



## Use of modern techniques in investigation by police

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### Abstract

Traditional crimes almost end. The modern society needs scientific methods of crime recognition, in case the general public go undefended. There are a number of methods for crime investigation to identify the accused and crime. Most of the techniques are founded on torture, either physical or mental. But modern techniques like Polygraph and brain-mapping test are not based on torture, we can say accused discloses all things regarding crime without giving physical pain and mentally pain. The first narco-analysis was done in the Forensic Science Laboratory, in the veerappan case by the Forensic Science Laboratory Bangalore in 2001. For conducting the test, the National Human Rights Commission has laid down certain guidelines for the conducting of this test the Narco substance should only be administered if the accused gives consent before a Magistrate. Researchers in Britain and the Netherlands also research on the result of these tests. They also found that success rate of these tests is close to 86 percent. Many European countries do not regard polygraph tests as reliable evidence. So lastly we can conclude that these tests are not reliable. Our law also permit of taking the fingerprints of accused and suspected person. So investigation agencies take fingerprints of suspected person. Explanation of Section 53 of Criminal Procedure Code 1973 clearly says that investigation Officer has power to get fingerprints of accused.

**Keywords:** crime, technique, accused

### Introduction

We know that Law is dynamic and not static. Society is changing according to its necessary.

In the present era scientific technology should be used by Police Officer in the investigation method. Because we know that criminals use very new technology. Traditional crimes almost end. The modern society needs scientific methods of crime recognition, in case the general public go undefended. There are a number of methods for crime investigation to identify the accused and crime. Most of the techniques are founded on torture, either physical or mental. But modern techniques like Polygraph and brain-mapping test are not based on torture, we can say accused discloses all things regarding crime without giving physical pain and mentally pain. Methods of investigation are witnessing quick shifts with the combination of scientific techniques and criminal procedure. Scientific techniques are necessary for proving the conviction as well as acquittal of the accused. Forensic science is very important for the investigation. We know in the modern era forensic science can help in the solving the criminal cases. Firstly, we should know about the forensic science. What is the forensic science?

### Definition of forensic science

Hall Dillon said "The word "forensic" means "pertaining to the law"; forensic science resolves legal issues by applying scientific principles to them."

According to Midwest Forensics Resource Center at the U.S. Dept. of Energy, "Forensic science is the application of natural sciences to matters of the law. In practice, forensic

science draws upon physics, chemistry, biology, and other scientific principles and methods. Forensic science is concerned with the recognition, identification, individualization, and evaluation of physical evidence. Forensic scientists present their findings as expert witnesses in the court of law."

### Some Modern Methods which Is Used By Police in the Investigation Procedure.

1. Bloodstain Pattern Analysis
2. Crime Scene Investigation
3. Crime Scene Photography
4. Digital Evidence
5. Fingerprint Analysis
6. Firearms Examination
7. Footwear and Tire Track Examination
8. Trace Evidence
9. Narco-Analysis Test
10. Polygraph or Lie Detector Test
11. Brain Mapping or P300 Test
12. DNA Profiling
13. Brain fingerprinting
14. Ballistic Fingerprinting
15. Other techniques of forensic Science
  - a) Binocular for identifying Dangerous gases
  - b) Remote personal assessment
  - c) Psycholinguistic profile
  - d) Criminal Profiling
  - e) Psychological Stress evaluator
  - f) Forensic Acoustics- Speaker identification

### a) Bloodstain pattern analysis

Bloodstain pattern analysis (BPA) is the interpretation of bloodstains which has collected from the crime scene in order to recreate the actions that caused the bloodshed. Analysts examine the size of the bloodstains, shape of the bloodstains, distribution and location of the bloodstains to form opinions about what did or did not occurred. BPA uses principles of biology (behaviour of blood), physics (cohesion, capillary action and velocity) and mathematics (geometry, distance, and angle) to support the investigators in answering questions such as:

- 1) Where did the blood come from?
- 2) What caused the wounds?
- 3) From what direction was the victim wounded?
- 4) How were the victim(s) and perpetrator(s) positioned?
- 5) What movements were made after the bloodshed?
- 6) How many potential perpetrators were present?
- 7) Does the bloodstain evidence support or refute witness statements?<sup>[1]</sup>

### b) Crime Scene Investigation

In this method Police Officer goes to place where crime was happened. He goes there for collecting physical evidence from a incident place. Generally Police collecting biological evidence (e.g., blood, body fluids, hair and other tissues), latent print evidence (e.g., fingerprints, palm prints, foot prints), footwear and tire track evidence, trace evidence (e.g., fibers, soil, vegetation, glass fragments), digital evidence (e.g., cell phone records, Internet logs, email messages), tool and tool mark evidence, drug evidence, firearm evidence. These evidences help in the investigation of some crime like burglaries, violent crimes, suicides, fires, auto thefts, auto accidents<sup>[2]</sup>. Police Officer also takes statement from the witnesses that are present on the incident place.

### c) Crime Scene Photography

In this method photographer takes some photo from that place where incident occurred. Photograph of the scene used as a document of physical evidence it helps in some crime like traffic collisions, burglaries, homicides, or any number of crimes against people or property. These photograph helps in the evaluate conditions, also helps for how to commit crime on this place.

### d) Digital Evidence

In this method some equipment comes in this purview that is computer and mobile. Digital devices are everywhere present in the world. In the modern era everybody use these digital devices. Computers, cell phones and the Internet come in this category. Criminals also use these types of devices in the crime. Computer documents, emails, text and instant messages, transactions, images and Internet histories are examples of information. Police can be gathered Information from electronic devices and used very effectively as evidence. For example, mobile devices use online-based based backup systems, also known as the 'cloud'. This provides to forensic investigators with access to text messages and pictures taken

from a particular phone.

### Narco-Analysis Test

The term Narco-Analysis is derived from the Greek word *narkō* (meaning "anesthesia" or "torpor") and is used to describe a diagnostic and psychotherapeutic technique that uses psychotropic drugs. Narco analysis first reached the mainstream in 1922, when Robert House, a Texas obstetrician used the drug scopolamine on two prisoners<sup>[3]</sup>. Fixed quantity of Sodium Pentothal or Sodium Amytal (3 grams of Sodium Pentothal or Sodium Amytal dissolved in 3000 ml of distilled water) administered to suspected person in a Narco-test for getting of state of Hypnotism. The dose narco-substance is dependent on the person's sex, age, health and physical condition. Such a test is generally conducted on an accused that is not ready to give true information. Once any person put into this test he is half sleep and answers the questions truthfully. However this test is not admissible in a court of law. But certainly it helps proceed in the right direction of investigation and also helps in the collection of evidence. This helps also prosecution. The medical doctors used to scopolamine together with morphine and chloroform to induce a state called 'twilight sleep' in the earlier of 20<sup>th</sup> century. However, scopolamine was also used in this field this substance also helps for creating a state of disorientation, confusion and amnesia during the period of intoxication. After administering this substance into the accused he interrogated, the statements made by the accused are recorded in the audio form and video form in the cassettes. The first narco-analysis was done in the Forensic Science Laboratory, in the veerappan case by the Forensic Science Laboratory Bangalore in 2001<sup>[4]</sup>. For conducting the test, the National Human Rights Commission has laid down certain guidelines for the conducting of this test the Narco substance should only be administered if the accused gives consent before a Magistrate. Then Police Officer should be ready for conducting this test. However, these guidelines are not mandatory but only recommendatory in nature. Therefore Enforcement machinery does not bind to follow. It is interesting to note that the Forensic Science Laboratory which is situated at Gandhinagar refused to conduct this test on a suspect when suspected person did not give his consent<sup>[5]</sup>. The Magistrate cannot be ordered the laboratory to conduct the test, if accused does not give consent for conducting the test. In 2006 however, the Supreme Court stayed the order of trial court to conduct narco- analysis. This is the first and only case in respect of scientific techniques which had gone in the Supreme Court.

