliance on the contents of compelled testimony comes within the prohibition of Article 20(3) but its use for identification or corroboration with facts already known to the investigators is not barred. However, a question arose in this case, whether the involuntary administration of the impugned techniques, a reasonable restriction on 'personal liberty' as understood in the context of Article 21 of the Constitution? The Court underscored that the inter-relationship between the 'right against self-incrimination' and the 'right to fair trial' has been recognized under Article 21 of the Constitution and forcing an individual to undergo any of the impugned techniques violates the standard of 'substantive due process' which is required for restraining personal liberty.²⁵ However, taking of fingerprints (biometrics) does not violate fundamental rights as embodied under article 21 of

²⁰ *Mohan Lal v. Ajit Singh & Ors.*, A.I.R. 1978 SC 1183, para 44-45.

²¹ *State of Bombay v. Kathi Kalu Oghad*, A.I.R. 1961 SC 1808, para 33.

²² *Id.*

²³ A.I.R. 1961 All. 456.

²⁴ A.I.R. 2010 S.C. 1974, para 145-147.

²⁵ *Id.*

the Constitution²⁶ which states 'No person shall be deprived of his life or personal liberty except according to procedure established by law.'

Since a crime committed is against the society as an aggregate, the taking of fingerprint in order to find the culprit is not a deprivation of personal liberty rather it is in the interest of general public and so provision for exception is there.

Admissibility of Fingerprint Evidence

Evidence on finger impression is now admissible, but the person giving his opinion, in the case therewith, must be an expert in fingerprint analysis. Section 45 of the Indian Evidence Act, 1872 enumerates that – 'When the court has to form an opinion upon a point of foreign law, arts, science, etc. including finger impressions, the opinion of persons especially skilled in such foreign laws, arts, science, etc., including finger impression, are relevant facts. Such persons are called experts.'

The term 'finger impression' was added for the first time after the observation in the case of *R v. Fakir, Md.*²⁷ The Court held that the Court itself must make the comparison of impressions of finger, and the opinion of an expert was not admissible under section 45 of the Indian Evidence Act, 1872. Gradually, the admissibility of finger impression as evidence has evolved and to support so, section 20B of the Code of Criminal Procedure, 1973, can be quoted.²⁸ It embodies that any document produced before the Magistrate on which prosecution proposes to rely is subject to the satisfaction of the Magistrate. The report of fingerprint expert is inadmissible unless it is corroborated by the Court. The evidence of an expert can be impeached only in the manner provided in section 155 of the Evidence Act. There is a provision in section 293 Cr.P.C.²⁹ that report of the Director of the Finger-Print Bureau can be treated as evidence without any further examination of the Director. The court, however, can summon and examine such director whenever it thinks fit. The reason why the report of the Director of the Finger-Print Bureau is treated as evidence without examining him is that the

²⁶ *Justice K.S. Puttaswamy v. Union of India*, (2019) 1 S.C.C. 1, para 121.

²⁷ *Id.* pg. 07.

²⁸ Section 20B CrPC: Any document produced before the magistrate on which prosecution proposes to rely provided that the magistrate is satisfied that any such document is voluminous, he shall, instead of furnishing the accused with a copy thereof, direct that he will only be allowed to inspect it either personally or through pleader, in the court.

²⁹ Section 293 CrPC: Reports of certain government scientific experts (i) Report submitted by Director FPB as expert opinion may be used as evidence, (ii) the court may, if it thinks fit, summon and examine any such expert (iii) if Director, FPB is summoned by a court and he is unable to attend personally, he may, unless the court has expressly directed him to appear personally, depute another expert who is conversant with the facts of the case.

comparison and identification of fingerprint has now developed into a science and the result derived there from have reached the stage of exactitude.³⁰

Section 73³¹ of the Indian Evidence Act, 1872 provides provision to ascertain whether a fingerprint of a person to whom it purports to be; any finger impression admitted or proved to be the finger impression of that person; may be compared with the one which is to be proved although that finger impression has not been produced or proved for any other purpose. The aforesaid section read with section 6 of the Identification of Prisoners Act, provides that resistance to allow the taking of fingerprints is deemed to be an offence under section 186 of the Indian Penal Code, 1860. The provisions of the Identification of Prisoners Act, 1920 regarding fingerprint can be traced under sections 3, 4, 5, 6, and 7. Section 4 of the Act embodies provision for taking by a police officer, the fingerprint of any person arrested for an offence punishable with rigorous imprisonment for one year or more.³² The police officer can take finger impression of an arrested person under any offence for the purpose of investigation.

In the case of *B.A. Umesh v. State of Karnataka*,³³ the accused was charged for rape, murder and robbery, the case was based on circumstantial evidence. The witness had seen the accused inside the house of the deceased, leaving the house with household articles. The fingerprints of the accused were found on the handle of the *almirah* lying inside the house of the deceased. The conviction of the accused was held proper. In a similar case of, *Giriraj Singh Gaghela v. State of Andhra Pradesh*,³⁴ the court held that the fingerprints of the accused can be taken by the Police even without the permission of the Magistrate when investigation in the case is a pending.

Concept of Admissibility of Fingerprint Evidence in American Law

³⁰ *Himachal Pradesh Administration v. Shri Om Prakash*, A.I.R. 1972 S.C. 975, para 17.

