BROADCAST SPEECH AND THE EFFECT OF VOICE QUALITY ON THE LISTENER: A STUDY OF THE VARIOUS COMPONENTS WHICH CATEGORISE LISTENER PERCEPTION OF VOCAL CHARACTERISTICS

JOHN CHARLES HERBERT

PhD Thesis

Department of English Language, University of Sheffield

OCTOBER 1988

CONTENTS

ACKNOWLEDGEMENTS

Inevitably in a work of this kind there are many people who need to be thanked – too many to list them all here. But there are some special thanks due: to Graham Nixon, my supervisor; to all those past students of mine now scattered throughout the broadcasting industry in the United Kingdom who knowingly or unknowingly have been helpful in crystalising my thoughts about the relationships of the voice to broadcasting. Thanks also to many members of the BBC and the staff of the University of Sheffield library for whom no request, however esoteric, was too difficult. A particular thanks to Maggie who typed the manuscript.

SUMMARY OF PhD THESIS

John Herbert

Title: BROADCAST SPEECH AND THE EFFECT OF VOICE QUALITY ON THE LISTENER: A STUDY OF THE COMPONENTS WHICH CATEGORISE LISTENER PERCEPTION OF VOCAL CHARACTERISTICS

Voice quality is crucial to the art of the broadcast speaker. Acceptable voice quality is a necessity for an acceptable microphone voice and essential therefore for employment as a broadcaster. This thesis investigates the characteristics of the voice which provide that acceptability; and categorises the features which lead the listener to make judgements about their vocal likes and dislikes. These subjective judgements are explored by investigating the psychological, medical, and innate features contributing to the vocal perceptions of the listener. Voice quality is related to the efficiency of the larynx and its importance to voice production; and to the various vocal disorders which can affect the broadcaster.

It becomes evident throughout the thesis that each listener receives a clear impression of the personality of the speaker through the features present in the voice. Many of these impressions however are based on stereotypes. The thesis relates these stereotypical judgements to accents, investigating their relationship to the 'BBC' voice, the 'World Service' voice, the 'ILR' voice and the 'reporter's voice'. It is shown that the listener's subjective impression of the voice and the broadcaster personality is formed by the presentational and physical aspects of voice quality.

Listener perceptions of voice acceptability are tested and discussed. The data is analysed to provide a set of dominant characteristics from which are drawn voice histograms and frequency polygons.

The result is a set of preferred voice characteristics which apply specifically to the broadcast speaker and which can be sought during the selection process.

CHAPTER ONE

VOICE QUALITY AND THE BROADCASTER'S ART

Broadcasters are a unique creation of our times - an "essential product of the electronic age" (Hyde 1979 : 5).

The problem is that their audience is scattered; but they are related to the preliterate story tellers in that they speak directly to their audiences. This makes VOICE QUALITY an important aspect of performance. It is the broadcaster's voice personality, invisible to the listener, but essential to the communication process.

Radio made it possible for one person to be heard at the same time by millions throughout the country. These voices had a great responsibility thrust on them because most of the people who listened assumed they were hearing the authentic sound of perfectly spoken English (Lloyd-James 1928 : 16).

As John Reith pointed out a few years after the BBC had begun broadcasting in Britain, "Since the earliest days of broadcasting the BBC has recognised a great responsibility towards the problems of spoken English. These are vexing but intriguing. They might have been evaded, thus leaving both general principles and particular words to chance". (Lloyd-James 1928 : 17).

Reith and those early broadcasters had the fundamental insight that the broadcaster was a most influential person. So broadcasters were from the beginning open to

criticism from every quarter because they addressed listeners from all parts of the country and walks of life.

Reith was conscious – as indeed were linguists like Daniel Jones and Lloyd-James – that this new art form could work very much for either the good or ill of the English language. Reith made it plain that there was no attempt on the part of the BBC managers to establish a uniform spoken language but it seemed desirable to adopt uniformity of principle and uniformity of pronunciation on the part of announcers (Reith 1928 : 12). The difficulty was that they wanted to even out the country's dialects and reform them upon the base of received pronunciation.

Reith described it as: "seeking a common denominator of educated speech" (Lloyd-James 1928 : 42). Today, the aim of BBC Local Radio training is very different. It is to make listeners and broadcasters realise how precious accent and dialect is to our spoken heritage.

But in those early days Broadcasting helped people rediscover the spoken language; and reminded people that speech, not print, was the basis of language. It is interesting that so much about this time – in the 1920's – influential linguists in Britain and elsewhere were developing a new approach to language. It seems significant that this was happening at or around the time that broadcasting was beginning to influence the population.

It became clear, by observation if by no other means, as people listened to this new phenomenon in their living rooms, that writing and printing were an incomplete form of our language. They showed words, but not the full range of

features of the spoken language - the rhythm, the stress, the accent, the quality of the voice which can do so much to a cold piece of prose, and vice versa. Broadcasting allowed the transmission of many ideas to people who would otherwise never have read them.

Broadcasting brought a new consciousness of the primacy of speech. It began to affect pronunciation, intonation, the structure and composition of the language like nothing had for more than 500 years. The broadcast sound became all pervasive in a way even the ancient story tellers had never been; and available to a number of listeners unimaginable to those ancient communicators.

In 1932, Hilda Matheson, one of the first BBC broadcasters said: "a generation accustomed to relate much of its thought to spoken English may question whether even our words need remodelling as well as our spelling, if they are to be adequate for new purposes and ideas". (Matheson 1932 : 54).

One of the most influential popularisers of this new concept of the language of the broadcaster - and the quality of the sound of the 'proper' broadcaster as decided by those early broadcasters, and which has had so much influence on the sound quality of voices on our radios ever since - was A. Lloyd-James, Professor of Phonetics at the School of Oriental and African Studies, London; and Honorary Secretary of the BBC Advisory Committee on Spoken English.

It had a distinguished membership and, according to Briggs (1965 : 467) at least in the early days the BBC profited from the association with it of men like Bridges, Shaw and Kipling. Over the years, Lloyd-James believed the Committee did much

to improve the standard of spoken English. "Southern announcers cannot treat the /r/ sound in the Northern manner, and very few English born speakers give to the unaccented vowels the flavour that Mr Bridges recommended. But the BBC very definitely concerns itself with checking ultra-modern tendencies in the language, and in carrying out the injunctions of the Committee with regard to the so-called purity of English vowels" (Lloyd-James quoted in Briggs 1965 : 468).

His attitude to the Broadcast Sound is evident from the very title page of his book THE BROADCAST WORD.

"The pronunciation is the actual living form or forms of a word, that is, THE WORD ITSELF, of which the current spelling is only a symbolisation - generally, indeed, only the traditionally preserved symbolisation of an earlier form, sometimes imperfect to begin with, still oftener corrupted in its passage to our time". (Lloyd-James 1935 : Foreword).

He was a significant influence on the quality of voice and the general attitude of those early broadcasters, and it is those early broadcasters - whether for good or ill - upon which all today's standards are based. Lloyd-James believed that: "Every man is both a transmitting station and a receiving station. As a transmitter he sends out speech, (ie English) on a certain wave-length (ie a certain rhythm and intonation). As a receiver he is tuned to receive his mother tongue on this wave-length and any variation in the normal wave-length will endanger reception. The easiest way to be unintelligible is to speak it on the wrong rhythm". (Lloyd-James 1935 : 86).

He believed that for the broadcaster the simple form of speech, designed for the rough and tumble of life, for the expression of our ordinary needs and desires, is a thing of short sentences, abbreviations and gestures. It is a means to an end.

So, from the earliest days some linguists were providing definitions of the announcer "sound".

An American radio executive said in 1932: "An announcer should be such a friendly voice in the house that the listener is tempted to answer him back". (Abbot and Rider 1957 : 103).

He added: "An announcer's voice must be healthy, well dressed, cheerful". (Abbot and Rider 1957 : 104).

And as Lloyd-James himself said more generally: "Wireless is making of us a nation of speech critics, and may restore good spoken English to a place of honour". (Lloyd-James 1936 : 142). The question of course was what was meant by "good spoken English". To them it meant formal, grammatical and non-neutral. Today it would mean: informal, friendly, warm and naturally accented.

Announcers became a caste of their own in those early days of broadcasting; highly educated (always from Oxbridge); about as untypical of the normal English speaker as you could possibly get. Although Lloyd-James reiterated time and time again that there was 'no such thing as BBC English', (Lloyd-James 1936 : 20), there clearly was; Southern received English from Oxbridge and the major public

schools.

It was for this reason that George Bernard Shaw thought the Committee "a ghastly failure. It should be reconstituted with an age limit of 30 and a few taxi drivers on it. The young people won't pronounce like the old Dons and Jones and James who are in touch with the coming race, are distracted by the conflict". (Briggs 1965 : 469).

The BBC in those early exploratory days had six announcers on the Home Service - so these were the people whom everyone heard for almost all the time. With the exception of a brief experimental interlude when one woman was employed, none but men held these posts. It was not until 1971 that women took a significant part in BBC sound - although not on the World Service where curiously women had been used for a very long time (on the Arabic Service since the 1930's).

All applicants for vacancies on the announcing staff were required to pass a test before the microphone, during which they were asked to read a short news bulletin, an SOS in French, and a programme of music in French, German and Italian; and, without preparation, a piece of prose. The test was listened to in another part of the building as it was being done by various officials, including at least one phonetician and linguist. They reported to the Board whether:

- the voice is suitable
- there are speech defects, however small
- the dialect of English is suitable

- the standard of pronunciation of the foreign languages is moderately good
- the candidate can read aloud intelligently

(H Matheson 1933 : 74).

Most failed; many because their English voice quality was 'not good enough'. As Lloyd-James put it, "usually it is too aggressively modern, too much like what is sometimes called 'haw-haw' - the sort of speech certain comedians love to play with. Oftentimes the candidates' speech is indistinct, suffering occasionally from those laxities of articulation which, while of minor importance in ordinary language, make seriously for unintelligibility over any but the best receiving apparatus". (Lloyd-James 1936 : 48).

Those who passed this test were taken on probation when vacancies arose. While on probation they received, in addition to regular practice, regular instruction in the technique of their work. As a memo of the day put it: "An effort is made to remove from the man's pronunciation such peculiarities of vowel and diphthong pronunciation as are likely to be resented by listeners throughout the country. A man who refers to Europe as "Yawrup" or "Yearup" is encouraged to cultivate another variant. After a period of about three months it is usually not difficult to determine, on linguistic as well as on other grounds, which men are likely to prove satisfactory announcers". (Lloyd-James 1936 : 49).

Today when we recruit broadcasters - not just announcers - we look for a natural, clear, conversational, warm, friendly voice with either a neutral accent or a clear regional accent. There must be an absence of noticeable speech defect.

All those who might be called upon to use their voice on the radio have to take a voice test (or several). "An acceptable microphone voice" is a necessity for employment.

The voice tests include a writing test which then has to be read to a pre-determined duration. Candidates also have to interview someone for two minutes.

The difference between the naturalness of the voice when asking conversational questions and when "reading" a script is often very marked. The interview tells us much more about their potential than the read piece.

Announcers have additional tests that include pronunciation and announcing record and other programmes.

The Americans of course had similar ideas - but ideas which seem to trace their origins to the original influences of the BBC.

For example NBC, one of the major American radio networks, had this to say about those becoming announcers with them:

"An announcer in the NBC is expected to average well in the following: a good voice, clear enunciation; and pronunciation free of dialect or local peculiarities; ability to read well; sufficient knowledge of foreign languages for the correct pronunciation of names, places, titles etc. Some knowledge of musical history, composition and composers; ability to read and interpret poetry; facility in

extempore speech; selling ability in the reading of commercial continuity; ability to master the technical details in operating switchboards; a college education". (NBC pamphlet 'The selection and training of radio announcers').

So there was from the beginning a well established notion that voice quality is a vital factor in the recruitment of the radio announcer – as it still is for the broadcaster.

CHAPTER TWO

DESCRIPTION AND FEATURES OF VOICE QUALITY

In this thesis, it is proposed to examine the voice quality of the broadcaster, and its reaction on the listener. This will show the relationship between the listener and broadcast speech quality. I am concerned with VOICE QUALITY, which Abercrombie describes as referring to indexical information like 'a pleasant voice' . . . 'a hoarse voice' etc.

The features of voice quality then can be said to refer to those characteristics which are present more or less all the time a person is talking. And, as Abercrombie says, "it is the least investigated of the three strands of speech". (Abercrombie 1967 : 91).

The components which make up voice quality then can be said to be of two kinds -

innate (the physical characteristics, eg bone structure etc)

medical (or controllable) -

These are within the speaker's own control and originate in various muscular tensions which are maintained by a speaker the whole time he is talking and which keep certain organs adjusted - which give a general set of the vocal tract which affects the quality of sound coming from it.

I will also be investigating the problems arising from voice quality which affect broadcast speech. The most common problems found when recruiting broadcast

speakers arise from improper use of the vocal cords and resonators; the voices are too often suffering from nasality, huskiness and lack of resonance. The end result of such problems is that the listener describes the sound as "unpleasant".

I have found listeners' reactions to be as follows:

Nasality makes the listener describe the voice as "grating".

Huskiness or excessively hoarse voice, is usually the result of laryngitis, smoker's throat, infected tonsils, sinus trouble or excessive nervous tension. Listeners complain the voice is "too raspy" or "whispery".

Lack of resonance is a great problem with broadcast voice quality. The listener describes such a voice as "thin" or "high pitched".

The Notion of Voice Quality in Literature

In the early literature quality is often used to refer loosely to all the specific attributes of sound, for example Ogden lists as 'qualities': "pitch, intensity, duration, brightness, octave-quality, vocalic quality, and intensity". (Ogden 1924 : 18). G E Arnold gives a different list of basic vocal qualities: "pitch, loudness, timbre, vocal range, registers, vocal styles and voice type". (Arnold 1957 : 47).

