Aspects of Forensic Linguistics in Policing

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Abstract

Forensic Linguistics analysis became an independent discipline in last few decades. Forensic Linguistics is the study of Linguistic techniques to investigate Crimes (Criminal/ Civil) especially Authorship disputes, Documentation, Text, Media & Social media disputes Rapes, Murders, Drug dealing, Telephoned Bomb threads, Random threads, Missing, Kidnapping, Counter terrorism, Intelligence and Surveillance. Forensic Specialists who examine spoken or written materials in relation with Crimes (Criminal/Civil) and Legal matter are known as 'Forensic Linguists'. Forensic Linguistics is really helping the Police to detect the real motives and intentions of crimes through the detailed analysis of sounds or texts of suspect by applying above said Linguistics theories. This article probably discusses how Forensic Linguistics tools leads to solve Crime Investigation and implementation of the same in Policing.

Keywords: Forensic linguistics, stylistics, fingerprinting, Voice Analysis, Crime)
Introduction- Forensic Linguistics

Linguistics is the scientific study of languages and this discipline has a large number of applications in different areas in the present technology. Forensic Linguistics is an emerging sub-discipline of Forensic Science and it is a branch in Applied Linguistics. 'Forensic Linguistics is the scientific study as applied to forensic and contexts' (McMenamin -2008: 86). Forensic Linguistics procedure involves two types of expert analysis techniques such as Speech analysis and Text analysis. Forensic Linguistics is the study of Linguistic techniques to investigate Crimes (Criminal/ Civil) especially Rapes, Murders, Drug dealing, Telephoned Bomb threads, Random threads, Missing, Kidnapping, Counter terrorism, Authorship disputes, Documentation, Text, Media & Social media disputes, Intelligence and Surveillance.

In 2009 Toolan writes as
"Linguistics-informed studies of language in legal proceedings of all kinds have enjoyed a striking growth over the past few years, with much of the work recognized as falling within the sub discipline now known as forensic linguistics. A host of law-related issues where language is at issue now benefit from a more searching and rigorous applied linguistic scrutiny than was in the past deemed appropriate and admissible".

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Toolan expresses the idea that this new interdisciplinary subject may perform the key role in Interrogation questioning, Investigation related to the area f Crimes and in court of Law. Foster (2000:16-17) find that Linguistics has a close association with law, linked by stylometrics, and that both are needed in courts.(Ferdows Aghagolzadeh, Negar Momeni, Mostafa Asi, Mohamad Farajiha, 2010).

Forensic Specialists who examine spoken or written materials in relation with Crimes (Criminal/Civil) and Legal matter are known as 'Forensic Linguists'. Aspects of Linguistics plays important role when it deals with legal texts such as Suicide note, Legal Document and any written form in the Text, by using the branch of Linguistics like Phonology, Phonetics, Morphology, Semantics, Pragmatics, Discourse approaches etc. Forensic Linguistics is really helping the Police to detect the real motives and intentions of crimes through the detailed analysis of sounds or texts of suspect by applying above said Linguistics theories.

Etymology
The term 'Forensic is an adjective term and it was taken from Latin word 'Forensis', which means that 'public or 'in open court'. The term 'Linguistics' came from Latin terms 'Lingua' and 'istics'. The term 'Lingua' means 'Tongue' and 'Istics' means 'Knowledge' or 'Science'.

Definition
Forensic is described in the Merriam- Webster dictionary as relating to the use of scientific knowledge or methods in solving crimes or relating to used in, or suitable to a court of law. The term 'Forensic' is referred to the application of scientific knowledge to legal problems, especially scientific analysis of physical evidence as from a crime scene.

Aim and Objectives of the study
The main objective of this study is to understand the aspects in Forensic Linguistics and give light to the practical sense of linguistics concepts to accelerate the police investigation as a tool.

Review of Literature
An article titled Voice Fingerprinting: A very Important Tool against Crime written by Mr. Pragnesh Parmar and Udhayabanu R in the Journal of Indian Academic Forensic Medicine on Jan-March 2012, Vol34, No.1. In this paper the Researchers discussed about the history of sound spectrogram, basic method of recording the voice and comparison, its utility in the solution of crime and admissibility in the court of Law.

In 1949 Philbrick published Language and the Law: the Semantics of Forensic English, written by Philbrich in 1949 which gives the straight light of future researchers in the field of Forensic Linguistics. Such as Eades in 1994, Levi 1993, Coulthard & Johnson in 2007.