### Narco Analysis in India

In India there are many cases present in which this (Narco-test) test used. But Supreme Court said and National Human Rights Commission has been given many guidelines on this point that without consent of accused the investigating

<sup>1</sup> <http://www.crime-scene-investigator.net> visited on 04-04-2012.

<sup>2</sup> <http://www.crime-scene-investigator.net> visited on 04-04-2012.

<sup>3</sup> Is Narco Analysis a Reliable Science? – Present Legal Scenario In India  
Written by: Subho jyoti Acharya site on [www.leglaserviceindia.com](http://www.leglaserviceindia.com),  
visted on 5-06-2012.

<sup>4</sup> Bannur Muthai Mohan, *Misconceptions About Narco Analysis*,  
[www.issuesinmedicalethics.org](http://www.issuesinmedicalethics.org)(Last visted on October 3, 2008).

<sup>5</sup> Lakshman Sriram, *Narcoanalysis and Some Hard Facts*, Frontline, Volume  
24 - Issue 9, May 05-18, 2007,

agencies must avoid this test. If accused gives consent for testing this then investigating agencies proceed this test. We know that India is a developing country. This firstly used in developed countries. After then developing countries follow this test. In our country this test used in the high profile cases. We will describe these cases below:-

1. Abdul Karim Telgi is the accused in the stamp paper scam. So investigating agency approached to a Bangalore court in 2003. Bangalore court gave permission for narco-analysis test in Bangalore. Bangalore forensic laboratory applied this test on the accused in 2003.
2. Abu Salem was one of the accused Mumbai serial bomb blasts case, which occurred in the 1993. Everybody knows that he has close relation with the underworld don Dawood Ibrahim. In this case Court also gave permission for narco-analysis test at Bowring Hospital, Bangalore, in December 2005.
3. Imran alias Bilal was a Suspected terrorist so he also produced in the Court in 2007. This matter was very serious. So Court also gave permission for Narco-analysis test. Investigating agency send to to Bowring Hospital, Bangalore<sup>[6]</sup>.
4. Surender Koli was the main accused in the Nithari case. It was a famous case. Surender Koli brought before forensic science laboratory in Gandhinagar in January 2007 for narco-analysis test<sup>[7]</sup>.
5. **In Arushi Murder Case** Rajesh and Nupur Talwar were the accused of murdering their 14-year-old daughter, both gave consent for Narco-analysis test to prove their innocence.
6. **'Geetika Sharma Suicide Case'** In this case the Former Haryana minister Gopal Goyal Kandawas the main accused. But he has refused to undergo brain mapping and also narco-analysis test. He was alleged by the Police in a case of abetting the suicide of a former air hostess Geetika Sharma. When he refused for Narco-analysis test then the victim's family approached the National Commission for Women (NCW) seeking for Narco analysis test, brain mapping and strict action against the culprits. When National Commission for Women (NCW) gave direction the local Police. The city police had approached Bangalore-based forensic sciences laboratory (FSL) for the tests. But The FSL officials denied doing this test because accused did not give consent on this matter.
7. **Jhurjhura Tigress's Case Everybody knows that** Madhya Pradesh was known as the tiger state of India Till 2011.the numbers of tiger was present about 2000. But according to census of 2011, there are only 257 left. One case came by media that one tiger was murdered in mysterious by tourists. Four persons were arrested by Police. They charged for murdered of tiger. Police wanted for Narco-analysis test. But accused denied for this test due to post-test hazards.

The team which is conducted this test comprising of an anaesthesiologist, a psychiatrist, a clinical/forensic

psychologist, an audio-videographer, and also some nursing staff for support. The one of the forensic/ clinical psychologist will prepare the report of disclosing statement. This forensic/ clinical psychologist records in the audio and video cassette. This record is produced before the Court considers this report<sup>[8]</sup>. The new jersey Supreme Court in the State v. Pitts case prohibited the use of sodium amytal Because Supreme Court considered that the result of this medicine is not correct. Dr. B.M. Mohan, who is a director of Bangalore forensic science laboratory, he said that the result of this test is 96% correct. We can say that the result of this test is not 100 percent correct.