QUALITY may also be given a more restricted definition referring to a single, identifiable, conventionalised aspect of sound selected from the whole range of attributes which exist (Crystal 1969 : 102).

'Quality' is also referred to as "yodelling, ventriloquism and singing" types and also "whispering and aspiration". (Luchsinger and Arnold 1965). Carrell and Tiffany refer to quality as a 'prosodic element', a single attribute of sound along with pitch, strength and duration. They see quality as "an aspect of tone which is independent of pitch, loudness, and duration; it is the remaining cue that enables us to differentiate between two tones if the other three variables are the same in both". (Carrell and Tiffany 1960 : 266).

They also use the terms 'colour' and 'timbre' as synonyms for quality. They include in voice quality – unevenness and irregular movement of the vocal folds as in "harsh" or "hoarse" qualities; additional noises as in "breathy" voice; and resonances, as in throaty, hollow or thin qualities (Carrell and Tiffany 1960 : 266).

Then too, the use of 'quality' is a synonym for 'timbre' by Sweet (1878 : 91), Heffner (1949 : 223) and Kruisinga (1914 : 39).

Early British Writings on Voice Quality

One of the first mentions of voice quality in early British works seems to be by Roger Ascham when he wrote of . . . "a voice not softe, weake, piping, womanish but audible, stronge and manlike . . .". (Ascham 1570 : 4). Writers in the seventeenth century, while never approaching even a basic general

description of voice quality quite often noted small details about voices, such as hoarseness. Wallis (1653) discussing voicing and the larynx says, "the hoarseness which often accompanies catarrh originates in the same place, hindering this vibration of the larynx and trachea". Kemp points out that the first three editions of Wallis' Grammatica Lingua Anglicanae were worded slightly differently from the sixth edition whch was the basis for Kemp's translation of Wallis and that the relevant passage in those three editions made the catarrh itself the factor hindering the vibration of the larynx, not the hoarseness accompanying it. (Kemp 1972 : 135).

Early in the eighteenth century, Maittaire wrote about the extrinsic controllable aspects of voice quality and voice dynamics: "The Voice: two things in it are carefully to be observed; what voice you have and how to use it. It may be, as to its Quantity, Great or Small. As to its Quality, Clear or Thick, Full or Slender, Soft or Harsh, Contracted or Spread, Hard or Easy to be managed, Sharp or Blunt.

The Breath is either Long or Short. The Good Qualities, as of all other things, so of its Voice are bettered with Care, and impaired through Negligence. Frequent Exercise, Temperance and Frugality conduce much to their improvement.

. . . Tis a fault of the voice to be too much stretched or rowling: the mouth is best, when it is Ready, not Precipitate; moderate, not slow . . .

Nothing can be worse than a Tone or Cant. A true Pronunciation is ever suited to what we speak. The Affections are either Real and Natural, which need no Art: or else Feigned and Put on; and in these the great Art is to be first moved with them, as if they were Real; then the Voice, as a faithful Interpreter of the Mind, will convey what impressions it has received from our Soul, into

those of the Judges or Auditors. It is capable of as many changes as our Minds; Easy in Cheerful Matters; Erect and Firm, when we strive as for the Mastery; Fierce, Harsh and Thick in Anger; Soft, in Begging, Grave, in Persuading; Short, in Fear; Strong, in Exhortation or Narration, Even, between Acute and Grave; in short, it riseth or falleth, as the Affections are raised or composed". (Maittaire 1712 : 239–240).

In his ESSAY ON ELOCUTION, Mason begins with some comments on using conversational voice quality in public speaking and reading aloud:

"To avoid all kinds of unnatural and disagreeable Tones, the only rule is to endeavour to speak with the same ease and freedom as you would do on the same subject in private conversation. You hear no body converse in a Tone; unless they have the Brogue of some other country, or have got into a habit (as some have) of altering the natural key of their voice when they are talking of some serious subject in religion. But I can see no reason in the world that when in common conversation we speak in a natural voice with a proper accent and emphasis yet as soon as we begin to read, or talk of Religion, or speak in publick, we should immediately assume a stiff, awkward, unnatural Tone. If we are indeed deeply affected with the subject we read or talk of, the voice will naturally vary according to the passion excited; but if we vary it unnaturally, only to seem affected, or with a design to affect others, it then becomes a Tone and is offensive". (Mason 1748 : 17–18).

Mason later on discusses what is more likely today to be called voice quality:

"The voice must express, as near as may be, the very sense or idea designed to be conveyed by the emphatical word; by a strong, rough and violent, or a soft, smooth and tender sound. Thus the different passions of the mind are to be expressed by a different sound or tone of voice. LOVE, by a soft, smooth, languishing voice; ANGER, by a strong, vehement and elevated voice; FEAR by a dejected, tremulous, hesitating voice; COURAGE, hath a full bold, and loud voice; and perplexity, a grave, steady and earnest one. Briefly, in EXORDIUMS the voice should be low; in Narrations, distinct; in Reasoning, slow; in Persuasions, strong; it should thunder in ANGER, soften in SORROW, tremble in Fear and melt in Love". (Mason 1748 : 25–26).

Bayly distinguishes clearly between intrinsic and extrinsic voice features:

"The most remarkable ill tones are perhaps such as arise from what is called speaking through the nose and in the throat. Of gutteral tones there is great variety. Some are like the bleating of a sheep, or noise of a raven; some resemble the croaking of a frog, and quacking of a duck: All of which seem to be owing to some trick of compressing the wind pipe in such a manner as to confine the tone in the throat instead of letting it pass freely out. The voice is also often hurt by another trick; that of shutting the teeth, and confining the tone within the mouth instead of opening the teeth and lips properly so as it bring it out with fulness and rotundity". (Bayly 1758 Pt3 : 180–181).

Thomas Sheridan felt that vocal means communicated strong emotions, and has distinguished very clearly between language and 'tones':

"Every one will at once acknowledge that the terms anger, fear, love, hatred, pity, grief, will not excite in him the sensations of those passions, and make him angry or afraid, compassionate or grieved; nor, should a man declare himself to be under the influence of any of these passions, in the most explicit and strong words that the language can afford, would be in the least affect us, or gain any credit, if he used no other signs but words. If any one should say in the same tone of voice that he uses in delivering indifferent propositions from a cool understanding, "Sure never any mortal was so overwhelmed with grief as I am at this present" . . . Sure no one would feel any pity for the distress of the speaker . . . He makes use of words only, as the signs of emotion, which it is impossible they can represent; and omits the use of the true signs of the passions, which are the tones, looks and gestures". (Sheridan 1762 : 100–102).

Herries comments again on voice quality:

"Others who are not accustomed to expel their breath with the same freedom through the nostrils as through the mouth, pronounce the three nasals /m/, /n/, /ng/, very imperfectly, which produces that dull disagreeable sound, which we call sneveling or speaking through the nose. The latter term is entirely wrong, because it is the defect of NOT speaking thro' the nose which occasions that impropriety in articulation. Sometimes this habit arises from an excess in taking snuff, which ought always to be avoided by the publick speaker or singer". (Herries 1773 : 55–56).

Herries, later, has a warning on voice quality which might be heeded by broadcasters of today:

"The young gentleman . . . begins to speak FINE. He minces out his words, and warbles his modulations like an Italian singer. His voice as he grows up retains the same unmanly quality. He dare not, he cannot exert it. He speaks upon the most important, the most alarming subjects, with the delicate tone of a waiting-gentlewoman. Let this effeminate mode of education be banished from our land". (Herries 1773 : 99-100).

It is interesting that he was speaking about "Court" speech, the foundations of todays "RP". For hundreds of years writers have been considering different vocal qualities in this way. Herries also refers to the relationship between voice quality and pitch:

"The true criterion of speaking is, when each of the articulate sounds is uttered forcibly and distinctly. But we find that whenever we go beyond our natural pitch, we lose the command of articulation. Our tones are weak, shrill, and broken. Every excess of passion has a tendency to straiten the glottis and render the voice more acute. This we may observe in the sharp, hurrying voice of anger, the plaintiff wailings of grief, the clear-gliding warblings of joy. If, therefore, a publick speaker is deeply animated with his subject his voice insensibly ascends, and sometimes is carried to such a pitch that he loses all command of it. Cicero informs us, that when Cracchus, an eminent pleader at Rome, was in the vehement parts of his discourse, his voice became too high and squeaking. To remedy this inconvenience, he placed a servant behind him, with a pitch-pipe in his hand, who, at such a time, sounded a note in unison with the medium of his voice, on which he immediately descended to his usual sweetness". (Herries 1773 : 152).

By Sweet's time, attempts to set up a voice quality classification on a phonetic basis were becoming frequent although none of them were comprehensive. Sweet classified voice quality as 'clear', 'dull', 'harsh', 'nasal', (Sweet 1877 : 97–99); and expanded this list in his Primer of Phonetics. He then felt that voice had these qualities: "clear, dull, nasality, wheeziness, gutturality". (Sweet 1890 : 69). Sweet believed that voice quality is susceptible to systematic description, when he wrote that "besides the various modifications of stress, tone, etc, the quality of the voice may be modified through whole sentences by various glottal, pharyngeal and oral influences" (1877 : 97). He stressed this again in his HISTORY OF LANGUAGE.

". . . the general quality of the voice is likely to be modified by changes in the shape of the throat and mouth passages, which give rise to the various qualities of voice known as clear, dull, muffled, nasal, wheezing, strangled voice . . .". (Sweet 1890 : 136).

And he distinguished between intrinsic and extrinsic features. He believed that voice quality modifications "must be carefully distinguished from those which are due to peculiarities in the organs of speech themselves. Thus defects in the palate may cause permanent nasality (together with a peculiar hollowness of sound) an abnormally large tongue, gutturality etc. All of these pecularities are inseparable from the individual". (Sweet 1877 : 99).

In the nineteenth century there began, therefore, to appear explicit, general schemes for describing voice quality. This was particularly so in the United States by the efforts of the American elocutionists. (Laver 1975 : 64).

The American Elocutionists

The first was James Rush. In THE PHILOSOPHY OF THE HUMAN VOICE (1859), he gave a physiological foundation and explanation of vocal theory which put an entirely new emphasis on the study of speech.

He divided vocal sound into the following constitutents:
"quality, force, time, abruptness, pitch". (Rush 1859 : 67).

And on the subject of voice quality:
"The thirty-five elements of speech may be heard under four different kinds of voice; the natural, the falsetto, the whispering, and that improved quality, to be presently described under the name of the Orotund". (Rush 1859 : 138).

He then goes on to describe these qualities:
"The natural voice is said to be produced by the vibration of the glottis. This has been inferred, from a supposed analogy between the action of the human organ, and that of the dog, in which the vibration has been observed and on exposing the glottis during the cries of the animal; and from the vibration of the chords, by blowing through the human larynx, when removed from the body. The conclusion is therefore probable, but until it is seen in the living function of the part, or until there is sufficient approximation to this proof by other means, it cannot be admitted as a portion of exact physiological science". (Rush 1859 : 139).

Rush describes 'Falsetto' as:

"a peculiar voice, in the highest degrees of pitch, beginning where the natural voice breaks, or outruns its compass. The piercing cry, the scream, and the yell are various forms of the falsetto . . .. The striking difference in quality, between the natural and the falsetto voices, has created the idea of a difference in the respective mechanisms, not only of their kind of sound, but likewise of their pitch. It has been supposed, that the falsetto is produced at the "upper orifice of the larynx, formed by the summits of the arytenoid cartilages and the epiglottis": and the difficulty of joining it to the natural voice, which is thought to be made by the inferior ligaments of the glottis is ascribed to the change of mechanism in the transition. On this point I have only to add that the falsetto . . . may be brought downward in pitch nearly to the lowest degree of the natural voice . . . and since the natural voice may by cultivation be carried above the point it instinctively reaches, it suggests the inquiry, whether these voices may have a different agency of mechanism . . . rather than by an extension of the powers of the same organisation". (Rush 1859 : 142).

His description of Orotund is:

"The voice is not perhaps in its mechanism, different from the natural; but is rather to be regarded as an eminent degree of fulness, clearness and smoothness in quality; and this may be either native or acquired". (Rush 1859 : 143).

Amongst more recent attempts to characterise voice quality, four treatments are of interest, those of Trager (1958), Fairbanks (1960), Abercrombie (1967) and Crystal (1969).

Voice qualities for Trager refer to the different phonetic parameters which can be used for paralinguistic communication. Some of them, such as 'pitch range' and 'tempo' would fall into what Abercrombie called voice dynamics. Trager used the term 'voice set' which he described as involving the physiological and physical peculiarities resulting in the patterned identification of individuals as members of a group and as persons of a certain sex, age, state of health, body build, rhythm state, etc. (Trager 1958 : 4).

Fairbanks has four types of voice quality: harshness, breathiness, hoarseness and nasality. He says that the first three are 'defects of tone generation' and that 'nasality' is a 'defect of transmission'. (Fairbanks 1960 : 170). "Harshness is defined as irregular, aperiodic noise in the vocal fold spectrum. A common cause is excessive laryngeal tension. Harsh speakers tend to initiate phonations abruptly, with obtrusive glottal attacks". (Fairbanks 1960 : 175-176). He describes 'breathy quality' as an inefficient laryngeal vibration: "In the co-operation of normal voice quality the vibrating vocal folds approximate in the midline once per cycle, closing the glottis and interrupting the airflow. In breathy quality the vocal folds vibrate, but the intermittent closure fails and the airflow is continuous. The firmness of the basic glottal closure is insufficient for a given airflow. Breathy quality is almost invariably accompanied by limited vocal intensity . . . and . . . low pitch. Vocal attacks tend to be aspirate, in contrast to the glottal attacks of harshness". (Fairbanks 1960 : 179).