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Jan Svartvik's The Evans Statements as the first typical work related to forensic linguistics. Statements that had been made to police officers by Timothy Evans about the deaths of his wife and baby daughter. The analysis showed the incriminating parts of the four statements had a grammatical style measurably different from that of uncontested parts of the statements and thus a new forensic area was emerged.

Forensic Linguistics by Gerald R. Mcmenamin in 2002 is one of the knowledgeable books published by CRC Press gives a good understanding of Forensic Phonetics and its major areas such as Auditory Phonetics, Acoustic Phonetics, Semantic explanation, Stylistics, Discourse and Pragmatics.

Shuy RW explains in his book about the language of confessions, Interrogation and Deception I 1998. This book was published by Sage publication. Confession, Interrogation and Deception were interconnected.

Blake Stephen Howald in his book, 'Comparative and Non- Comparative Forensic Linguistics Analysis Techniques and methodologies of Negotiating the interface of Linguistics and evidentiary jurisprudence in the American Judiciary' discussed the comparative nature of Forensic Linguistics Negotiation.

Hand book of Introduction about the workshop of Forensic Linguistics, by Dr S Prema, Department of Linguistics, University of Kerala conducted on March 26-28, 2018 in collaboration with Police Training College, Government of Kerala carried out a number of classes by experts in the field of Police Investigation and Forensic Linguistics. All classes are excellent and gave a detailed understanding of Forensic Linguistics and its application through scientific analysis of Language.

Dr. N. Vijayan in 2015 studied the confessions, Statements and evidences in Forensic Linguistics. This Research work is the first Ph.D. Thesis in south India. In his work he explained the principle of Legality, the principle of Validity, The principle of Reliability, The principle of Authenticity and the principle of Truthfulness. He discussed the confession from the murder case of Mrs. Vijayalashmi. and also he explained the evaluation of Inter-textual similarities.

Methodology and Data collection

Descriptive methodology was used in this study. Only secondary data is taken for analysis this study. Secondary data can be collected from Interviews through phones, books and some official records. All collected data will be analyzed in a descriptive manner. All data can be collected from experience shared from officers, scholars and works regarding forensic Linguistics.

Problems Identified

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During interrogation, the help of a linguist is needed for the documentation process. Because legal documentation and Linguistics documentation are entirely different. When a person is giving his /her statement, that statement must be document without any change. In casual writings, persons may give their own style in statement and when legal writings, some technical terms may be added as procedure. The style of language may change, and some unnecessary terms may add in to the statement, and it will affect further investigation. So the point is language used in (confessions) a statement and the style of the language is more important. The police sometimes give some correction to the accused for describing the crime scene and then ask to explain him what happened (Rutledge, 1994). To getting a good and correct confession is the most essential thing in the investigation and hence the analysis of style of language in confession is more important. (For example, in the case of Murder of Mrs. Vijayalekshmi- Tamilnadu, Dr. Vijayan).

And the second point is Multilingualism. India is a multilingual country. So, most of the time, Investigating Officers may face some difficulty for communicating with in the regional or foreign languages. Because the Officer is not a language expert and he may have to take the help of translators from outside. Reports by MG Radhakrishnan in *India Today*, April 28, 2012 and KPM Basheer in *The Hindu*, May 27, 2015 say that, current migrant population could be around one-tenth of the resident population which was around 33 million in 2011. Murders apart, innumerable cases of theft, burglary, drug peddling, drug abuse, kidnaps, fights and sexual crimes involving migrant workers have been reported.

History of Forensic Linguistics

History of origin of Forensic Linguistics started in the eighteenth century regarding the authorship of some of the Plays and writings of Scholars in Greek of plagiarism. In the 19th century some of the Scholars like Augustus and Mendenhall attempt to develop some methods in the attribution of authorships. And 20th century Udney Yule attempt to develop methods in the attribution of authorships. The term Forensic Linguistics was first used by Professors Jan Svartvik, of the University of Lund, Sweden in "The Evans Statements: A Case for Forensic Linguistics" published in 1968. Hence Professor Jan Svartvik was known as the father of Forensic Linguistics. A group of people consisting of several members of Parliament from different parties formed a committee to campaign on Evans Case. A member from this committee who initiated Jan Svartvik to produce his textual analysis in the Evans Statements. All the statements had been analyzed word for word to the Police. Hence Professor Svartvik had been pointed out a number of clear differences in grammatical usage in different statements. Thus, Linguistics aspects proud to solve this case initially.