#### **Other similar test for truth findings**

We know that there some other test are also present in this field. These are followings:-

- a) Polygraph or Lie Detector Test
- b) Brain Mapping or P300 Test

#### **Polygraph or Lie Detector Test**

The word literally meaning of Polygraph is many writings. This test first attempted by Lombroso to identify reality or fraud as early as 1895. In this test six sensor are attached with person who is giving the statement under this test. A Polygraph is a machine in which many signals are given from the sensors are recorded on a single strip of moving paper.

- 1) The breathing rate of the person.
- 2) The pulses of the person.
- 3) The blood pressure of the person.
- 4) The perspiration of the person.
- 5) This will also record things like arm and leg movement in sometimes.

When this test starts first check the consciousness of the person so examiner first asks on three and four question. Afterwards real question asks from the person who is under this test. While doing this test one expert looks the graph of the machine and also considers the breathing rate of the person, the pulses of the person, the blood pressure of the person, the perspiration of the person and also record things like arm and leg movement in sometimes. After wards the expertise examine the report which is obtained after conducting this test, make a report. The scientist named was keeler further developed the polygraph machine by adding a Psycho-galvanometer to record the electrical resistance of the skin<sup>[9]</sup>.

#### **Procedure to be followed by Police Officers for using the Polygraph**

- 1) The Investigating Officer (I.O) should ask the suspect/accused whether he/she wishes to avail the test.
- 2) If the suspect/accused does not volunteer to undergo the test, write a C.D. stating so and inform the superior officer.
- 3) If the accused volunteers to undergo the test his consent should be recorded before a Judicial Magistrate and access

<sup>6</sup> Narco-analysis and some hard facts written by SRIRAM LAKSHMAN site on <http://www.frontline.in> visited on 2-7-2012.

<sup>7</sup> Narco-analysis and some hard facts written by SRIRAM LAKSHMAN site on <http://www.frontline.in> visited on 2-7-2012.

<sup>8</sup> Is Narco Analysis a Reliable Science? – Present Legal Scenario In India Written by: Subhojyoti Acharya

<sup>9</sup> Article "Narco Analysis: A Volcano In Criminal Investigation System" Written by: Gagandeep Kaur.

- to a lawyer should be given. The I.O. should file an application in the jurisdictional Court and request the judge to record the consent of the suspect accused.
- 4) The suspect/accused should be given access to a lawyer and the physical, emotional and legal implications should be explained to the suspect/accused. by the I.O. and his lawyer.
  - 5) The Prosecutor should inform the suspect/accused at the hearing i.e. when the consent is about to be recorded that the statement made shall not be a “confessional” statement to the Magistrate but will have the status of a statement made to the police.
  - 6) After the consent is recorded, the I.O. should meet the Joint Director of A.P. State FSL at Hyderabad and give the full facts of the case and the doubts, apprehensions about certain aspects for which suspect/accused was unable to give or which the I.O. could not obtain. He will prepare a set of questions to be administered to the suspect/accused.
  - 7) The I.O. will then discuss these questions with the superior officer and after finalization should either bring the suspect/accused to the FSL in Hyderabad for the Test or send the Polygraph to the location where the suspect/accused is, as per the choice of suspect/accused.
  - 8) While conducting the test ensure that the test is conducted in the presence of a lawyer and preferably a doctor.
  - 9) After the test is over take the report from the Joint Director, FSL and discuss with the superior officer for further necessary action<sup>[10]</sup>.