Fairbanks describes 'hoarse quality' in a way which suggests that he believes that hoarseness can have, superimposed on its basic intrinsic condition, a controllable extrinsic element as well. He writes:

"Universally familiar as a symptom of acute laryngitis, hoarseness combines the features of harshness and breathiness . . .. The harsh element predominates in some hoarse voices, the breathy element in others and the same kind of variations may be heard within a given voice. If persistent hoarseness is your problem . . . if you have not already done so, seek medical advice". (Fairbanks 1960 : 182–3).

On nasality:

"Excessive nasality, or hypernasality is one of the most common voice problems, but mild nasality is heard in many good voices. It may be a virtue, in fact, although the evidence is inconclusive . . .. Nasality is imparted to the vowel spectrum by lowering the velum and coupling the nasal cavity into the system. . .. Constriction of the oral channel (above or behind the tongue between teeth and lips) tends to increase the relative prominence of nasality in the spectrum. Excessive nasality usually accompanies such organic conditions as velar insufficiency, velar paralysis, cleft velum or palate, and anterior nasal obstruction". (Fairbanks 1960 : 172).

Abercrombie gives a description of voice quality – even though he warns that much about voice quality is not understood.

"the term voice quality refers to those characteristics which are present more or less all the time that a person is talking: it is a quasi–permanent quality running through all the sounds that issue from his mouth". (Abercrombie 1967 : 91).

In this context, as he points out, 'voice' has a much broader meaning than its technical phonetic sense, having a "much more general meaning" than the quality of the sound resulting from the vibration of the vocal folds. (Abercrombie 1967 :

91).

This wider use of 'voice quality' is of course the usual, traditional sense of the term. Abercrombie distinguishes between uncontrollable and potentially controllable components. He divides the uncontrollable components into anatomically derived permanent features and more ephemeral aspects such as result from laryngitis. The controllable features he then attributes to the effect of "various muscular tensions which are maintained by a speaker the whole time he is talking, and which keep certain of the organs of speech adjusted in a way that is not their relaxed position of rest. These adjustments give a kind of general 'set' or configuration of the vocal tract, which inevitably affects the quality of sound which issues from it". (Abercrombie 1967 : 92–93).

He highlights four different adjustments:

1. of the lips and tongue, which he says gives a continually maintained secondary articulation;
2. of the velum and pharynx;
3. of the larynx, giving different phonation types;
4. of the vertical position of the larynx.

(Abercrombie 1967 : 93).

The other recent contribution to the description of voice quality is in Crystal (1969 : 97–125), who describes voice quality in three ways:

1. "that relatively permanent, non-institutionalised, idiosyncratic, background which accompanies a person when he speaks and is the main source of our ability to recognise personal identity vocally. This . . . is normally completely

uncontrolled . . . and we learn to discount a speaker's voice quality as contributing nothing to the meaning of language as soon as we have recognised it for what it is - something idiosyncratic to the speaker, as opposed to something shared by other speakers in the speech community". (Crystal 1969 : 100)

2. "the permanent 'background' speaking characteristic of the voice against which conventional linguistic patterns are identified". (Crystal 1969 : 104)
3. "the permanent non-segmental idiosyncratic factor in a person's speech". (Crystal 1969 : 126).

And he says:

"Voice quality is thus the permanently present person-identifying 'background' vocal effect in speech, constituted by the same set of acoustic-physiological parameters as constitute speech, but being distinguished from speech by a different set of parametric values which are never utilised for purposes of communication. Voice quality is readily distinguishable from linguistic contrasts on almost all occasions by its being (a) contextually random, ie the occurrence of voice quality does not correlate with non-physiologically determined categories (linguistic or non-linguistic) and consequently (b) wholly statistically predictable - a fact which would hold for the component parameters of voice quality as well as the total phenomenon". (Crystal 1969 : 124-125).

Voice Quality Description

Laver says that any given utterance contains not only linguistic information but also a great deal of information for the listener about the characteristics of the speaker

himself. (Laver 1968 : 43).

Laver argued that "the basic philosophy of phonetic analysis is that composite articulatory events are broken down into their component parts and each independent physiological component is separately labelled. Thus the sound at the beginning of the English word 'fat' is described not as 'a sort of /f/ sound' but as a pulmonic, egressive, voiceless, labiodental fricative with velic closure, with each important physiological component analytically isolated". (Laver 1968 : 44).

Laver believes that voice quality is similarly susceptible of description in terms of components, and that general phonetic theory can supply the concepts necessary for a physiologically meaningful description of each of the components. This idea is also held by Abercrombie, Garvin and Ladefoged and Fairbanks. Voice quality is the quasi-permanent identity of a speaker's voice, derived from two main sources: the anatomical and physiological foundation of a speaker's vocal equipment; and the long term muscular developments acquired idiosyncratically or by social imitation and now unconscious of the speaker's larynx and supralaryngeal vocal tract. (Laver 1968 : 44).

The anatomy and physiology of a speaker determine the width of the potential range of operation for any voice quality feature, and the long-term habitual settings of the larynx and the vocal tract restrict this feature to a more limited range of operation. (Laver 1968 : 44).

For example: "a man's voice may be physically capable of spanning a wide pitch range; in normal speech however he habitually selects a more restricted range

within the total possibilities. Basic anatomy and physiology thus determine the possible extremes, and voluntary muscular settings determine habitual ranges between those extremes". (Laver 1968 : 44).

Both these sources of voice quality can transmit indexical information, although of different sorts.

There has to be a distinction though between those physical attributes which are universal - which occur for every speaker - and those which are limited in application, ie affecting only a small section of the population.

Voice quality features can classify all speakers in terms of size, physique, sex and age. These features have given rise to a universal series of stereotypes in radio voice images. There seems, for example, to be a general correlation between physique and the size of the person's larynx. A deep-pitched, loud voice will conjure up an image over the radio of being a strong male.

There is, however, one class of voice where the general correlation does not apply but where listeners nevertheless seem to be able to reach successful conclusions about physical attributes. That is where the formant range of the voice is radically discrepant with the fundamental frequency, (eg with dwarfism) and yet, when I asked subjects for a description of voice quality associated with dwarfism, the usual description was "high and squeaky".

The listener also forms accurate impressions from voice quality of a speaker's sex and age. (Mysak 1959; Ptacek and Sander 1966; Shipp and Hollien 1969;

Tarneaud 1941; Zerffi 1957). Deviations from 'normal' expectations about the correlation between a speaker's voice and sex or age have a powerful effect on impressions the listeners have of a broadcaster.

Gender Differences

The most obvious voice quality feature is "sex". The speech of men and women differs in many ways.

The sex distinctions involve certain specific language features, such as phonology, grammar and vocabulary. There are other differences, such as the style and structuring of conversational patterns etc.

Women's speech is usually said to be more polite, correct and proper than men's speech. They tend to stick to the rules of politeness whereas males stick to the rules of direct speech. Women tend to use polite, cheerful patterns of intonation. (Brend 1971). The evidence that women use more correct speech forms is at the phonological level. Trudgill suggests that the prestige forms are used by women because they try to compensate for their social subordination by signalling their status by linguistic methods - and men covertly by non-prestige use. (Trudgill 1972 : 180).

Haas indicates that the differences in male/female speech are common to many different cultures. She said that most differences appeared to be either of vocabulary or pronunciation. (Haas 1944).

These differences are very marked in some languages (Flannery 1946; Frazer 1900; Haas 1944). The differences in English are far more subtle, but they do occur. Several studies have found that women adhere to the prestige forms of their speech more than men. However, the variations in the pronunciations are not solely sex-differentiated but are related to personality, status, mood, formality etc. (Fischer 1958).

Using the data of speakers of Urban English in Norwich, Trudgill showed that "women, allowing for other variables such as age, education and social class, consistently produce linguistic forms which more closely approach those of the standard language or have higher prestige than those produced by men, or alternatively, that they produce forms of this type more frequently". (Trudgill 1972 : 180). He offers several explanations for these findings:

1) women are more status conscious than men, and are therefore more aware of the social significance of linguistic variables. Their insecure and subordinate social position makes it 'more necessary for women to secure and signal their social status linguistically and in other ways'. Men can be rated socially by their occupation, by what they do, whereas women are rated on how they appear, hence they rely on other signals of status such as speech.

2) Working class speech and culture have connotations of masculinity because of its association with roughness and toughness, whereas features such as refinement and sophistication are considered to be desirable feminine characteristics. Trudgill's study was concerned with how people reported their pronunciation. He tested the variables /ju/ as in 'tune'; /io/ in 'ear'; /o/ in 'road' and /ei/ as in 'gate'. He found that for each of these variables, more women than men reported using the prestigeous pronunciation (RP) more

frequently than they actually did, and more men reported using less prestigeous forms than they actually did. Trudgill explained this finding by saying that for 'Norwich men working class speech is statusful and prestigious'. Age as well as sex plays an important role in affecting the choice of phonetic variants. Thus males of all ages and females under 30 valued non-standard Working Class speech more than females over 30. (Trudgill 1972 : 150-152).

In a study of one American community, Levine and Crockett showed that it was particularly the middle class women who led the community toward 'the national norm'. (Levine and Crockett 1966 : 98).

Crystal says that certain types of voice quality correlate with:

a) sex (eg the correlation of effeminancy in English with lisping)

b) age (eg 'old', 'young' voices)

c) status (eg the social identity of the speaker or listener)

d) occupation (eg the tone of voice attributed to people such as broadcasters). (Crystal 1971).

The 'sex' factor in voice quality has often been used as an excuse for non-employment of women broadcasters. Such reasons have been given to me as: "distracting to the message", "too much like my wife", "too high-pitched to understand". Women likewise have shown a marked reluctance to relate to many female voice features.

The fact that women have higher-pitched voices than men has been offered as an explanation as to why in the United States few women are employed as broadcast

reporters. "Often the higher-pitched female voices could not hold listeners' attention for any length of time, while the lower-pitched voices were frequently vehicles for an over-polished, ultra-sophisticated delivery that sounded phoney . . . Women's delivery . . . is lacking in the authority needed for a convincing newscast". (Kay 1972 : 19).

Several years ago I was told by the Editor of BBC World Service News that he only approved of women newsreaders when their voices were deepish. He said this was because audience research and his own experience showed that listeners thought of deep voices as 'authoritative' and believable'.

I did a short listening exercise with the four women currently used on World Service as news readers. In every case they felt - in discussion with me afterwards - that they had to "force their voice down" to sound acceptable. The result was an "unpleasant" voice quality which "sounded forced and harsh". In each case they preferred their voices when I asked them to sound "more natural" and "conversational".

In my experience good female voice quality is as acceptable to the listener as male - sometimes more so. But only when they use natural pitch and conversational tone.

It is possible to identify the speech of adult male and female speakers. But it is not apparent whether the factors that enable listeners to identify a voice as either male or female are dependent on 'anatomical differences' or 'whether culturally prescribed factors also play a part in defining the norms for male and female voice quality'. (Sachs et al 1973 : 74).

A number of writers have commented on the acoustic correlates of male and female voices. Apart from the obvious tendency for females with smaller vocal dimensions to have higher ranges of fundamental frequency the most frequent comment is to do with the spectral correlates. Fant says that while average spectra for speakers of both sexes vary with the language spoken there is a tendency for a spectral minimum to occur at about 900 Hz for males and 1000 Hz for women. (Fant 1973 : 14).

Fant gives a list of acoustic values for average male subjects and compares them with those for females and children. He writes that:

"The natural range of variation of the voice fundamental frequencies for non-nasal voiced sounds uttered by average male subjects is as follows:

F0 - 60-240 Hz

F1 - 150-850 Hz

F2 - 500-2500 Hz

F3 - 1500-3500 Hz

F4 - 2500-4500 Hz

Females have on average one octave higher fundamental pitch but only 17% higher formant frequencies. (Peterson and Barney (1952); Fant (1973)). Children about

10 years of age have still higher formants, on the average 25% higher than adult males, and their fundamental pitch averages 300 Hz. The individual spread is large". (Fant 1960 : 242).

Fant later amended this position when he said:

"The common concept of physiologically induced differences in formant patterns comparing males and females is that the average female F-frequencies are related to those of the male by a single scale factor inversely proportional to the overall vocal tract length (ie female F-patterns about 20% higher than male). This . . . simple scale factor rule has important limitations". (Fant 1973).

He points out that the deviations from the rule are obscured if an average is taken over all vowels, and says that female-male relations are:

"typically different in (1) rounded back vowels, (2) very open unrounded vowels, (3) close front vowels. The main physiological determinants of the specific deviations from the average rule is that the ratio of the pharynx length to mouth cavity length is greater for males than for females and that the laryngeal cavities are more developed in males".

"The scale factor relating average female formant frequencies to those of men is a function of the particular class of vowels. The female to male scale factor is of the order of 18% averaged over the whole vowel system . . .. The scaling of childrens data from female data comes closer to a simple factor independent of vowel class". (Fant 1973).

Sachs argues that "when adult male and female voices are phonetically differentiated the most obvious factor is pitch, or fundamental frequency of

phonation". (Sachs et al 1973 : 74). The lower fundamental frequencies of the male are a consequence of secondary sexual dimorphism (Negus 1949; Kirchner 1970). The male larynx is enlarged and the vocal cords become longer and thicker. Although pitch is the most obvious factor that distinguishes between male and female speakers, recent studies have also shown that it is possible to differentiate between adult males and females when the fundamental frequency is eliminated.