Forensic Linguistics in Legal System

Language is the key in Legal System. All Legal Systems like issuing warrants, confessions in crimes, Documentation of Interrogation process in crimes, Suicidal note analysis etc have significant role in language data analysis. Legal proceeding consists of three stages. First stage is the Investigative

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stage, second stage is the Trial stage and the third stage is the Appeal stage. (Dr. John Olsson, Dr. Prema. 2018, What is forensic Linguistics, Hand book of workshop on forensic linguistics, Dept of Linguistics; Kerala). Linguistic analysis of language content includes detailed study of dialect variations, style of dialects, pronunciation, word order, selection of usages and phrases, syntactic variations, semantic style and pragmatic expressions.

Author Identification

Author Identification process involves examines the authorship of the questioned documents scientifically. In this Forensic Linguists must examine the anonymous documents in terms of Linguistics tools such as Grammar, Punctuations, Pattern of Usages, Spell check, Word selection, Style of writings, Narrative Style, Types of Register, Dialect variations, Semantic and Syntactic structures. In grammatical structures Forensic Linguists must be careful about usages, discourse, clause used, preposition and word structure (Robert A. Leonard, Juliane E. R. Ford, Tanya Karoli Christensen). Linguistics analysis aims to discern patterns indicating whether a hypothesis of common authorship better explains the data than hypothesizing independent authorship (Robert A. Leonard).

Forensic Phonetics and Voice Finger Printing

Forensic Phonetics is an important branch in Forensic Linguistics. In Forensic Phonetics the sound data from recorded voices or tapes, recorded telephone calls, confessions in Interrogation were analyzed with Linguistics tools such as Phone and Phonemes. Phonetics is the branch in Linguistics and it can be classified in to three. Articulatory phonetics, auditory phonetics and Acoustics phonetics. Articulatory phonetics is the study of the production of human speech sounds. Speech sounds come from the vibration of the vocal cords inside the larynx or voice box. The cavities of the mouth, nose, and throat act as resonators, that making the sound louder. The teeth, lips, tongue hard palate and soft palate are the articulators that shape the sounds in to speech (Pragnesh Parmar, Udhayabanu R, 2012). Auditory phonetics is concerned with perception of speech sounds on the way in which sounds are heard and how the brain forms perceptual representation of the input it receives.

The primary areas of auditory analysis of speech sounds in Forensic phonetics are speaker discrimination, imitation and disguise and identification of characteristics of speakers' dialect variations, accent analysis and speaker age and physique (Ellis, 1994). Acoustic phonetics is the study of the acoustics of speech sounds including an analysis and description of speech in terms of its physical properties such as frequency, intensity and duration. The preliminary area of acoustic analysis in Forensic phonetics is speaker identification and from this we can identify characteristics of speaker, voice characteristics, accent changes, physical measurements such as height, age, dialectical variations, regional similarity of speech and other technical aspects (Dr. Prema. 2018, What is forensic Linguistics, Hand book of workshop on forensic linguistics, Dept of Linguistics; Kerala). Voice fingerprinting is same as the process in forensic phonetics and which is applicable in some cases in which voice is the

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only clue for police to identify criminals. Voice fingerprinting is applicable in cases of telephoned bomb threat, kidnapping cases, some terrorist threat etc.

In Voice Fingerprinting, the recorded sound data can be analyzed through a sound spectrograph. Sounds are collected and recorded on a magnetic plate through an amplifier in which the internal sounds entering through a frequency analyzer. This frequency analyzer splits sounds in to different frequencies when the air vibrates as sounds waves. A filter selects a group of frequencies and with the help of the analyser, converts them in to electrical signals. These signals move the pen like device, which marks. These frequencies can be converted in to electrical signals and recorded through a sharp needle. This needle records the signals on a paper. Then a series of jagged lines can be collected. The spectrograph printout is called Spectrogram. Each Spectrogram shows 2.5 seconds of spoken sounds represented as a graph. The vertical and horizontal axis indicates frequencies and time as well. The most important sound of human voice is called fundamental and fainter tones are called harmonics. Both these frequencies are analyzed and detected the way of breathing, unusual speech habits, accents, tones, some supra segmental linguistics areas such as pitch, intonation etc. Each of the deviating points may be collected, analyzed and finally get a conclusion. Then a comparison of the corresponding Voice print is made (Pragnesh Parmar, Udhayabanu R, 2012).