### Brain Mapping or P300 Test

This test was developed by the Dr. Lawrence A. Farwell. He was the Director and Chief scientist of ‘Brain Wave Science’ IWOA. He patented this test in the year 1995. He was a famous neurologist. This technique is also called as ‘Brain wave finger printing’. According to the Dr. Lawrence A. Farwell “In this technique, the suspect is first interviewed and interrogated to find out whether he is concealing any important information, then sensors are attached to the head and the person is made to sit in front of a computer monitor. He is then shown and made to hear certain images and voice. The sensor attached to head monitors and records electrical activity and P300 waves in the brain, which is produced only if the subject has link with stimulus. The subject is not asked any question. To put it simply, it simply means that brain finger printing matches the information stored in the brain with that of the related crime and crime scene. In case of an innocent person no such P300 waves would get registered during the test.” Actually in this test accused interrogated by the expert and ask some regarding to crime. The sensors are attached with his mind and his body. If he gives false information then the brain waves will be different. It is recorded by also expert. Then the forensic expert analysis’s the data which is obtained under examination of this test. Afterwards come into the conclusion this is saying true or not. This technique is first used by Forensic laboratory of Bangalore in India. The scientist of this laboratory conducted this test properly. They also recorded the statement which was

giving under this examination. The report send to the court, court considered this report. But said in one case this statement which is obtained under this test shall not be admissible in evidence. The first case named as selvi Vs Karnataka<sup>[11]</sup> which is related to narco-analysis and other similar test. In this case Supreme Court gave some guidelines regarding this matter. Before this high court of this case thought that this test is violated the fundamental rights, against substantive due process of law, and against the self incrimination rule. But Supreme Court disagreed these views and the Supreme Court over ruled these judgements in this case. Lastly Supreme Court said that if without consent of accused, the investigation officer sends to the accused for conducting of this test, it will illegal. The test would not be applied in a case where there are doubt these accused were present or not in the committing of crime. This method useful for collecting the information regarding the crime, from this we can obtained the answer of these questions i.e who committed this crime?, who assisted for committing the crime?, who abetted for committing the crime?, who gave the arms for committing the crime? Etc. The method can only help to get information from their memory of the accused. It cannot decide what their roles were, thus creating a different possibility of an innocent eye-witness becoming a doubtful of the crime and giving a doubtful opportunity to the real culprit to create a situation of uncertainty.

Lastly we can conclude that these tests come into same category named as Deception Detecting Test. Because in all these test accused is in semi conscious situation and we can say that statement takes form accused by fraud.

### Success Rate of Deception Detecting Test

American Polygraph Association used this test over 250 students. It found that these tests are accurate close to 100 percent, but we can say that these tests are surely accurate. Their recent research claims that the accuracy of *the* new computerized polygraph system is close to 100 percent<sup>[12]</sup>. In studies conducted by the UK laboratories they found that the accuracy rate of Lie detectors for getting lie is approximately 90 percent and the accuracy rate for getting truth is approximately 70percent<sup>[13]</sup>. Lancaster University applied these test on 180 students and employees at Lancaster to either get the truth or lie in the course of these tests. Their result also showed that the result of these test not 100 percent accurate but it is close to 97 percent. Anderson told the result of Polygraph, brain mapping, and lie detector is 76 percent accurate<sup>[14]</sup>.

Researchers in Britain and the Netherlands also research on the result of these tests. They also found that success rate of these tests is close to 86 percent<sup>[15]</sup>. Many European countries do not regard polygraph tests as reliable evidence. So lastly we can conclude that these tests are not reliable. The result of these tests is 90 percent accurate but not 100 percent accurate. There accuracy rate is 90 percent, so investigating agencies

<sup>11</sup>2010, 7sc, 263.

<sup>12</sup><https://sciencebasedlife.wordpress.com>.

<sup>13</sup> <https://www.ukliedetectorstest.co>.

<sup>14</sup> <https://www.rt.com/news>.

<sup>15</sup> <https://www.theguardian.com>

<sup>10</sup> T. Murali Krishna, “Polygraph test (Lie –Detector Test) and Truth Serum” available at [www.Polygraph.com](http://www.Polygraph.com) visited on date 05-10-2012.

can take help of investigation procedure.

## DNA Profiling

### First we know that what is DNA Profiling

According to dictionary it defined as “the analysis of a small amount of genetic material from a blood or cellular sample, which is unique per individual as a fingerprint is, as an aid to identification; also called genetic fingerprinting.”