Schwartz investigated the ability of listeners to identify speaker sex from isolated productions of /f/, /θ/, /s/, /ʃ/. Nine females and nine males recorded the four fricatives in isolation. The material was presented through a loudspeaker to ten listeners for sex identifications. The results indicated that the listeners could identify the sex of the speaker from /s/ and /ʃ/, but not from /f/ and /θ/. Spectrographic analysis of /s/ and /ʃ/ showed that "the female spectra tend not only to be higher in frequency than the male but parallel to them as well". (Schwartz 1968 : 1179).

Ingemann conducted a similar experiment in which he investigated the ability of listeners to determine the sex of the speaker on hearing voiceless fricatives. Eight men and eight women produced the fricatives (θ, f, s, ʃ, c, x, X, h). Five men and five women served as listeners. The results showed that a speaker's sex was more easily identified when he produced (h, X, x) than when he produced (θ, f). Ingemann confirmed Schwartz's findings that (s) and (ʃ) had spectral peaks higher in frequency when spoken by females than by males and added that 'the other highly identifiable fricatives (h, X, s) have spectral peaks in a format-like structure, thereby carrying information on the dimensions of the vocal tract. As the portion

of the vocal tract in front of the constriction diminishes, so does the identification of the speaker's sex. This finding, Ingemann says, explains why (h), which involves the whole vocal tract is the most highly identifiable. The back velar (X) is more identifiable than the mid velar (x). (Ingemann 1968 : 1145).

Schwartz and Rine made another investigation of whispered vowels. They hypothesized that a whispered vowel, though lacking the conventional source spectrum, would retain sufficient information to permit a correct sex identification. Five males and five females stood individually in a sound-proofed room and sustained the vowels /i/ and /a/ in a whisper for 3 secs. The utterances were recorded and presented to a group of eight listeners for sex identification. The results revealed that listeners are able to identify the speaker's sex from isolated productions of whispered vowels. The writers say that 'while the male and female spectra of each vowel show basically similar configurations, the spectral peaks for the female vowels in each instance occur at higher frequency positions than those for the males'. (Schwartz and Rine 1968 : 1737).

According to Fant's calculations the universal tendency in formant differences between men and women "conform with anatomical constraints of the average female vocal tract". (Fant 1973 : 93). The main differences, he says, is in the pharynx length.

Mattingly showed that the acoustic differences that exist in the distribution of the formants are greater than one would expect if the sole difference is the variation in the vocal tract size between men and women. He correlated the distributions of the formants of each of the ten vowels and expected it to be high, given the

hypothesis that differences in formant frequencies are due to variations in the vocal tract size. Contrary to what he expected the correlations were low. And the separation between male and female distributions for some vowel formants is much sharper than what is expected from variations in individual vowel tract size.

Mattingly concludes by saying that "the variation within class must by stylistic, not physical; and the difference between male and female formant values, though doubtless related to typical male and female vocal tract size is probably a linguistic convention". (Mattingley 1966 : 1219).

Fant compares male and female formant patterns and relates the average female formant frequencies to those of the male by a factor proportional to the overall vocal tract length.

He says: "Thus on the average the female F-pattern (F1 F2 F3 etc) is said to be scaled to about 20% higher frequencies than the average male F-pattern". (Fant 1973 : 84). The scale factors vary not only with the speaker, but also with the specific vowel and the specific formant. "The origin of these non-uniform variations lies in the non-uniform scaling (ie different scale factors for mouth and pharynx) of the female vocal tract with respect to the male vocal tract". (Fant 1973 : 168).

CHAPTER THREE

ATTRIBUTES OF VOICE QUALITY

Medical Attributes

The concept of 'voice' carries many associations; it conveys emotions ('angry', 'sarcastic') or a projection of personality ('young', 'depressed').

The largest grouping of these attributes is Medical. This covers such aspects as abnormalities of anatomy or physiology, the physical effects of trauma or disease, the noxious effects of alcohol, drugs or smoking, transient effects of endocrinal changes, signs of fatigue and others. It also includes the more transient medical states which can be indicated by voice quality when the speaker is suffering from conditions of local inflammation of the vocal organs, as in laryngitis, pharyngitis and tonsillitis, and from nasal catarrh, adenoids or a cold.

Other transient factors in voice quality derive from changes in the copiousness and consistency of the supply of lubricating mucus in the larynx and in the characteristics of the mucal lining covering the actual vocal folds, affecting the efficiency of their vibration.

Examples of transient states which can become relatively permanent, and which can be detected in broadcasters' voice quality - and so are important for their profession - are the effects of alcohol and hot tobacco smoke. In excess these tend to damage the vocal folds. "Whisky voice" or "Gin and midnight" voice, are

popular labels for the deep-pitched, harsh whispery voice that tends to signal one result of excessive consumption of alcohol. The phrase "smoker's larynx" is a fairly frequently used medical label for the pathological effect of excessive hot, toxic tobacco smoke on the vocal folds.

Also to be watched by broadcasters is the ability of listeners to relate voice quality to perceptions of tiredness. In extreme fatigue, the mode of phonation becomes inefficient, resulting in whispery voice or a lax breathy voice.

Psychological Attributes

One of the most important aspects of voice quality for the successful radio broadcaster is the relationship between the listener and the psychological attributes the voice quality conjures up in the minds of the listeners.

From discussion with listeners over many years it is clear that listeners tend to draw pictures of aggression and harshness from harsh voices; from breathy voice a more 'mole-like' person. This idea that personality characteristics are correlated with voice quality has been tested scientifically by many writers, mainly in the medical and psychological fields. (Allport and Cantrill 1934; Brody 1943; Cohen 1961; Diehl, White and Burle 1959; Eisenberg and Zalowitz 1938; Fay and Middleton 1939b 1940; Goldfarb, Braunstein and Lorge 1956; Kramer 1964; Mallory and Miller 1958; Moore 1939a 1939b; Moses 1954; Pear 1957; Sapir 1927; Starweather 1964; Taylor 1934).

In general they tend to agree that broad correlations do exist. And from my observation it is obvious that radio listeners, who cannot see the face behind the voice, make psychological and physical judgements about the voice.

But, as Laver points out, one major obstacle in the way of reliable scientific statements has been the lack of any standard system for labelling the voice qualities and an inability to specify more than a fairly crude quantification of the voice quality variables which act as the experimental variables. For example, how can we be sure that people judge a breathy voice quality in the same way? And certainly I believe that people differ in their reaction to breathy voice quality.

I asked a group of 10 people their individual reaction to a tape recording of "Sophie" in the BBC serial "The Archers". Six described the voice quality as "sexy"; two said it was "weak and a silly girl"; and two said it was "sensible". I asked the producer for her description of what she wanted this voice quality to convey and she said: "kind, gentle, loving, artistic".

Social Information in Voice Quality

Laver says: "Social behaviour is largely learned behaviour. Because of this clues in voice quality to social information must lie mainly in those features of voice quality which can be acquired by imitation. In this sense a particular accent often has a special voice quality associated with it and the voice quality can thereby act as a partial clue to any social characteristics that are typical of speakers of that accent". (Laver 1968 : 50).

Advertisers use a Scottish accent to convey a sensible, thrifty person; a Somerset accent for "a country sound"; Yorkshire to convey "no-nonsense, down to earth".

Thus voice quality may serve as an index of features of regional origin, social status, social values and attitudes, and profession or occupation where these features characterise speakers of the particular accent in question.

This occurs with relation to nasality which is often characteristic of accents of a particular region. Similarly velarisation acts as a regional marker in Liverpool or Birmingham speech.

It can happen in broadcasting, as well as in other clearly defined social groupings, that there is a conscious affectation of a speaking style. Luchsinger and Arnold comment:

"The old speech pathologists, notably H Gutzman and Nadoleczny quoted examples of habitually nasal speech among many Prussian Imperial Guard lieutenants, and the widespread nasality among priests and pastors of the eighteenth century of whom it was said . . . for the sake of humility, they affect nasality". (Luchsinger and Arnold 1965 : 666).

I asked the producer of the radio serial "David Copperfield" for a single description of the voice quality of Uriah Heep. "A nasal whine" was his description.

Occupation can be indicated in two ways: by an extrinsic setting voluntarily acquired as an index of membership of the particular occupation (BBC English) or by the effect of practising the particular occupation on the intrinsic vocal apparatus of the speaker, as in the case of laryngeal damage by vocal abuse. Military drill sergeants, for example, seem characteristically to have harsh voices – either as a direct result of habitual vocal abuse, or by imitation, in the hope of projecting the typical persona of their profession. According to Fay and Middleton, Pear and Herzog listeners are fairly good at guessing occupation from voice cues, because, Fay and Middleton suggest, there are occupational stereotypes. This can also be seen in specialised radio voices such as sport where there is a high degree of stereotypical relevance. A very interesting example is the voice of a native Sheffield speaking sports reporter who has a combination of harshness, nasality and vocal loudness which grates unpleasantly and is accentuated by the microphone. He is not a popular broadcaster with other broadcasters because of the nasality of his voice production – but he is extremely popular with the listeners, not because of how he sounds; but because of his authoritative local knowledge, which, according to listeners, masks his 'unpleasant' vocal attributes.

"We all act, as listeners, as if we were experts in using indexical information in voice quality to reach conclusions about physical, psychological and social attributes of speakers" (Laver 1968 : 50).

Social status often denotes indexical labels, and the vocal correlate is usually the whole amalgam of the speaker's accent. Indexical labels of this sort include 'upper-class', 'middle-class', 'working class' and possibly such terms as 'superior'. Educational status labels often carry a connotation of social class, when people

speak of 'an educated voice' or 'an illiterate voice'; and there is the further possibility here that the aspect of vocal behaviour to which implicit reference is being made may well be aspects of higher-level dialect choices as well as of features of accent.

Psychological and social conclusions about voice quality run a higher risk of error because of their culturally-relative nature, and because they derive from the more variable strand in voice quality, the extrinsic settings as opposed to the invariant intrinsic aspect (Laver 1968 : 51).

Indexical labels denoting a profession, particularly when used as a disparaging comment on the sound of the speaker's voice, seem often to be concerned with features of voice dynamics and with extrinsic aspects of voice quality. Examples are: a lecturer's voice, a politician's voice, a schoolteacher's voice, a sergeant major's voice, a Radio 3 newsreader's voice, a commercial newsreader's voice.

There are also areas where social and psychological indexical labels seem to come together, where comment is made about the nature of the interaction in which a speaker is participating. The first group concerns the interactional status of the speaker, in his relationship with the listener. Adjectives for voices in this circumstance would include such items as 'condescending', 'flattering', 'grovelling', 'patronising', 'smarmy', 'whining' and 'superior'.

Another category concerns the type of interaction involved between speaker and listener, but still with the emphasis on the speaker, in labels such as 'the radio or broadcasting or newsreading voice'.

The third category shifts the emphasis to the effect of the voice on the listener. The listener draws conclusions about the characteristics of the speaker, so that in a sense all indexical labels imply an effect on the listener. Austin (1962 : 101) calls this a 'perlocutionary effect'. Labels for such voices would be 'annoying, boring, calming, frightening, interesting, persuasive, soothing, soporific'.

Indexical labels for psychological characteristics of a speaker fall into two main groupings - those that concern relatively short-term aspects of psychological states, in their communication of mood or attitude and those that concern longer-term aspects of personality. It does seem that the personality of a broadcaster - an unseen speaker - may be judged by the listener not only on the basis of choices of vocal behaviour but also possibly to some extent on physical, biological features over which he has no possibility of control. For example, a man with a long vocal tract and large vocal folds, with a correspondingly deep-pitched bass voice with low formants may well have attributed to him personality characteristics of mature authority that have little in common with the actuality of his psychological make-up purely because of our cultural stereotypes of 'authoritive' voices. This of course has vital implications for the best type of voice quality for the broadcaster, even though he may be only 17 years old and 5 feet tall, the unseen voice - the vocal personality - says different.

Relationship of Vocal Characteristics to Personality Perception

Certain voices are stereotypes; they definitely impress listeners as being the voice of persons who might be classified (according to one or another personality type).

So broadcasters' voices elicit stereotyped judgements which may or may not be consistent with other more direct or valid assessments. David Addington carried out research to investigate the relationship of nine vocal characteristics to forty personality characteristics judged by listeners cued only by the sound of a speaker's voice. Addington took 250 tape recorded samples of a piece of writing from two male and two female trained speakers instructed to simulate seven voice qualities (breathy, tense, thin, flat, throaty, nasal, orotund) and three variations of speaking rate (normal, fast, slow) and of pitch variety (normal, more than normal, less than normal).

Two sets of data were collected. Vocal data was collected from three groups of trained judges who were asked to describe the vocal characteristics of the samples on nine seven-point, equal interval scales.

The personality data was obtained by students listening to recorded vocal samples. They described the personality of the speakers on rating blanks containing forty seven-point, equal-interval, bipolar, adjectival scales. Addington sets out a table on the reliability of the vocal ratings:

Vocal Character	Reliability
breathy	.82
thin	.88
flat	.91
nasal	.84
tense	.75
throaty	.77
orotund	.83

(Addington 1968 : 494)

Addington then formulated a second table on the reliability of the ratings of perceived personality characteristics arranged in descending order of magnitude:

Characteristic	Reliability
feminine–masculine	.94
young–old	.93
enthusiastic–apathetic	.91
energetic–lazy	.90
good looking–ugly	.90
cooperative–uncooperative	.89
unemotional–emotional	.89
talkative–quiet	.89
intelligent–stupid	.88
interesting–uninteresting	.87
mature–immature	.87

polite–boorish	.86
educated–uneducated	.86
convincing–unconvincing	.86
well adjusted–neurotic	.85
sensitive–insensitive	.83
sense of humour–no sense	.83
jovial–morose	.82
kind–cruel	.82
romantic–unromantic	.82
tall–short	.81
sophisticated–naive	.81
active–passive	.81
proud–humble	.81

(Addington 1968 : 495)

Addington then provided a detailed description of the relationship between the specific vocal characteristics simulated by the speakers and the personality characteristics ascribed to those speakers.