Forensic Graphology

Forensic Graphology is the study of hand writing on ransom notes, Suicide notes, Blackmail demands, Threats Letters etc. After text analysis he Forensic Graphologist may find out the writer's state of mind, time when the note was penned, the dialect, style of sentences, terms, phrases etc. Detailed analysis of the text will give deep insights about emotional status, mood, state of mind etc. From the analysis the exact location of the writer can be finding out by doing deep analysis with the slag, the usages and expressions.

Forensic Linguistics Profiling / Forensic Sociolinguistics Profiling

Linguistics profiling or Socio linguistics profiling is one of the effective analytical concepts in the Forensic Linguistic Analysis, which include language indicators such as Regional, Social Dialect, Age, Gender, Education, Occupation etc. Linguistics Profiling has been most effectively used to narrow down a suspect list rather than to conventional identification for a suspect. Also, Linguistics profiling or Sociolinguistics profiling can be used in the Authorship Analysis.

Forensic Corpus Linguistic Analysis

Software's can be used to find out the source of speech sound specimen. Which include the keywords and phrases of documents from the suspect's texts or speech which can be useful to identify Investigative purpose. Speaker profiling can be used by an expert to listen the samples of speech sounds to identify the demographic background of the suspect and which involves Speaker comparison, Automatic Speaker Recognition and Verification. Other procedures of techniques involve

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Transcription, Resolution of disputed utterance, Authentications, Detecting Deception etc. Voice Risk Analysis (VRA), this technology for indicating deception which is used as an anti-fraud tool especially in Insurance related issues. Which is the technology for analyzing speech samples through suprasegmental Linguistics features like stress, emotions etc. (POST note509, Sep 2015, Forensic Language Analysis)

Forensic Stylistic Analysis

Stylistic Analysis is one of the aspects in the text analysis. Which includes comparing the document style with those of other documents written by possible suspects, stylistic analysis of writer's habitual language features, patterns of clause embedding, Punctuations, Mechanical errors, Discourse features, Print features etc.

Forensic Pragmatic analysis

Pragmatic analysis has proven useful in both civil and criminal cases of many kinds. For example, Leonard testified in a U.S. district court in Florida on the contextual meaning of words claimed as trademarks and in state court in Florida on the meaning of internal company-related communications; in state courts in New Jersey, Arizona, and Nevada on the meaning of language.
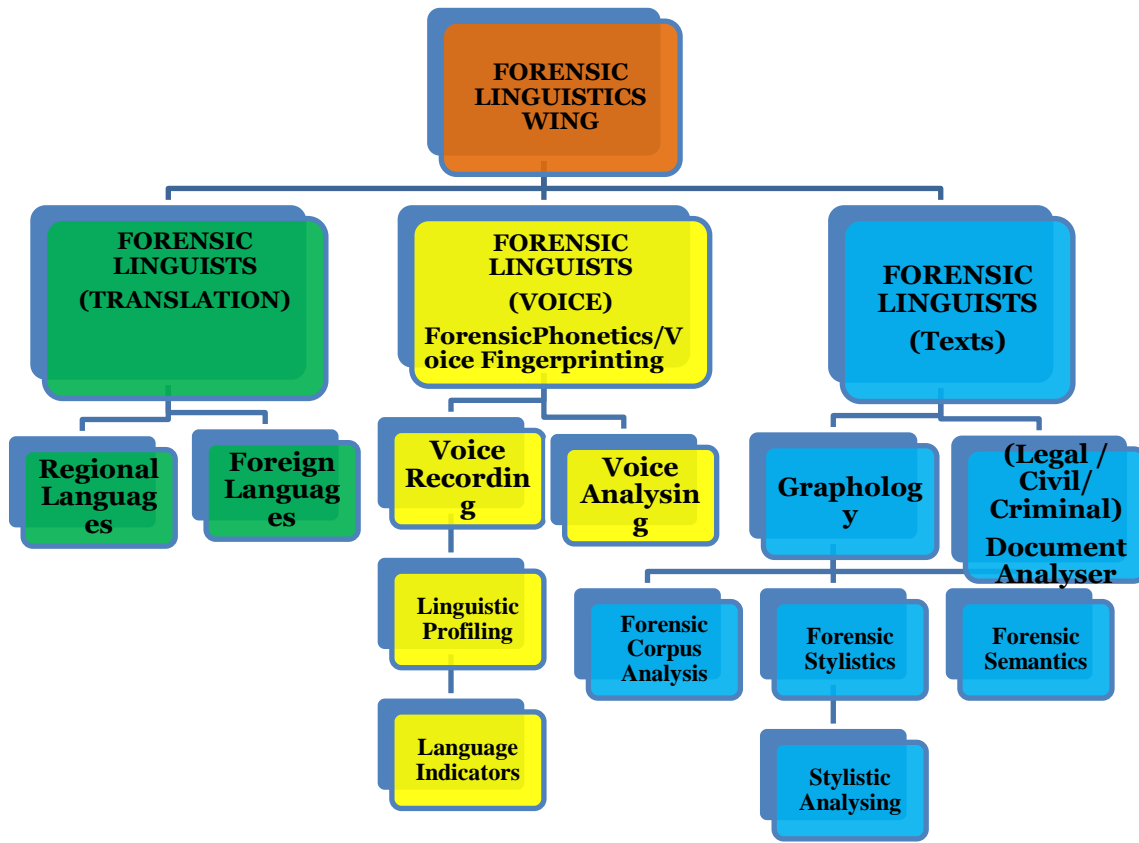
Executing Forensic Linguistics in Policing