Another definition of DNA profiling that “The identification and documentation of the structure of certain regions of a given DNA molecule, used to determine the source of a DNA sample, to determine a child's paternity, to diagnose genetic disorders, or to incriminate or exonerate suspects of a crime. It is also called *DNA* fingerprinting, *DNA* typing”

Leicester University geneticist Alec Jeffreys discovered a technique called DNA fingerprinting in 1985. It is also called *DNA* fingerprinting, *DNA* typing and genetic fingerprinting. This technology can be used to identify individuals. Modern-day DNA profiling is also called STR analysis. It is a very sensitive technique which only needs a few skin cells, a hair root or a tiny amount of blood or saliva, by which it can discover who committed this crime? DNA profiling is especially useful for solving crimes. But it can use also in the solution of problem of paternity<sup>[16]</sup>. It is the One of the most modern growing and trustworthy modes of investigation in forensic science.

### How can DNA profiling solve crimes?

The following items may contain DNA material Masks, Hats, Gloves, Clothing, Tools, Weapons, Sexual assault evidence kits, Underclothes, Bedding, Dirty laundry, Fingernail scrapings, Cups/bottles, Cigarettes, Toothpicks, Toothbrush, Facial tissue, Hairbrush, Eyeglasses, Condoms, Tape, Ligatures (rope, wire, cords), Stamps or envelopes.

The Investigation Officer collects some materials from the place of crime. He gets some clue like single piece of hair, few drops of blood, or other things which is enough to get a DNA STR profile. Afterwards Forensic scientists compare the STR profile of a blood sample with that of a suspect, accused and the victim. If two DNA profiles match then we can say this person was present in the incident place. This technology is highly reliable because each person has unique DNA<sup>[17]</sup>.

By this technology we can solve the problem of paternity so we will discuss on this topic below.

The growth of DNA is a welcome step and it has become more and more trustworthy instrument. Indian courts have accepted the DNA evidence not only in paternity but also in criminal paternity case. Likewise in Rajiv Gandhi Murder Case<sup>[18]</sup>, the DNA samples of alleged assassin Dhanu were compared with her relatives by which investigation agencies got conclusive proof about her being involved in the shocking attack. Similarly in the famous Tandoor murder case<sup>[19]</sup>, the DNA samples of the injured party Naina Sahni were compared with that of her parents to set up her identity.

<sup>16</sup> www.sciencemuseum.org.,visted on 23-7-2012.

<sup>17</sup> www.sciencemuseum.org.,visted on 23-7-2012.

<sup>18</sup> (1996) 6 SCC 241.

<sup>19</sup> 1996 CriLJ 3944.

## Fingerprints

We know that every person has finger print on his hand. Fingerprints are the tiny ridges, whorls and valley patterns on the tip of each finger. These fingerprints developed in the womb of mother. We can say two people have no same fingerprints. Scientist proved this fact that there is one in 64 billion chances that your fingerprint will match with others. Fingerprints are even more unique than DNA profiling. This science is more reliable than DNA technology. We know that fingerprints also uses in the solving of crime. Our courts also permit the admissible of evidence of fingerprints. Our law also permit of taking the fingerprints of accused and suspected person. So investigation agencies take fingerprints of suspected person. Explanation of Section 53 of Criminal Procedure Code 1973 clearly says that investigation Officer has power to get fingerprints of accused. Lastly we come on the conclusion that fingerprints technology more reliable science. Court easily accepts of evidence regarding the fingerprints.

## Ballistic Fingerprinting

According to Knight, KeDarius “Ballistic fingerprinting refers to a set of forensic techniques that rely on marks that firearms leave on bullets to match a bullet to the gun it was fired with. It is a subset of forensic ballistics (the application of ballistics to legal questions) and internal ballistics (the study of events between the firing of a gun and the bullet leaving the barrel)”. This science is very useful in solving the crime, in which arms is used. When we want to trace this technique then we found some evidence in 15th century. But the first firearms evidence identification can be traced back to England in 1835<sup>[20]</sup>. It is one of the important branch of Forensic Science. It is another type of evidence. In ballistic Fingerprinting the distinct marking left on ammunition as a result of its use in a particular weapon. This science works in two phases. In the first phase expert, see the bullet in which arms this can be used and which company makes this bullet. In the second phase experts check the gun. Because when any gun used then it left some scratches in the gun barrel. By this method, they can easily solve the problem which gun is used in this crime?