Breathiness: Males: increased breathiness in the voices of male speakers gave rise to increases in only two personality descriptions - speakers were rated as being younger and more artistic.

Females: more feminine, prettier, more petite, more effervescent and more highly strung while at the same time shallower.

Thinness: Males: no significant correlations revealed.

Females: increased thinness in female voices gave rise to perceptions of increased immaturity on four levels: social, physical, emotional and mental. High and significant correlations which were revealed were those which indicated increased ratings of sense of humour and sensitivity.

Flatness: Both male and females using increased flatness were perceived as being more masculine, more sluggish, colder and withdrawn.

Nasality: Increased simulation of nasality by both sexes provoked such a wide array of socially undesirable characteristics as to make the isolation of any clear cut images difficult if not impossible.

Tenseness: Males: perceived as being older and more unyielding, cantankerous.

Females: perceived as being younger, more emotional, feminine, highly strung, less intelligent.

Throatiness: Males: with increased throatiness male speakers were stereotyped as being older, more realistic, mature, sophisticated, well adjusted.

Females: perceived as being less intelligent, more masculine, lazier, unemotional, ugly, sickly, careless, inartistic, humble, neurotic, quiet, uninteresting, apathetic; females using increased throatiness might be said to appear more cloddish or oafish.

Orotundity: Males: with increased orotundity perceived as more energetic, healthy, artistic, sophisticated, proud, interesting, enthusiastic.

Females: simulated orotundity effected perceptions of increased liveliness, gregariousness, yet at the same time this voice quality was thought to reflect the personality of one who tends to be

increasingly proud and humourless.

Rate: As male and female speakers increased their rates of speaking they were perceived as more animated and extrovert.

Pitch Variety: Males: using increased pitch variety tended to be perceived as more dynamic, feminine and aesthetically inclined.

Females: increased pitch variety in the voices of females resulted in personalities being perceived as more dynamic and extroverted.

(Addington 1968 : 501-502).

Work has also been done on the effects of voice quality on communication. Diehl concluded that breathy and nasal voice quality appear to interfere with a speaker's ability to communicate information. In the case of nasality the difference, although statistically significant, is only slight. A voice free from hoarse, harsh, nasal and breathy characteristics they rated 'very good', a hoarse voice 'poor', a harsh voice 'only average' and a nasal voice 'only average'. (Diehl C, White R and Burle K 1959 : 233-237).

On the question of male and female voice quality and its relationship to vowel formant frequencies, there has been some interesting work done by Ralph Coleman.

He found that the perception of male and female voice quality is probably based on some auditory sensation of vocal pitch which is the result of a combination of acoustic cues. While the most obvious acoustic component is probably the difference in the fundamental frequency of males and females he demonstrated that there may also be a component related to the location in the frequency spectra of vocal tract resonances. These may provide (as already mentioned) a cue to the

size of the vocal tract which in turn is an indicator of the probable head and neck size of the speaker. The extent of male or female quality in a particular voice then would likely be determined by the interaction of these two acoustic cues, assuming that the perception of vocal pitch does in fact result from the combining of this information. For instance, Coleman says that a low frequency laryngeal fundamental in combination with a low frequency vocal tract resonance would likely result in a voice that would be perceived as strongly male. Other combinations would result in either a strongly female voice and ones with varying degrees of maleness or femaleness. He adds:

"Since separate physical structures determine the characteristics of the laryngeal fundamental and the vocal tract resonances it would be possible for conflicting cues to speaker sex to be present in one individual. The fact that the dimensions of both the larynx and the vocal tract are probably influenced by physical stature would tend to reduce the likelihood of this occuring but it would not prevent it. Certain individuals may owe the female quality in their voice to abnormally high pitched phonemic resonances rather than to the frequency of the laryngeal tone. Since phonemic resonances are determined by the physical characteristics of the vocal tract lowering the fundamental would be only partially effective in removing the female quality from the voice". (Coleman 1971 : 576–577).

Voice Dynamics

Abercrombie describes voice dynamics as features that are under the speaker's control and therefore can be acquired; which therefore tend to be copied from other people, and so are capable of characterising social groups as well as individuals. Typical features of voice dynamics which Abercrombie lists are the

following:

loudness

tempo

continuity

rhythm

tessitura

register

pitch fluctuation

(Abercrombie 1967 : 95).

These need to be considered since they all have a close relationship to the general voice quality characteristics of the broadcaster and his ability to communicate plausibly with listeners.

Loudness is not important in a broadcasting sense, since it is never technically good broadcasting practice to speak louder (or indeed to shout) unless for some specific reason, as in drama. In any case, the technology of broadcasting means that the quality of loudness in listener perception is not an actual dynamic but a psychological technique which changes voice quality characteristics perceived by the listener without any attendant increase of volume.

Tempo is speed of speaking - which is best measured by rate of syllable succession. This is vitally important for broadcaster-listener relationship and understanding.

Closely connected with tempo is continuity: the number of pauses in the speech stream – position, frequency, duration. The incidence of pauses, whether they are simple hesitations or whether deliberate cessations of talking for the purpose of breathing seems to be a highly idiosyncratic matter and there is much variation from speaker to speaker.

However in Broadcast speech there is a pattern of continuity which provides optimum efficiency in conveying the message.

Rhythm occurs in all human speech. It arises out of the periodic recurrence of movement, so that the listener assumes and expects that the regularity of movement will continue. The movements are the syllable and stress producing processes.

Rhythm has important implications for the listener, in broadcast speech. The listener, like the speaker, is hearing a rhythm of movement. It is also very important in training broadcasters to read in a conversational speech style.

Tessitura and Register: Every speaker has a characteristic range of notes within which the pitch fluctuations of the voice falls during normal circumstances. This is called tessitura and it can vary from person to person (someone has a 'low pitched' or 'high pitched' voice) and everyone has a tessitura which is best suited to the strength, size and condition of their vocal folds. However you can change tessitura according to certain circumstances, when talking to people nearby or a long way away. The best broadcast speaker's tessitura relates to the intimate authority used in conversational one-to-one speech, in which the pitch of the voice

used by the broadcaster creates authority and is that used in conversation rather than in public or lecturing speech.

Pitch Fluctuation: the voice constantly fluctuates while we are talking and most of the time is either rising or falling. It is not a random fluctuation but follows well defined melodic patterns which are common to the basic community in which the speaker is a part, or from which he has come.

Pitch levels do not have their own indexes, but are referred to metaphorically as 'high' or 'low' – and there are people who cannot differentiate between them, and in fact, if played a rising pitch will say its a falling one.

Pitch fluctuations is very important for communication, and is closely related to gesture. Ogden and Bloomfield describe it as 'vocal gesture' (Ogden 1935 : 28; Bloomfield 1933 : 114). It is basically our speech melody and part of the spoken form of language. It is part of the structure of sentences (intonation); and of parts of words (tone).

Pitch depends primarily on the frequency of the sound stimulus but it also depends on the sound pressure and waveform of the stimulus.

The distribution of pitch is "voice range". The collective range of all human voices is generally agreed to be between 5 and 6 octaves (from about 50–2,000 Hz); the individual physiological range which is generally agreed as being all producible tones within 2–4½ octaves. It is important for broadcasters to speak as closely as possible to their "natural pitch" when broadcasting. The tendency is

to speak in an artifically high or low pitch and this is to be avoided.

Crystal has this to say in his conclusion to his chapter on voice quality:
"Voice quality is thus a single impression of a voice existing throughout the whole of a normal utterance: it corresponds to a combination of independently varying acoustic and articulatory parameters of which the formal analysis of voice quality would thus seem to be most satisfactorily carried out using a componential approach establishing as small a number of independently varying parameters as possible . . .. It now seems generally agreed that a phenomenon of voice quality exists independently of the linguistic contrast available in a speech community, and that this quality has the main function of identifying individuals". (Crystal 1969 : 123–124).

CHAPTER FOUR

ACCENTS AND THE BROADCAST VOICE

Radio Accent

There are so many varieties of accent in the United Kingdom (not including Scotland, Northern Ireland and Wales) which play an important part in presentation on radio, both national and local.

First it is important to distinguish between a dialect and accent. Linguistically a simple distinction can be made whereby Dialect refers to differences between kinds of language of vocabulary, grammatical construction and phonology. Accent on the other hand, refers only to pronunciation. So accent can be seen as the phonetic aspect of dialect. For example, expressions and words such as "It gars ye fash", "ginnel", "Mawther" or "grouts", even though they are English will not be recognisable to all English speaking people. The first comes from rural Scotland, and means annoyance with someone or something; the second comes from Leeds and means a narrow passage between houses; the third comes from East Anglia, meaning a big, awkward girl; and the fourth from South East England meaning what is left in a tea cup. All of these are dialect expressions and are not easily understandable to everyone, because they are not part of the dialect called Standard English. On the other hand, if one of these severely dialect words (for example, 'ginnel') is given national exposure in the voice presentation of a broadcaster, then it becomes part of the Standard English knowledge, if not usage, of listeners. And this points out the importance of the usage of language on

radio. It also applies equally to the voice quality and accent. To a wide enough audience, in the right way, an inherently unpleasant (to, say, Southern ears) northern voice quality becomes acceptable and normal. Listeners then tend to forget the kind of voice they are listening to, and accept it as normal. It could be assumed that Standard English has become the most important of any present-day English class dialect. Standard English started as a London based standard back in the 15th and 16th centuries when London became the centre of all major trade and commerce, of the Church, administration, literature etc. Quirk describes it as "normal English . . . basically an ideal, a mode of expression that we seek when we wish to communicate beyond our immediate community with members of the wider community". (Quirk 1969). Standard English is used more for communication outside the family, beyond close friends and acquaintances. Dialect on the other hand is often kept nowadays for intimate circles.

There is however a cross fertilisation between the regional dialect and Standard English. Expressions and terminology used in other dialects have often been influenced by Standard English, so that even though grammatical constructions may be different, the sense is still understandable.

For example

"He run" as used in East Anglia is not really different from the Standard "He runs". And indeed, in the Norfolk local radio station, BBC Radio Norfolk, there are local presenters who would use local phrases of this kind, and whose voice quality is very different to the voice quality that would be considered acceptable in say, Sheffield, or London. Voice quality is not only highly subjective – although it must be stressed that there does appear to be a strong similarity of descriptive

language used to describe the quality of the voices played to the groups (See Chapter 7) - but regional likes and dislikes clearly played an important part in those descriptions.

By contrast, whilst Standard English exists as a dialect separate from regional dialects, this doesn't apply to pronunciation. There is no universally acknowledged standard accent for English, and in theory it is possible to speak Standard English with any regional or social accent. There is, however, one accent which only occurs with Standard English - the "English" English accent - Received Pronunciation (RP). This was the accent required of BBC announcers, hence one of its other descriptions: "BBC English". This accent has emerged as the closest nationally accepted form of speech (in England anyway), as a result of many regional and social influences through England's historical development. In the past, broadcasters considered this accent to apply in Scotland and Wales as well. Now, broadcasting is giving rise to a new phenomenon: Scottish/Welsh RP.

Status of Accents

Over the last four centuries, one type of regional pronunciation has acquired a social prestige. This has been geared to the pronunciation of the South East of England, particularly London. This came about as with the growth of Standard English due to political and commercial reasons, but particularly because of the presence in London of the Court. In 1589, Puttenham (in the Arte of English Poesie) recommended "the usual speech of the court and that of London and the shires lying about London within 60 miles and not much above . . .. Northern men, whether they are noblemen or gentlemen, or of their best clerks use an

English which is not so courtly or so current as our Southern English". (Puttenham 1589).

So the Speech of the Court acquired an ever-increasing prestige. By the nineteenth century, through extensive use in the established Public Schools, it was being seen to be the speech of the influential classes of society. Over the years it has lost its distinctively London characteristics, thus becoming social rather than regional. To be 'posh' you now had to sound 'posh'. Speech became a marker of social position.

This pronunciation, and accent, were further 'regularised' by the BBC who considered it 'the best' kind of speaking, a national example to which everyone should aspire. So powerful was the influence of the BBC that this became prevalent in other countries as broadcasting began there. In Australia, New Zealand and USA there arose an accent called 'Educated speech' - which was basic RP with a few local modifications. RP is the result of inadvertent social growth, not a conscious decision or agreement to speak in a certain defined way. But the BBC, by choosing this form of speech, gave it a seal of approval which made it the national norm. Despite this nowadays RP is not the exclusive property of any particular social level - precisely because in making it 'national' it also 'de-socialised it'.

With the levelling of society itself and as a result of broadcasting on television and radio, which exposes everyone to RP, more and more speakers from all regions were influenced by this pronunciation, sometimes for conscious social reasons, but also quite unconsciously because the radio became the accepted social norm of

authoritative speech.

Nowadays Local Radio is redressing the balance. More local voices are being heard and the same broadcasting organisation which tried to 'nationalise' the speech of the country is succeeding in doing the opposite. Radio is now accessible to ordinary people. Some opinion believes that certain accents bestow more prestige than others. Brook says "that Scottish and Irish dialects enjoy greater prestige in England, than do the dialects of the North of England, and it may be that the reason for this is that they are national and not merely regional dialects". (Brook 1963 : 81). Wilkinson suggests that there are three levels of 'accent prestige' in Britain. The 'first class accents' comprise RP, some unnamed foreign accents and forms of Scottish and Irish. 'Second class accents' he says could be the British regional accents, which may also have a heirarchy among themselves. The lowest prestige accents 'third class accents' are those from some of the large industrial towns. (Wilkinson 1965 : 17).