³¹ Section 73 of IEA, 1872: in order to ascertain whether a signature, writing, or seal is that of the person by whom it purports to have been written or made, any signature, writing or seal admitted or proved to the satisfaction of the court to have been written or made by that person may be compared with the one which is to be proved, although that signature, writing or seal has not been produced or proved for any other purpose.

The court may direct any other person present on court to write any words or figures for the purpose of enabling the court to compare the words or figures so written with any words or figures alleged to have been written by such person.

³² Section 4 Identification of Prisoners Act: Any person who has been arrested in connection with an offence punishable with rigorous imprisonment for a term of one year or upwards shall, if so, required by a police officer, allow his measurement to be taken in the prescribed manner.

³³ (2011) 3 S.C.C. 85, paras 74-78.

³⁴ 2009 Cr.L.J. 1257, para 21.

Moreover, the Indian laws and the American laws on the evidentiary value of finger and foot impression are similar in certain aspects. Rule 702³⁵ of the Federal Rules of Evidence embodies the definition and uses of expert testimony, which are also applicable to persons performing forensic friction ridge impression examinations. It is only after the preliminary stage of qualifying the witness as an expert is completed that the witness can offer opinion about the case in which the witness was summoned by the court. The American law also provides that requiring a lawfully arrested defendant to submit to fingerprinting does not violate the constitutional rights of the defendant.³⁶ In one of the earliest cases of the American law, some bloody fingerprints were found on a hatchet at the scene of a murder. The court, affirming the conviction, held that the defendant's rights have not been violated.³⁷

Footprint Identification

A footprint is an impression like all other impressions but it is very different from all other impressions. A culprit must reach the scene of occurrence, stay and then leave the place. It is, therefore, most obvious that the culprit must have left track mark at the scene and *en route*. Track marks are most frequent evidence in all sort of crime, available at the scene of occurrence, on the conference sites, at the disposal sites of a dead body or stolen vehicles and on the routes. Track marks include both prints and impressions. Prints have lengths and widths only, it does not have appreciable depth or height, and therefore, it is two-dimensional. Impressions, on the other hand are three-dimensional, having length, breadth and depth. However, the terms "prints" and "impressions" are used indiscriminately and have been used so in this discussion.

A large segment of the Indian population walks bare-footed and therefore, the chance of getting foot mark at the scene of the crime increases. Also, the criminals in India, in order to camouflage their presence and to prevent unwanted sounds in the commission of an offence, prefer to go bare footed. Consequently, track mark can easily be figured out in criminal investigations. They provide direct positive linkage when they are properly imprinted, collected and evaluated. The variety of footwear used in our country is very large. Not only the designs and craftsmanship

³⁵ Rule 702 FRE: If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training or education, may testify thereto in the form of an opinion or otherwise, if (i) the testimony is based upon sufficient facts or data, (ii) the testimony is the product of reliable principles and methods, and (iii) the witness has applied the principles and methods reliably to the fact of the case.

³⁶ *Moon v. State*, 22 Ariz. 418, 198 Pac. 288, 16 A.L.R., 362 (1921).

³⁷ *State v. Cerciello*, 86 N.J.L. 309, 90 Atl. 1112 (1914).

of the footwear vary but the materials used for their manufacture also vary tremendously. Leather, rubber, and plastic are some of the common materials.

The role of the Investigating Officer is to process the evidence properly. Track marks are present in most of the crime's scenes. They provide a definite linkage of the criminal with crime in most of the cases. The IO is duty bound to protect the track marks for its evidentiary purpose from rain, wind, trespassers etc., by immediate processing. Some of the means used to protect the footprint is by covering the evidence with empty fruit or milk container, buckets, or wide utensils or any such object which is big enough to cover the mark(s). However, the IO shall prevent water entering the crime site bearing the marks.

V

Conclusion

It can be concluded that the footprints and fingerprints identification play a constructive role in the identification of a person's impression having been alleged to be made by him. The foot or finger impression is unique to every person. The permanency of fingerprints permits the identification of an individual even after changes in height, age, face, figure, name, profession and place of residence. Even surgery fails to change the pattern. However, section 45³⁸ of the Indian Evidence Act, 1872 provides for the admissibility of the Court's opinion upon such forensic evidence provided it is testified by an expert. Further, section 65B of the Evidence Act embodies the admissibility of the electronic record. The finger impressions of a person put on electronic record which is printed on a paper can be deemed to be the document without any original proof. However, taking finger-impression of a person to put it into the record or to make a comparison with the impression having been alleged to be of such person does not violate fundamental rights under Article 20(3) of the Constitution and it also does not infringe the fundamental rights enshrined under Article 21. Therefore, the science of footprint and fingerprint identification is an exact science and does not admit any mistake of doubt.

³⁸ Section 45 of the Indian Evidence Act, 1872 reads as, 'When the court has to form and opinion upon a point of a foreign law or of science or art, or as to identity of handwriting [or fingerprint impressions], the opinion upon that point of persons especially skilled in such forensic law, science or art, [or in questions as to identity of handwriting] [or finger impressions] are relevant facts.' Such persons are called experts.