## Other techniques of forensic Science

### 1. Binocular for identifying Dangerous gases

It is a device which is known as polychromatic, is developed for the identify gases from two miles away when attached to binoculars. The system works identifying the holographic signature of gases using infrared light. It builds up a 3-dimensional pattern of the composition of the gas. When we binocular use then a small hologram is programmed to mimic the chemical signature of any gas and afterwards we comparing it with the light from the gas, the two can be compared to identify the gas. This process takes only millisecond and can be used to at the same time identify number of gases. To identify the chemical weapon, the soldier can apply it mainly for military and defense purposes. Fireman can also use it for the assessment of burning factories, houses and building. It can also be used for checking

<sup>20</sup> www.wikipedia.com visited on 25-7-2012.

cars exhaust fumes in future<sup>[21]</sup>.

## 2. Remote personal assessment

It is a new process which was added in the 20<sup>th</sup> century. Remote personal assessment is a convert technique of forensic Science. In this analyst uses microwaves or lasers to assess the stress on the person remotely, covertly.

## 3. Psycholinguistic profile

Psycholinguistics means it is a study that combines the fields of linguistics and psychology<sup>[22]</sup>. It is a profile of a criminal based upon his written and spoken words and texts which was used by the criminal. Competent Forensic Psychologist can draw a correct descriptions of the possible criminal from the written or spoken (both) words.

## 4. Criminal Profiling

Criminal profiling is also known as Offender profiling. It is an investigative tool used by law enforcement agencies to identify likely suspects and also analyze patterns that may predict future offenses<sup>[23]</sup>. It is criminal's profiling based on his action, behaviour and attitude towards other person. His behaviour, mannerism, acts and expressions also are used to construct his profile.

## 5. Psychological Stress evaluator

The short form of the **Psychological Stress Evaluator** is PSEV. It is a machine for detecting signs of stress in the voice. It was tested using tape recordings of accused which is record during a prolonged terrorist siege in which a number of death threats were issued<sup>[24]</sup>. It uses a voice spectrograph for analysis of changes in vibration in the subsonic sound. Waves under interrogative stress waves are different from ordinary situations. So easily check this things whether he has committed crime or not?

## 6. Forensic Acoustics- Speaker identification

It is new method which added in the 20<sup>th</sup> century. We know that voice of every human being is different. So this method is based on this principle. Voice analysis is essentially a sound spectrograph based technique which is used to evaluate the recorded voice of an unknown individual to a known recorded voice sample of an assumed kidnapper, extortionist, terrorist, and others who communicate their intent to commit violent acts. The Central Forensic Science Laboratory (CFSL) and Central Bureau of Investigation (CBI) are using the spectrographic technique joined with linguistic analysis for forensic investigation.

## Conclusion

THE CRIMINAL justice system is entering a new era transformed by advances in science and technology. The society is experiencing new changes due to the latest strides in the fields of science and technology. Criminals too are

using technology to accomplish their unjust demands. The time has come when we have to use technology in the crime prevention. There is an urgent need to evolve new methods to fight against different types of crime like terrorism or any organised crime. If police use modern technology in the investigation then police may find true facts of the case. Innocent person will not suffer by any false incrimination. Victim will get easily justice. Police will also easily collect evidence against offender and court may easily give conviction.

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<sup>21</sup> David E. Newton, DNA evidence and Forensic Science 21(Viva Book Publication, New Delhi , 2006).

<sup>22</sup> www.study.com. Visited on 12-5-2012.

<sup>23</sup> www.wikipedia.com visited on 12-5-2012.

<sup>24</sup> www.wikipedia.com visited on 12-5-2012.