Status of Accents

There have been a number of empirical studies into the status and values of different accents perceived by the listeners. Giles (1970) using the matched-guise technique, presented thirteen accents to South Welsh and Somerset schoolchildren. They were told they would hear different speakers - in fact they heard the recorded voice of one male speaker in different, realistic guises. The accents were: RP, affected RP, North American, French, German, South Welsh, Irish, Italian, Northern English, Somerset, Cockney, Birmingham. The subjects then rated the accents for prestige.

These subjects showed some accent loyalty, in the sense that each group reacted more favourably to its own local accent than did the other regional group. They did, however, attribute more prestige to RP than to their own local variety.

Giles also gave the same subjects more accents to rate, but under different labels . . . RP became "BBC English", and added "an accent identical to their own". Here it is interesting to note that while they would not concede that the "accent identical to their own" was inferior to RP, they nonetheless rated their relevant local accent inferior to RP. This suggests that people consider their own individual accent as distinct from that of the local venacular, or at least fail to recognise the "broadness" of their own accent. (Giles 1972a : 168-170).

Wilkinson said this in a study he did: "very many English people who have not heard their voices on tape imagine that they have RP whilst their neighbours have an "accent". Even when they have heard themselves, the prestige of RP is so high that they are often unwilling to admit it themselves that they deviate from it". (Wilkinson 1965 : 18).

I myself carried out a small subsidiary experiment to test the reactions of people to hearing their own secretly recorded voices. When these unidentified recordings were played back to them for analysis without any indication of the voice origin, the listeners were not able to identify the voices as their own. They made such comments as: "I don't like this voice"; "It sounds far too Yorkshire for me to enjoy". When told that the voice they had been so critical of was their own - they were all surprised and made comments such as: "That's never me". "I don't really sound like that do I?" "Horrible". Some were so embarrassed that

they said they did not want to listen.

In Giles' experiment he found that the accents of lowest prestige are those of industrial towns. No accent was found to be equal to RP in status value. The accent a listener himself possessed did not seem to affect the superior prestige value assigned to RP. But it must be remembered that this study looked at the reactions of listeners from Southern regions in Britain only, and so effectively is of little value since, from my experience, RP is less prestigeous to Northern ears.

There does seem to be a trend towards accepting the local accent now even for broadcasting purposes, at least among the younger generations.

Listener Personality Variants

So far I have been looking at studies dealing with differences among speakers rather than listeners. Personality differences among listeners also seem important. Giles hypothesised that highly ethnocentric (E+) listeners would react more favourably (in terms of prestige and pleasantness ratings) to the standard accent and less favourably towards the regional varieties, than would subjects with low ethnocentricity (E-). These differences can be measured on the 24-item BRITISH ETHNOCENTRISM (E) Scale constructed by Warr, Faust and Harrison (1967)

20 E+ and 20 E- subjects, from Somerset and South Wales, matched for age, sex and region, were asked to rate six voices: RP, Irish, South Welsh, Birmingham, Somerset and Northern English accented speech.

There was a general tendency for the E+ subjects to rate regional accents LESS favourably in terms of pleasantness and prestige than E- people, thus showing (he said) that they had less tolerance to regional variations in accent. This lack of tolerance was also accompanied by a more favourable reaction to RP than was shown by the E- group. (Giles 1972a : 168-170).

On the whole, it seems clear, that the status once attached to "BBC English" has changed as social levels have changed. However there is still a certain amount of prestige attached to RP in some regions in Britain, even above the local accent of the region. But these regions tend to be those relatively untouched by local radio, and which still rely in the main on national radio for their broadcast sound. And National Radio is still, almost universally, RP-orientated.

The Importance of Accent on Radio

RP, as a universal British accent, has been ingrained into the listening habits of the nation since the birth of the BBC. Radio has progressively taken on, over the years, a special responsibility; listeners unquestioningly assumed that national broadcast speech was the best variant to imitate. Indeed the BBC fostered this impression and listeners believed that the way the BBC said it, was right. That was not always the case - particularly with localised place names and variants - but the irrational authority bestowed on BBC speech overrode all. Since accent and voice quality are inextricably linked, a similar prescription applied to the voice quality of broadcasters - who established a new stereotype. The BBC realised that it had this responsibility, that it had become a semi-official custodian of the English language, and of the English 'voice type'. This in turn gave rise to the

mistaken belief that there was a 'universal', national spoken English to which all should aspire.

John Reith, a Scot with a recognisably Scottish accent, accordingly set up a committee in 1926 to inquire into pronunciation to be used by announcers. In 1928 he gave his own attitude to Broadcast English . . .

"Since the earliest days of broadcasting the BBC has recognised a great responsibility towards the problems of spoken English. These are vexed but intriguing. They might have been evaded, leaving both general principles and particular words to chance. Tendencies might have been observed and either reinforced or resisted. As the broadcaster is influential, so also is he open to criticism from every quarter in that he addresses listeners of every degree of education, many of whom are influenced by local vernacular and tradition. There has been no attempt to establish a uniform spoken language, but it seemed desirable to adopt uniformity of principle and uniformity of pronunciation to be observed by Announcers with respect to doubtful words. The policy might be described as that of seeking a common denominator of educated speech". (A Lloyd-James 1931 : 131).

This common denominator was of course RP, and people throughout the country began to hear it regularly and to be influenced by it, both in their own practice and in their attitude to other accents.

The committee on pronunciation set up by Reith was headed by the phonetician, A Lloyd-James. In 1931 he claimed. . .

(a) There are distinct variants of speech in every social class, and class variants in every district.

(b) Local variants become increasingly unlike one another as we descend the social scale.

(c) They become more alike as we ascend.

(d) The greater mobility of educated people tends towards the elimination of some of their local peculiarities.

(e) The general spread of education tends to bring about the unification of the social variants in all districts.

(f) Out of the broad band that comprises all district and class variants, there is emerging a considerably narrower band of variants that have a very great measure of similarity.

(g) This narrow band of types has more features in common with Southern English than with Northern English.

(h) Those who speak any one variety of the narrow band are recognised as educated speakers throughout the country. They may broadcast without fear of adverse intelligent criticism".

(Lloyd-James 1931 : 142).

Lloyd-James wondered whether, given a standard grammar and vocabulary but no standard pronunciation, anything could be done to ensure uniformity in spoken English? He - and John Reith - wanted the variety of local accents to be replaced by the one non-local accent, RP.

Hence RP became closely associated with the BBC.

The 'BBC Voice'

Since the days of Alvar Liddell and John Snagge, whose 'BBC voice' are probably still well remembered , the actual style of RP has changed, and with it the 'voice'. The traditional RP sound on network and national radio has given way to a sort of 'new generation' English, but still strongly tied to the original Standard English. The old style classic voice quality (deep, cultured, 'very Oxford') also sounded 'old' and 'authoritative'. As the accent changed, so did the voice quality. The new sound is very much younger, with the lighter voice quality associated with youthful voices. Neither is it as formal.

These changes have not been universally welcomed. This reaction against the 'new radio speech' was spear headed by Alvar Liddell (now retired), when he wrote in the Listener that the sound of the modern BBC announcer was appalling and ought to be investigated. 'The voice was wrong; the speech was wrong', he wrote. The resulting controversy saw the establishment of a committee to investigate BBC speech standards, chaired by Robert Burchfield.

An experiment was tried during World War II, when the BBC used Wilfred Pickles, a broad Yorkshire speaker, as a newsreader. There were two theories behind this experiment: first that it would present a more 'democratic' sound for Britain, a sound which would not alienate London from the rest of the country in a time of war; and second was for security reasons: the Germans (it was felt) would not easily be able to mimic the Yorkshire accent. The experiment did not work. Although initially it was considered 'quite fun', there was a lot of complaint from all over the country, and particularly from people in Yorkshire. It

was felt that this was not 'taking the news seriously', and was also seen as making fun of the Yorkshire accent. (Briggs 1965 : 38). It did not really work at that time for several reasons: it was introduced too suddenly, it came as a shock to the listener at a time when RP was 'standard' for all broadcasters. With social mobility not so common, people weren't used to hearing other accents.

The BBC, by the nature of its social context has never found it easy to fully penetrate the working-class world which provided it with by far the largest part of its audience. (Briggs 1965 : 40).

Briggs relates that Roger Eckersley, the Chief Engineer, once feigned complete ignorance of the fact that by far the largest section of British society ate high tea and not dinner. BBC announcers wore dinner jackets; and spoke accordingly. Their enforced impersonality clashed sharply with the powerful working-class instinct to stress the personal in every aspect of human relationships. (Briggs 1965 : 40).

The language of discourse - accent, vocabulary, style - was so separate that it was always a matter of 'them and us'. There were excellent reasons for paying special attention to the training of announcers and for the encouragement of good Standard English - G B Shaw was after all a member of the Spoken English Advisory Committee - but there were also, as Shaw never failed to point out, all kinds of social and cultural implications. (Briggs 1965 : 40).

And Briggs goes on: "In such circumstances to talk of common culture is exaggerated and at its most rhetorical the talk is dangerously misleading. In an early contribution to the RADIO TIMES G K Chesterton expressed the view that it

was 'a good thing indeed' for the 'masses' - a dangerously patronising word - to listen to the words of Lord Curzon: he did not add that it would have been at least equally good if his lordship could, by means of radio, have listened to the views of the people" (Briggs 1965 : 40-41).

Pronunciation Prestige

Reith and Lloyd-James believed that radio speech affected listeners speech. RP provided authority, a necessary aspect of the broadcasters' speech style. But just how far does the speech style affect the listeners' attitudes? A study by Glasgow (1961) investigated the effects of manner of speech on the appreciation of spoken literature. He used four different speech variables: voice quality, pitch, speech rate and enunciation and hypothesised that readings from literature presented in a 'good' manner with regard to these variables would favourably influence audience appreciation of the material, while presenting them in a 'poor' manner would adversely influence audience appreciation. 'Goodness' and 'poorness' were assessed by experienced university speech teachers in terms of whether the manner of speech was aesthetically pleasing, expressed suitable emotional states, sustained attention, gave appropriate intonation, emphasis etc. It was found that enunciation was the most critical variable: poor enunciation decreased appreciation more than any other variable.

Another finding relating to pronunciation prestige with perceived quality of message content was produced by Taylor and Gardner (1970). In this study, French-Canadian and English-Canadian subjects were asked to select which of five photographs was being described in English on tape by either an English-Canadian

or a French-Canadian accented speaker.

Speakers gave their own descriptions of the pictures, and read each other's descriptions. The subjects had to rate the performance of the speakers, and it was found that the speaker possessing lower accent prestige (French-Canadian) was rated significantly poorer in the quality of his description by both groups of listeners.

It seems that the quality of a communication may be down-graded if it is spoken in a non-standard accent. Uniformity is important in terms of quality. However, is a standard accent more effective than a non-standard accent in bringing about a change of opinion on the part of the listener? Is it more or less persuasive?

Accent Persuasiveness

Giles looked at the relative persuasiveness of standard and non-standard accents in the context of British regional accents. He considered "Would a standard accented speaker, because of the prestige and competence with which his speech pattern is associated, possess greater credibility than a non-standard speaker?"

He used a persuasive message assumed to be unconnected with regional values and norms - capital punishment.

Five groups of 50 subjects each matched for sex and their attitude on the topic were formed. All of these subjects were considered to be regional accented speakers. Each group was given the same argument against capital punishment, in five forms . . . typescript, RP, South Welsh, Somerset and Birmingham accented speech on tape. Subjects were then asked for their attitudes to capital punishment, and were asked to rate quality of argument they had been given.

Although the content of the argument had been exactly the same, the ratings of content quality were found to be a positive function of the communicator's accent prestige. (RP having most prestige as in studies mentioned earlier).

However, as far as actual persuasiveness of the arguments went, only the regional voices were effective in producing a significant shift in subjects' attitudes. The typescript and RP did not. (Giles 1975 : 30-33).

Other factors appear to influence the persuasiveness of different accents. Non-standard accents score high on personal attraction, ie warmth, humour etc. . . and RP on authority. Powesland and Giles tested this by using standard accented listeners, and arguments that were more clearly related to perceived social status. They found out the attitudes to the Industrial Relations Act of a group of medical undergraduates, and their approval/disapproval ratings of it. The accents used to read an argument for the IR Act (right) and against the Act (left) were RP (right) and Bristol (regional-left). Each group heard only one version, and then the subjects were asked to rate the speaker on personality traits, and show their attitudes to the Industrial Relations Act. As expected, the RP speaker irrespective of the argument presented, was rated superior in social class to the regional

speaker but less favourably in terms of sincerity.

However, the only condition which produced a statistically significant shift in attitude was the 'incompatible' combination of RP speaker adopting the left-wing argument. (Giles and Powesland 1975 : 96-98).

If we take the results of these two studies . . . the one using capital punishment as the message, and this one with the Industrial Relations Act, it is clear that the most important factor in the persuasiveness of the speaker is the listener's closeness in accent. He probably uses the accent as a clue to the speaker's social class, education, personality, and is thus able to form a judgement on the similarity between the speaker and himself. So the quality of an argument is more favourably perceived when presented in a standard accented voice, but when it comes to attitudinal results of an argument, listeners may be more convinced and persuaded by a speaker with whom they can identify.

Although the major role of a broadcaster is to inform, not to persuade or sway opinions, nevertheless it is important that he or she should be readily believed, and so their sincerity is important. It clearly depends on the content as well. An RP-accented voice has little credibility when reading the racing results, but greater credibility when giving the financial news.

For national and local radio, the most important requirements of a presenter is that he or she is able to broadcast well, to communicate clearly. On the different channels, particularly on Radios 1, 2, 3 and 4, a difference in approach to style and accent is evident. The music presenters on Radio One and Two have a wide

variety of accents, including even mid-Atlantic. Terry Wogan has an Irish accent, Dave Lee Travis a Manchester accent, Janice Long is from Merseyside. The news styles differ between stations. Even though RP is predominant in all, the actual style tends to be more colloquial on Radio 1, similar on Radio 2, formal on Radio 3, and slightly less formal on Radio 4. RP is predominant in all, but here are the different styles of RP mentioned earlier.

