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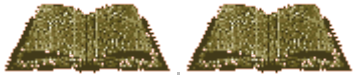
Book Reviews: Technical Books Section



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A COMPREHENSIVE ACCOUNT OF VOICE IDENTIFICATION

Forensic Voice Identification, 1st Edition, *by* Harry Hollien. Hardcover: ; Dimensions (in inches): 0.75 x 10.00 x 7.50.
Academic Press, Harcourt Place, 32 Jamestown Road, London NW1 7BY, UK. Date of publication 2002; Pages xiv+240; ISBN 0-12-352621-3; Price £53.95

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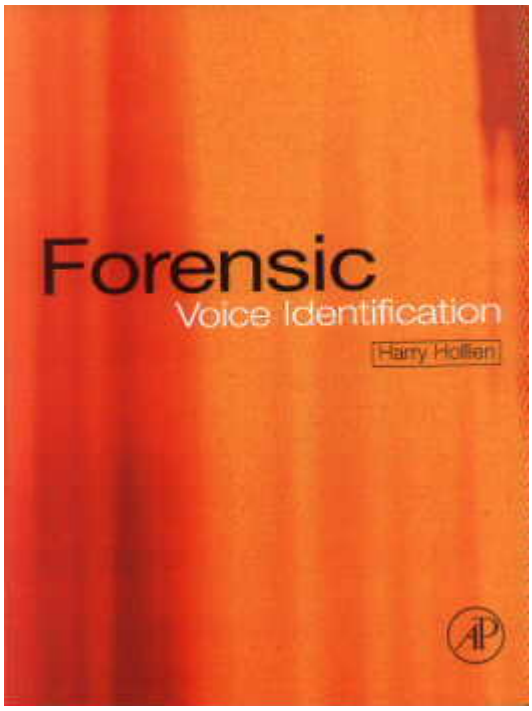

When someone first hears of forensic voice identification at the start of his career, he might take it to be something similar to eyewitness examination. With the progression of one's career, is one able to know about forensic voice identification. Many misconceptions exist even among professionals regarding voice identification. Many persons are either not aware of this technique or are not fully aware of the varied uses and applications of this technique. The same is true for other professionals dealing with the law like the lawyers, judges, police personnel etc. As the author has mentioned, he has tried to format the book keeping in mind these very people. And we must say that he has been pretty successful in his attempt. We would now present the various features of this book in the manner of their appearance i.e. taking one chapter at a time so that one gets an idea about the ways in which they have been written.

CHAPTER 1

This chapter starts off by giving a brief overview of what is voice identification, what are the various terms used in this technique, the various definitions and problems encountered in this technology. Also mentioned are the various types of speaker identification like those by machines or by human beings. An important thing that has been mentioned is the difference between speaker recognition (SR), speaker verification (SV) and speaker identification (SPID). It is important to know these differences as they form the backbone of the method and without knowing the difference between them one can't proceed with this important forensic tool. The author has rightly mentioned about the Fry and Daubert tests (page 14-15). But what he has not done is describe them. We know this is not the right place for us to describe these tests, but we must say that for the uninitiated, these tests are extremely important as they describe how and when voice identification became admissible in the courts as evidence. The importance of these tests is self-evident. Unless these new techniques are admissible in the courts, there is no use in developing and using them. Probably one or two paragraphs describing these tests and their relevance in voice identification could have been included without causing much change in the text and volume of the book.

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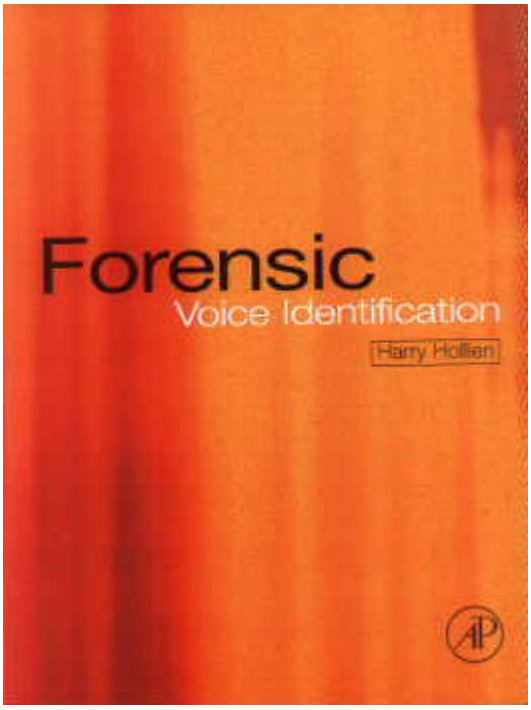
CHAPTER 2

This chapter has described the history of voice identification as it has progressed over the years. He has mentioned about the early times describing about the times of the Romans and the Greeks. He has then gone on to trace the history through the nineteenth century to the modern times. An important example that has been described to illustrate the usefulness of the technique is its use in the identification of the voice of Adolf Hitler. Also mentioned are the contributions of the Bell Laboratories and the ways in which Stalin used the technology to eliminate his detractors and the prisoners of war. These things tell us about the possible uses and potential damage these new discoveries bring with them.