We can execute this in Police in the following ways**.** Every Police Department has certain specialized branches like HTC (High Tech Cell), FSC (Forensic Cell) and FSL (Forensic Cell Laboratory). Forensic Linguistics can be included in the FSL as a new branch as **'Forensic Linguistics Wing'** among its other divisions. Some of the states have Document section, but there are no Linguists in the Document section as far as the Researchers knowledge is concern, and also persons included there have only Physics and Chemistry background.

Structure of 'Forensic Linguistics Wing'

India is a land of so many languages, as considering these conditions, we can divide Forensic Linguistic Team in two or three groups.

a) **Forensic Linguists as Multi Lingual Translators**
(For Indian and Foreign Languages)
b) **Forensic Linguists as Voice Experts**
(Voice Fingerprinting /Forensic Phonetics/ Voice Recording and Analyzing)
c) **Forensic Linguists as Graphologist or Text Analyzer**
(Forensic Semantics/ Forensic Stylistics/ Forensic Corpus Analysis)

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FORENSIC LINGUISTICS WING

- FORENSIC LINGUISTS (TRANSLATION)
  - Regional Languages
  - Foreign Languages
- FORENSIC LINGUISTS (VOICE) ForensicPhonetics/Voice Fingerprinting
  - Voice Recording
    - Linguistic Profiling
    - Language Indicators
  - Voice Analysing
- FORENSIC LINGUISTS (Texts)
  - Graphology
    - Forensic Corpus Analysis
    - Forensic Stylistics
      - Stylistic Analysing
  - (Legal / Civil/ Criminal) Document Analyser
    - Forensic Semantics

Forensic Linguists as Multi Lingual Translators

India is a multilingual country. So, most of the time Investigating Officers may face some difficulty in communicating with people in the regional or foreign languages. Because the Officer is not a language expert, he may have to take the help of translators from outside. Recently most of the labors from different states are coming for getting better job options.

MG Radhakrishnan in *India Today*, April 28, 2012 says that,

"It is ironic that Kerala, which thrives on the remittances of its more than 2.5 million strong Diaspora in the Gulf and Western countries, has become a haven for migrants from other Indian states. An estimated 2 million migrant laborers from the states in the north, east and the North-east work in Kerala, of which more than 1, 00,000 live in Perumbavoor."

Also, the Crime-rate among these people is increasing.

KPM Basheer in The Hindu, May 27, 2015 says that,

"According to a 2013 survey, there were 2.5 million migrant workers in Kerala. The number has gone up substantially in the past two years with even white-collar job opportunities opening up before them. This means that the current migrant population could be around one-tenth of the resident population

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which was around 33 million in 2011. And, the huge majority of the migrants are young. Naturally, the increase in the number of crimes is a big concern for the resident population and the administrators. Murders apart, innumerable cases of theft, burglary, drug peddling, drug abuse, kidnaps, fights and sexual crimes involving migrant workers have been reported, especially from the countryside where the workers are in close contact with local residents."