Radio One news has the younger, less formal style type, while Radio 3, 4 and particularly World Service, have retained the older, more formal style.

The World Service Voice

World Service has a different role to perform, and performs it differently to the British home service. It is of interest to investigate its voice quality/accent.

RP tends to be the speech style taught to non-English speaking people when they are learning the language, which will normally be standard English. Indeed, I know from having worked with World Service, that most non-English speaking countries use it as an unofficial English teaching service.

So World Service retains formal RP style of broadcasting.

World service English is worthy of a study all of its own. For example, the RP standard used is extremely high, yet at the same time informal. The writing is excellent, while at the same time informal. The voice qualities used on World Service are interesting. There is a 'standard' World Service voice. Several

unidentified announcers, whose voices I have played to the group of 40 testees were described as 'RAF type'; 'military type'; 'plummy'; 'typically English'. Even on World Service, there is the sound of change - firstly in that women are being used on that service extensively - years before they were used on British Home Radio; and secondly, that the male voice stereotypes have changed to a lighter tone, more natural voice quality - giving in all a younger, more neutral accent and sound. There are no non-RP speakers used, except for one Irish voice which could only be described as 'educated Dublin', and not very far removed from Standard English.

The Independent Local Radio Voice

The other radio form in Britain - Commercial Radio - is also providing new stereotypes in voice quality and accents. Independent Local Radio is becoming a form of national radio, and exhibits a variety of accents - with quite a number of Australian sounds. Presentation style on Independent Radio can be seen to be very different to the style on any national BBC station; and consequently listeners find the mixture of accents more acceptable because the mixture is less obtrusive. The Pickles experiment found little acceptance; it was a 'culture-shock'. Local Radio is now providing an orchestra of accents, and voice qualities.

The Reporter's Voice

One area where you certainly do hear varying accents on national radio, is from foreign and home news correspondents, and local reporters. There are two ways of looking at these . . . in some cases it sounds wrong to hear an RP sounding

voice reporting on events from an area where there is a strong regional accent – it loses its sincerity . . . but conversely, the authority of an RP voice can be greater than a local accent.

Radio now uses more speech inserts from 'newsmakers' than from the reporter alone. In this way a wider variety of accents can be heard. This adds to the believability of the report.

Local Radio, however, has a different role to play. The people in charge of each station appear to have differing views on what that role is, in terms of voice quality and accent. Basically though the local radio station is there to serve that local area mainly with matters of local interest, but also incorporating national matters as well.

I sent a brief questionnaire to all local radio station managers throughout the country, to test their opinions on the selection of presenters in terms of voice quality and accent.

VOICE QUALITY QUESTIONNAIRE

STATION NAME:

TOWN:

1. Among your staff, how many people actually come from the local area? ____

2. How many people on your staff speak with . . .
   (a) a local accent ____
   (b) the Southern, standard accent? ____
   (c) any other regional accent? If so what? _____ ____

3. Please describe what you consider the most pleasant type of voice quality for
   (a) local broadcasters _____
   (b) national broadcasters. _____

4. From your experience of broadcasting, what type of voice do listeners in your area positively dislike? Can you give any reasons?

   _____

   _____

5. Do you think it is important for radio to have . . .
   (a) predominantly local accents? _____
   (b) predominantly southern accents? _____
   (c) a mixture? _____

   Please give a reason for your answer to this question if possible.

6. If you were starting up a new station, how great would voice quality and accent be in staff selection? Why? _____

   _____

7. What is the listener reaction in your area to . . .
   (a) broadcasters with a local accent? _____
   (b) broadcasters on your station with a local accent different to the accent of the area? _____
   (c) broadcasters in your station with a Southern sound?

   _____

Thank you very much for you kind help. Nothing used in this questionnaire will be made public without your knowledge or permission.

It was found that 120 staff regularly on air came from the local areas. 80 spoke with a local accent; 286 spoke with a standard or southern accent; 60 spoke with some other regional accent (Scottish, Welsh or Northern Irish).

80% said the best local broadcaster had a local voice but not so strong a local accent that listeners couldn't understand or thought it to be an unfair representation of the local accent. All of those who made an additional comment to 3(a) said they wanted a friendly, clear, believable voice with no impediments in articulation (lisping or imperfect 'r' sounds). 60% wanted RP speakers that were male and deep voiced in answer to 3(b). The rest who answered didn't mind.

4. Many answers were given to this question - 32% said their listeners did not like strong regional accents (Scottish was often given as an example by Southern English stations but not by those in the North of England). One Scottish station said it would not use strong Scottish voices either. 72% thought listeners would dislike 'bombastic' or 'posh' voices. 87% said that listeners wanted voices that they could identify with.

5(a) 82% said 'yes'.

5(b) Only two stations said 'yes' (both from the South Coast of England).

5(c) 93% said this would be OK so long as non-Southern predominated.

6. 98% said it would be most important; the rest said it would be important but other considerations (journalistic experience, personality) might override.

7(a) 82% said listeners reacted to voices of the area well so long as the voice was not too 'thick'.

7(b) 78% did not like them; 10% did like them; 2% didn't mind either way.

The answers show that accent and voice quality play an important part in selection, but only if very pronounced.

It must be remembered that even if a broadcaster does start out with an accent the fact that they are living and working in London will influence their speech, and they will move, maybe even unconsciously, towards RP.

Over recent years I have auditioned a number of potential broadcasters, for Local Radio as well as for Radio 4. An effort was made to choose people with regional accents. It has become apparent that these people - when chosen for their accents - once appointed tried to lose their accents and started speaking in RP accents. I also appointed speakers with an RP accent who when working in Birmingham or Leeds or Wales, started to adopt, unconsciously, the accent of the locality.

Radio Speech

There are problems about broadcast voice quality: these are the adaptations of natural voice production to the peculiarities of the radio medium.

As Brook says "The invention of the telephone has introduced a new register to the English language". (Brook 1979). And it could be said that the invention of the microphone and the psychological problems with both radio communication and radio listening have introduced yet another register to the language - Radio Register.

When microphone technology was less advanced, broadcasters were taught to be over-precise in their pronunciation and over-projected in the vocal delivery. In any case, untrained broadcasters tend to speak more loudly than necessary - as

one would on a bad quality phone line. The characteristics of this kind of register are a raised pitch and increased volume.

There is a stereotype speech 'acceptable' in radio programmes, another acceptable in radio news bulletins. But when I asked 35 people of mixed socioeconomic backgrounds whether they objected to the neutral sound of a Radio 4 newsreader, 87% answered 'No'. When asked: "Should you talk like a Radio 4 announcer?", 94% said 'No'.

So while the BBC has brought daily programmes in Standard English to large numbers of people who might otherwise have spent their lives hearing little but regional and local dialect, it is far from certain that it has had much influence on the speech of listeners.

BBC announcers do not, of course, all speak alike and in the programmes as a whole there is even greater diversity of speech. In the various magazine programmes large numbers of people are interviewed speaking a wide variety of local and class dialects.

But what the BBC has done has been to make available a wide range of varieties of English for those who wish to study them.

Apart from pronunciation and the pecularities of broadcast voice quality, radio speakers, especially in news bulletins, have begun to develop their own register.

This 'Radio Register' clearly modifies speech to indicate an attitude towards the subject, or the listener. Voice quality changes in the Radio context to take account of the constraints of the medium upon itself and upon its listeners.

The younger the announcers the more their speech varies from the accepted RP norm. This variation is the result of changes in language, the 'accepted' norm being based on the speech of older speakers who are reluctant to allow change.

Radio Voice Quality is therefore determined by: (1) the 'anatomical and physiological foundation of a speaker's vocal equipment and: (2) 'setting'. 'Settings' are "long-term muscular adjustments of the vocal tract, which are acquired, usually by social imitation, and are unconsciously and habitually maintained. Settings are LEARNED". (Giles and Powesland 1975 : 15-21).

Many American males, for example, have deeper voices than British males - and this is very apparent in listening to radio broadcasts. But according to Giles and Powesland, this is due not to physiology but to the fact that they have learned to use a lower part of their possible pitch range than have British men. It is (they say) cultural not physical. (Giles and Powesland 1975 : 14).

It cannot be assumed that certain voice quality types are universally perceived as 'pleasant' or 'unpleasant' across different cultures and different languages. Indeed, say Giles and Powesland, there is some evidence to the contrary. Indeed from my own observation this would appear to be true. 'Nasalisation' is a component of voice quality commonly associated with many 'unpleasant' Australian accents; but it is also a feature of many 'pleasant' RP speakers. Similarly, pharyngealization is

a component of working class Norwich voice quality which middle class Norwich people describe as very unpleasant. (Trudgill 1974a).

Care should also be exercised about the cross-cultural implications of labels such as 'breathy' since a 'breathy' voice has different implications in different languages (Catford 1964) - and also has different connotations in English (eg 'sexy' or 'childlike' etc).

CHAPTER FIVE

VOICE QUALITY CONTROL

Above the brain stem are the two cerebral hemispheres which together make up more than 80% of the total brain weight. (Hardcastle 1976). It is here that the most complex bodily activities such as speech production are initiated. The left cerebral hemisphere is generally regarded as being the dominant hemisphere for speech production in a right-handed person. Various specific areas of the dominant cerebral cortex are generally regarded to be of prime importance for speech and language. (Whitaker 1969). These are the so-called speech centres, damage to any of which frequently causes certain fairly well-defined disruptions in speech.

Reflex Control Mechanism of the Larynx

Auditory feedback is very important for the control of voice and speech behaviour which is a highly developed feature of human voluntary behaviour. However, it is also true in that the process of voice and speech production the activities of individual muscles of the larynx and upper articulatory organs are almost automatically or subconsciously adjusted and coordinated both with each other and with the respiratory muscles to achieve the intended vocal or speech performance. This automatic adjustment of muscle activity is essentially similar to the regulation of coordinated movements in our voluntary actions such as walking, running, chewing, swallowing and breathing.

Wyke summarised the phonatory process as follows: at first the laryngeal muscles are voluntarily controlled, through the central motor pathway from the cerebral cortex and pre-set to the glottal condition so as to produce the desired sounds. Secondly when a subglottal air pressure is exerted and the air flow through the glottis has been set in motion, laryngeal articular and myotatic reflexes promptly operate to adjust the laryngeal posture, which might otherwise be deflected by the air pressure, so as to restore the present position. Finally, once the sound becomes audible further adjustments both voluntary and reflex are made with the aid of auditory monitoring system and the phonatory servomechanism. (Wyke 1967).

Use of the Larynx in Language

Language uses the larynx in four ways: by varying the tension of the vocal folds so as to produce pitch changes; by adjusting the positions of the arytenoid cartilage so as to produce different glottal structures; by varying the timing of the onset of voicing relative to articulatory movements; and by raising or lowering the whole larynx to form ejectives or implosives. The contraction properties of the muscles are vital for good speech production and for voice quality. There are two kinds of muscle - fast muscles with shorter contraction time and slow muscles with longer contraction time. Relaxation time is shorter in fast muscles and longer in slow muscles. Repetitive stimulation evokes a chain of overlapping twitches and finally a complete mechanical fusion of the individual twitches (complete tetanus) is reached. Minimum frequency of stimulation to obtain complete tetanus of the muscle is called fusion frequency. Fusion frequency is higher for fast muscles and

lower for slow muscles. The ratio between maximum tetanus tension and maximum twitch tension (in isometric contraction) is called TETANUS-TWITCH RATIO. Contraction of the fast muscles of the larynx, (the thyroarytenoid and lateral cricoarytenoid adductors) is surpassed only by the external eyeball muscles (8-10 msec). (Martensson and Skogland 1964).

Laryngeal Adjustments in Voice and Speech Production

Vocal pitch changes as a function of longitudinal tension in the vocal folds, the mass of the vocal fold tissue involved in the vibration and subglottic pressure. Vocal fold tension increases with the contraction of the vocalis muscle and/or the extension of the vocal folds by external force. The laryngeal adjustments in the lower pitch range, (the chest register) are different from those in the higher pitch range (the falsetto register). The range of conversational vocal pitch is normally included in the chest register.

In an experiment on excised human larynges, Van den Berg and Tan observed an increase in fundamental frequency and a shift from the chest register to falsetto as extension of the vocal folds was increased by external force applied to the thyroid cartilage. They also noted that the extensibility of the vocal folds was almost entirely determined by that of the voice ligaments and the greatest part of the longitudinal force applied to the thyroid cartilage was taken up by the vocal ligaments. At large elongation of the vocal folds, the tension in the vocal ligaments was much larger than that obtainable by the contraction of the vocalis muscle. (Van den Berg and Tan 1959). Based on these experimental results, Van

den Berg concluded that in the chest register the tension in the vocal ligaments was very small and the vocal pitch was determined by the contraction of the vocalis muscle associated with medial compression of the vocal folds; whereas the tension in the vocal ligaments caused by the external force became dominant in falsetto. Differences between the chest and falsetto registers as observed in the vibratory motions of the vocal folds of living human subjects are evident by observing the action of the vocal folds through fibreoptics. This showed that the vocal folds in chest register vibrate along their full length striking each other with their entire mass in vibration whereas in falsetto the vocal fold margins become very thin and touch each other lightly if at all. The main mass of the vocalis muscle remains not involved in the vibration. (Van den Berg 1960, 1962).

Voice quality and sound production are associated mainly with a quasi-periodic sound source arising from an interaction between air flow from the lungs and the larynx.