CHAPTER 3

The next chapter "aural - perceptual approaches" describes the various characteristics that are used by the listener while identifying the voice. He has mentioned about the different kind of research that has taken place to know the ways and various parameters that affect the listener when he is identifying a speaker. This gives the reader an idea about the ways the method works and what are things that have to be taken care of while examining an ear witness. Things like the quality of speech, duration of speech, familiarity with the speaker, disguise etc. that affect the ability of the listener have been adequately explained. Also described very efficiently is the effect of emotions on the ability of the listener to recognize the voice. This has also disproved the notion that emotionally charged person is less likely to identify the voice. On the contrary the author's research has shown that emotions like grief and anger make the person more likely to recognize the voice than a non emotionally charged person. By summarizing the pros and cons of speaker identification in a numerical form, the author has presented it in what is known as the visual format i.e. it is easy to grasp and remember them when they are presented in such a form.



The book has one of the most lively "Prefaces" that we have read in recent times. In an unprecedented seven page preface, the author - in his unique style - describes why he wrote this book, and what is his intended audience. You can not help but notice the informal and chatty style that Hollien resorts to. The same style continues throughout the book, making the book exceedingly interesting even for non-phoneticians like us. Here is how he starts...

There are several reasons for writing this book. First, I wish to expand and update my three-chapter presentation on speaker identification found in another of my books (Acoustics of Crime, Plenum Press, 1990). Second, much has happened since the late 1980s and, naturally, I wish to review these developments and add my personal perspective to it all. However, it is the third reason that is the really serious one: I wish to respond to an unfortunate situation in this field, one which I believe to be counter-productive to good progress. The two major groups - phoneticians and engineers - who are responsible for solving the riddle of speaker recognition have not seen fit to cooperate to any great extent in either their research or practice. This tendency is most unfortunate since it has clearly impeded progress. So, what is the problem? Well, it appears that the engineers think that phoneticians do not know enough about mathematics and equipment to be effective catalysts, whereas the phoneticians complain that the engineers do not know enough about human behavior or experimentation to do an adequate job. The irony is that they both are correct and, as it turns out, it is doubtful whether either can come up with a solution without the other. Accordingly, one of the goals of this book will be to provide a little common ground for them; perhaps it will aid each in better understanding the other. If reasonably good relations can be achieved, effective cooperation and coordination should result. In any event, I will address this issue (in various ways) in several of the chapters to follow plus structure all of the last chapter as an illustration of how effective good collaboration can be. If you find my efforts in this regard a little redundant, so be it. It is my judgment that such repetition may lead to progress and, if it does,

it will be well worth it. Anyway, if you already are convinced that I am right, you can skip over those sections.

The fourth reason that this book was written was to effectively describe speaker identification, and do so in a manner that can be easily understood by those different types of people who are interested in the area. Nearly all of these groups are professionals, of course. The problem is that, taken as a whole, they come from wildly divergent backgrounds. Thus, the challenge - how does one reach them?

First, let us consider jurists and attorneys. Their backgrounds allow them to understand more about the courts and the criminal justice system than I ever will. Yet I must attempt to communicate directly to them about the nature of speaker identification, how it is carried out, why we do it the way we do it and how it fits into their world. Hopefully, I can explain what they can expect (and not expect) when they must deal with these processes. In turn, we will want to learn how we 'fit' into their systems. Second, while law enforcement personnel know more about forensics and criminal investigations than I do (or ever will learn), we forensic phoneticians have something in common with them. We both 'investigate' - we both seek answers to questions and to problems. Third, I already have touched on the problems phoneticians have in interfacing with members of the engineering community. They will want to know what we think about a particular algorithm; we will want to tell them about memory, the hearing mechanism and how these systems can play tricks on an 'auditor,' be it human or machine. We also can predict (sometimes anyway) how shifts in human behavior actually can affect machine processing. Conversely, we will want to learn from them why certain physical processes can predict human behavior. All in all, phoneticians and engineers can contribute materially to each others efforts. Perhaps my efforts here will contribute to this dialog.