And as per the problem stated above, to meet the challenge, an excellent group of Forensic Linguistic Experts were needed as professional Multilingual Translators for police interrogations. Linguists for Multilingual Translation of major regional Languages especially Bengali, Assamese, Oriya, Hindi and other recently migrated populations' Dialects. Also, we can give training in some of the foreign Languages like Arabic, English, French, etc. Select Linguists and give them proper training in Regional and foreign Languages. Linguists are Language experts, rather they are all well-acquainted with the Structures of Languages. So, they can easily learn Multi-languages in a short time.

Forensic Linguists as Voice Experts (Voice Finger Printing /Forensic Phonetics/ Voice Recording and Analyzing)

As stated above, Voice identification techniques are one of the modern techniques that are admissible for solving complicated cases. Suspects knowingly or unknowingly leave voices during crimes. Each person's voice is different and have different wavelength depending on the lung's air pressure and air stream mechanism in the vocal organs. If we record all the suspect's voices during interrogation and analyses the recordings using the Voice spectrographic print outs, we can specifically point out the wrong statements and right statements using Linguistic techniques. We can use Voice or Sound just like fingerprints. (Thomas Gale, 2006)

Voice Fingerprinting or Voice identification techniques are generally known as Forensic Phonetics and its analysis consists of Voice Comparison, Lay voice recognition, Transcription of Spoken Language, Speech signal enhancement and the Authentication of recordings. Forensic Linguists conduct speaker identifications, resolve disputed content recordings and Transcribe spoken text and they are also involved in the setting up of voice line ups in which ear witnesses are asked to take part in order to identify a suspect. (Pragnesh Parmar, Udhayabanu R, 2012)

Voice Finger Printing is a very important tool like Thumb Finger printing against Crime as stated above. Recently there were many technological methods taken to determine the identity of a particular person. Each person has different speech organ and articulator system. Because of that, each person's voice is different.

Forensic Linguists as Graphologist or Text Analyzer

The investigative Forensic Linguist analyses handwritten evidence or written document, which is the subject of police investigation or of criminal procedure are called by the term Forensic Graphologist.

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As described above, It includes Text Messages, Emails, and Website, Fraud Contracts, Chats, Legal Documents, Suicidal Notes, Social Media Contents, Media Messages, Authorship of book contents and other all written documents. All these aspects are included in **Forensic Semantics**. This aspect deals with the study in expressing meaning from words, phrases, sentence, texts, ambiguity in the text and interpretation of meaning in written discourse. In relation to Forensic Linguistics, semantics plays an important role in interpreting the written text which is hard to understand. Recently technologies like Hyper spectral imaging (HSI) is used on forensic analysis in the cases of forensic document analysis (Hitesh P Vora, Kapil Kumar, Himanshu Pandya, TIPJ, MHA).

Recommendations

1. For this task, first of all we have to select candidates from Linguistics background and give proper training to fix in the Forensic Linguistics Wing. The basic qualifications for the candidates must be M.A. in Linguistics and proper Research Experience in the Linguistics Field is needed.
2. We have to develop a Voice Data Bank of Criminals. Because Criminal's speech voice has certain identity measures like human finger prints.
3. Different frequencies of Voice print must be collected at preliminary investigation stage.
4. A joint venture of Linguists and Computer expert may be implemented for analyzing speech sounds through new technologies in speech synthesis.
5. Implement and Document the Spectroscopic Voice Fingerprinting using Phonetic Lab.
6. Sensitive areas will be covered by using High range Voice recorder like Video Cameras.
7. Implement an expert intelligence division to monitor telephone calls of the suspects and from high attention areas.

Conclusion

In the recent word technology there are many tools to determine the exact identity of a person. One of these modern tools is the old inevitable part of human being such as Sound. Recent Technologies are coming to the world quickly, but our system has least interest to receive and implement new investigating methods. As discussed above, forensic Linguistics offers excellent tool to help Policing and counter terrorism through Linguistics concepts. Forensic Linguistics can simultaneously applicable in Civil and Criminal cases to support legal conclusion. We have to focus on every aspect of the recent technologies that are changing our conventional Investigating and interrogation methods in the Police Investigation. When language can be considered as evidence every case can have Linguistic significance.

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