Of course, other phoneticians and forensic phoneticians will be easy to reach; all I have to do is use the appropriate systems and jargon. Correct? Don't hold your breath here. All that will be necessary for me to do is inadvertently tread on some phonetician's revered dogma and it will be 'Look out, Charlie!' Add in all the other types of 'communication' professionals (linguists, speech pathologists, physicians, communication specialists and so on) who sometimes have a bonafide interest in the area and World War III just might erupt under my teepee. In any case, I will try to reach most of these groups too. A daunting task? Definitely. Will I also attempt to reach the lay public (journalists, private detectives and the like) in any material way? No, to try to do so simply would be asking too much of my tired old cortex....

--Harry Hollien

CHAPTER 4

This chapter is about the professionals who are working in the field of voice identification. The author starts off the chapter by giving a brief overview of the various types of professionals who are currently engaged in this field, their roles and how well they are able to perform their intended functions. This is probably the most important aspect of the book as it tells the reader about the people they should contact when in need and who all are to be avoided lest they should damage their cause. It also tells us about the hierarchy of the field and the role assigned to each individual in the setup. He then goes on to describe how a phonetician works, what are the requirements to be a phonetician, the qualities of a good phonetician etc. All these things help a budding phonetician in

planning and preparing for his career in the field. He then goes on to describe the ways in which a phonetician goes about his job by making various recordings and analyzing them. Also mentioned are a couple of examples to illustrate the point the author is trying to make. These examples give the two extremes of cases i.e. one in which the voice of the suspect matches that of he speaker and the other in which it doesn't. The inclusion of figures depicting these findings helps the reader in knowing about the ways these tests are conducted. But what has not been mentioned is the cases in which the scores lie in between the two extremes. As we know forensic cases rarely follow laboratory procedures. So unless one is aware of the interpretation of the in-between scores he is bound to fail more often than succeed in his practice.

CHAPTER 5

In this chapter the author has described about the ear witness line-ups or in other words ear witness parades based on eyewitness parades. He has beautifully mentioned about the similarities and dissimilarities between the two techniques. Its importance lies in the fact that many people think that ear witness is same as eyewitness and unless this notion is dispelled, it will be very difficult to achieve its full potential. Next he has described the problems encountered in ear witness and has rightly divided them into controllable parameters, partly controllable parameters and uncontrollable parameters. These help to know what all things can be modified by proper training and experience and what cannot. The next thing that has been described is the various types of ear witness parades and how they are administered. The various advantages and disadvantages of these methods makes the reader decide which one of them is best suited for his needs and his environment.

CHAPTER 6

This chapter is (dedicated) to voice prints. The author is right in criticizing the technique and the advocates of the procedure. Every human being has the right to criticize others especially if they behave the way the advocates of voiceprints did in the early part of their discovery. The way they fudged the research findings, told lies and did all other things to promote their technology. A normal human being would react in a way the author has done. But one thing the author forgot was that he is a scientist and that too of such repute. For someone of his stature to say things of such kind is not justifiable at any cost. What he probably forgot was that every scientific progress is full of a lot of heartbreaks and failures. Voiceprints can be regarded as one such failure. And one doesn't know what the future has in store for us. For example, the use of radiology in fingerprinting was developed in the early part of twentieth century. But it was relegated to history books after the development of the present system. But the last few years have shown renewed interest in the use of radiology for the same because of its advantages that were not thought of earlier. So one never knows maybe in future voiceprints may even take over SPID as the most important technique for voice identification. So to castigate the proponents of this theory was all right but should have been done with a little restraint.

CHAPTER 7

Here the author has described the development of computers and various computerized programmes for use in voice identification. He has described how the thought of developing such a programme was necessary, what led to its development and what difficulties were encountered in

their development. He has then gone on to describe a couple of programmes, one each from the USA and Poland. Although we can't make much of the mathematical equations and the principles of physics mentioned, we do know that they have been an important development in the field and their inclusion has been an important aspect of the book. They not only keep us abreast of the latest developments but also give a sense of completeness to the book.

CHAPTER 8

This chapter has been given the maximum space in the book, and rightly so as it describes SAUSI, a computer based programme that has been developed by the author and his associates. He has mentioned about the need for the development of the programme, how it was thought and planned, the various difficulties that were encountered in its development etc. They have further gone on to describe the ways in which this programme can be used and also mentioned a few practical applications. All this goes on to demonstrate the usefulness of the programme and its importance in the history of voice identification as and when it is written a few years down the line. it also tells about the kind of contribution the author has made in the field.

In conclusion we would like to say that this is an extremely valuable book for all those who are even remotely involved with the process of voice identification - be that a phonetician, a lawyer, a judge, a forensic scientist or member of the police department. This book has presented a highly comprehensive account of the development of voice identification and their present use and also given a brief description of the ways the future is going to be.

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