The larynx functions mainly as a valve to constrict or close the air passages during voiced sound production or for the protection of the lower respiratory tract during swallowing.

The larynx is about 8cm by 5cm. Its most skeletal parts consist of three unpaired cartilages, the thyroid, cricoid and epiglottis, and the paired arytenoid cartilages. The cartilages are interconnected by joints, ligaments and membranes and are positioned relative to each other by a number of muscle groups. Situated above the larynx is the hyoid bone which acts as a base for the tongue.

The thyroid cartilage encloses a portion of the larynx anteriorly and laterally. The vocal ligaments which form the margins of the vocal folds and bound the air space (glottis) between the vocal folds attach anteriorly at the angle of the thyroid cartilage and posteriorly to the vocal processes of the pyramid-shaped arytenoid cartilages. These ligaments are paralleled by the vocalis muscle which together with elastic tissue and a covering of mucous membrane make up the vocal folds. Both the arytenoid and thyroid cartilages articulate with the ring-shaped cricoid cartilage below through joints located posteriorly. The arrangement of the critothyroid joints below the arytenoids allows the cricoid cartilage to rock backwards or forwards with respect to the thyroid cartilage carrying the arytenoid cartilages along so as to either apply tension or to relax the vocal ligaments. The air passage may be closed off at the glottis by positioning the arytenoid cartilages in such a way that the vocal folds meet or it may be closed from above by action of the false vocal folds or by sphincter action of the muscles of the aryepiglottic folds. (Pressman 1954).

The now generally accepted theory for the operation of the larynx during phonation, (the aerodynamic-myoelastic theory), has continued to be developed in recent years, largely through the work of Van den Berg (1968). If the upper respiratory tract is unconstricted and the vocal folds are approximated as the lung pressure is built up, the higher pressure below the vocal folds will force them apart. As the vocal folds move apart air from the lungs will begin to flow through the glottis. Initially, when the velocity is small, the pressure in excess of atmospheric pressure between the folds will be tending to force the vocal folds further apart. As the glottis continues to open and the velocity increases, the pressure between the vocal folds drops because of the Bernouilli effect (balance

between potential and kinetic energy requires a higher pressure at points of low velocity and lower pressure at points of high velocity). According to the theory, if the velocity becomes sufficiently large, the excess pressure between the vocal folds will become negative, tending to suck them in towards each other. If the vocal folds are suitably positioned and have appropriate longitudinal tension and medial compression this alternating pressure, first positive and then negative for larger openings coupled with the inertia and elastic properties of the folds will set them into a sustained oscillation alternatively opening and closing the glottis.

This alternation allows repetitive pulses of air to flow into the vocal tract. These repetitive pulses of air constitute an acoustic source for voiced sounds and their repetition frequency is the primary acoustic correlate of the pitch of the sound produced. The volume velocity (volume of air per second) through the glottis over most of the cycle is approximately proportional to the product of the area of glottal opening and the square root of pressure drop across the glottis. (Heinz 1974).

The vocal cords have several functions. Their main role in speech is to produce voice by means of their vibration (phonation). When not vibrating they may be tightly closed (by holding the breath). In this position, when the breath is released, they produce a glottal stop. When not vibrating they may remain open so that the breath flowing through the glottis produces audible friction (whispering) or the /h/ sound. Other phonation is possible by varying the mode of vibration of the vocal folds in various ways: if the folds are made to vibrate very slowly, a 'creaky' voice quality is produced; a very fast, tense mode of vibration produces a 'falsetto' voice. Lastly, by varying the rate and strength of vibration of the vocal

folds changes in pitch and loudness can be introduced into speech.

Resonance: above the larynx the air stream is further modified by the shapes assumed by the vocal tract. Three main cavities are involved and these act as the main resonators of the voice quality produced at the larynx: the pharyngeal cavity, the oral cavity and the nasal cavity.

Articulators: the physiological movements which modify the air stream within these cavities is articulation. There are two kinds of articulator: "active" (move); and "passive" (don't move the upper teeth and roof of the mouth). The tongue and soft palate are vital active articulators since they provide clarity. Poor control of the soft palate leads to audible nasal resonance and friction and is a major cause of unintelligible or unacceptable radio speech.

Articulation

By timing a series of conversational exchanges, it is evident that a speaker produces about 170 words per minute.

Rapid though this may seem, rates of up to 300 words a minute can be achieved, with continuing listener understanding.

Voice Quality Processes

Quality is a perceptual phenomenon which is determined by wave compositions. Quality is that attribute of tone by which tones that are alike in pitch, loudness and duration can be distinguished.

Voice quality enables a listener to differentiate between two speakers saying sounds which are the same in pitch, loudness, duration and speech sound quality.

Voice quality is the result of two processes.

1. The vocal fold tone which originates at the vocal folds where is offered certain resistance to the amplitude and rapidity of the vibrations of sounds. (Culver 1951).

2. Modification of voice quality after it leaves the vocal folds by the resonators: ventricle of the larynx, laryngeal cavity, nasal cavity, pharyngeal cavity, and oral cavity. The resonators are selective with respect to frequency and act differently at various frequencies, resulting in changing intensity of various sounds. The quality of the voice is also determined by the texture of the pharyngeal walls, as well as by the size and shape of the air column in the resonator. Tense rigid walls will emphasise the higher frequencies resulting in high, sharp voices; lax walls will permit the lower frequencies to be reinforced producing tones of depth and richness.

Although most of the energy of the voice is carried in the low formants at the same time both high and low frequencies are necessary for the best voice.

Voice quality of Microphone speech is considered "unpleasant" by listeners if there is excessive:

(1) Nasality

This can be described as sharp or twangy 'through the nose' speech.

It occurs when the opening into the nasal cavities is larger than the anterior opening out of the nasal cavities.

Nasality may be affected by:

organic pathologies such as velar insufficiency, cleft palate or velum, paralysis of the velar muscles, or anterior nasal obstructions.

(2) Breathiness

Which results when the vocal folds are too lax and fail to approximate completely as they vibrate thus allowing a stream of air to pass audibly through the glottis and resonance cavities. Breathiness is characterised by a voice with a tense, low whispered quality (Greene 1957).

The causes of breathiness are:

- laryngeal pathology: perhaps a singer's node (a small nodule formed on the edge of one or both vocal folds by over-use of the folds with insufficient rest);

- or some other form of polyp on the vocal fold.

It can also occur because of improper co-ordination between the breath supply and vocal fold tension. (Greene 1957).

There must be a proper relationship between infra-glottic air pressure and vocal fold tension for good voice quality.

A loud voice will not be breathy - loudness and breathiness are incompatible.

Harshness: The voice is unable to produce enough volume at either a low pitch or a high pitch thereby causing a strain on the vocal folds. A characteristic of harshness is a noisy, rasping unmusical tone.

If low pitched it can be called gutteral.

If high pitched can be called strident.

The general causes of harshness are:

- organic pathology in the larynx

- a functional problem caused by hypertension or strain on the vocal folds in an attempt to produce a louder voice quality. Harshness may also be caused by poor coordination of the breath supply. Harshness is characterised by low frequency aperiodicity.

Hoarseness combines the characteristics of both breathiness and harshness. Hoarseness would be characterised by both a whispered type voice and a noisy, raspy voice. The general causes of hoarseness are infections of the superior respiratory tract as acute or chronic laryngeal infection or irritation.

Voice Quality is affected by:

1. the original tone as initiated by the vocal folds

2. selective modification of this tone by the resonance cavities.

Voice Quality also depends on the physiology of the resonators and proper respiratory activity.

The Skeletal Framework for Respiratory Activity

The activities of speaking and breathing both normally require the production of an airstream in the lungs which is modified in some way by the action of articulatory organs before passing out of the mouth or nose. The respiratory cycle differs in speaking and breathing: when breathing, the inhalatory part of the cycle is approximately equal in time to the exhalatory part.

When speaking, the inhalatory part of the cycle must be very fast and when exhalatory slowed down

The exchanges of air during the respiratory cycle are brought about by alterations in the dimensions of the thoracic cavity which includes the ribs and lungs. When the volume of the thoracic cavity is enlarged the pressure within the cavity is lowered and air will be sucked in from mouth or nose. When however the volume of the cavity is decreased the pressure is raised so forcing air out of the nose or mouth.

The main anatomical structures which form the skeletal framework of respiratory activity are also very important in the production of an overall pleasantness of voice quality.

The trachea consists of eighteen connected horseshoe-shaped cartilages, the open ends of which are closed posteriorly by the trachealis muscle. The top of the trachea passes into the larynx while the bottom end divides into twin tubes or bronchi, which pass directly into the lungs. The lungs themselves consist mainly of masses of minute elastic tissue airsacs called alveoli connected by a dense system of tubes. When the volume in the lungs is decreased air is forced out of these alveoli into the bronchial tubes and out of the trachea. If however the lungs are expanded the alveoli fill with air which is drawn in from the trachea due to atmospheric pressure. These changes in the volume of the lungs take place largely by the action of the thoracic cage consisting of the ribs and sternum and by contraction of the large diaphragm muscle which separates the lungs from the abdominal cavities.

There are twelve ribs forming a barrel-shaped protective wall around the thoracic cavity. Posteriorly the head of each rib is articulated with the vertebral column by means of a special gliding joint. Anteriorly the first seven ribs join directly onto the sternum by means of costal cartilages and the next three to a cartilage attached to the lower end of the sternum. The last two ribs (floating ribs) have no anterior bony attachments but are fully enveloped in muscle fibre.

Because of the particular shape of the ribs and their anterior and posterior attachments an upward movement of the ribs will increase the thoracic dimensions in two main planes - the lateral transverse diameter will be increased by virtue of the curved shape of the ribs (particularly the lower ones) while the anterio-posterior diameter will be increased by a simultaneous forward and upward movement of the sternum. (Rossier et al 1960 : 136).

The vertical dimension of the thoracic cavity can be altered by contraction of the diaphragm, a muscle which sits like a dome with its anterior attachments near the sternal connection of the seventh rib. When it contracts it presses down on the abdominal viscera and so increases the vertical thoracic dimension. Because of its relatively great strength and speed of contraction the diaphragm is generally regarded to be the most important muscle for inhalation.

The thoracic framework for breathing is completed by two bones, the clavicle and scapula, which together form the pectoral girdle. The clavicle is articulated medially with the upper surfaces of the sternum and projects laterally to form the main part of the shoulder. The triangular–shaped scapula is attached to the clavicle posteriorly and is covered on both surfaces by muscles. It lies just lateral to the vertebral column on the posterior–superior wall of the rib cage. The importance of the pectoral girdle for speech lies in the fact that a number of neck and shoulder muscles which help to raise the thoracic cage have their points of attachment there.

The main movements of the thoracic cavity during inhalation and exhalation involve the ribs and diaphragm muscle. During inhalation the ribs and sternum are raised thus decreasing the intrapulmonic pressure. In addition the vertical dimension of the thoracic cavity is increased by contraction of the diaphragm. For normal speech the enlargement of the thoracic cavity is brought about mainly by the thoracic muscles, but during emphatic speech many other muscles (neck, shoulder and back) can act synergistically. However forced exhalation such as during stressed syllables (Draper et al 1960) requires the contribution of thoracic muscles which depress the ribs, and abdominal muscles which compress the abdominal

cavity, thus forcing the diaphragm upwards.

When the relaxation pressure is greater than the sub-glottal pressure required for phonation it is opposed by contraction of muscles such as the external intercostal which tend to raise the ribs, thus prolonging the exhalation phase. (Draper 1960).

Electromyographic investigations by Ladefoged (1967) and his associates showed an increase in activity of the internal intercostals as the utterance proceeds, particularly upon termination of pressures involved in relaxation. They suggested that the internal intercostals together with the synergistic activity from the abdominal muscles maintain the pulmonary pressure necessary to activate the vocal folds.

Ladefoged also found bursts of intercostal muscle activity associated with certain articulatory segments such as /h/ and long vowels, and before the principal stresses of the utterance during connected speech. (Ladefoged 1967). The subcostals are small muscles which are situated near the angles of the ribs in the same plane as the innermost fibres of the internal intercostals.

There are four ABDOMINAL MUSCLES used in breathing and speech production:

1. The transverse abdominal, a large flat muscle shaped like a girdle, is located on the front and side of the abdomen. It is the deepest of the abdominal muscles and is innervated by the intercostal nerves, subcostal, iliohypogastric and ilioinguinal nerves. It compresses the abdomen so raising the abdominal pressure and forcing the diaphragm upwards. This activity decreases the vertical dimension of the thoracic cavity and so aids expiration.

2. The oblique internal abdominal is a broad thin muscular sheet situated between the external oblique and the transverse abdominal muscles. It is innervated by the lower five intercostal, plus iliohypogastric and ilioinguinal nerves. Its main function is to assist the other abdominal muscles in compressing the abdomen thus raising the diaphragm and decreasing the vertical dimension of the thoracic cavity.

3. The oblique external abdominal muscle is a flat broad superficial muscle covering the surface of the lower thoracic and abdominal wall. It is innervated by the lower five intercostal nerves and its main functions are to compress the abdomen and draw the lower ribs downward.

4. The rectus abdominis is a long flat, strap-like muscle running vertically in the abdominal wall. It is innervated by the iliohypogastric and ilioinguinal nerves which are branches of the first lumbar nerve innervating some of the muscles of the abdominal wall and the seventh to twelfth intercostal nerves. Its function is to push inwards on the abdominal viscera so forcing the diaphragm upwards. The muscle can also draw the ribs down by pulling on the sternum.

Inhalation Muscles

The Diaphragm: a thin but extremely strong, dome-shaped sheet of muscle separating the thoracic from the abdominal cavities. It has great strength and special elastic properties because all the fibres of the muscle insert into an irregularly shaped central tendon located nearer the front than the back. The muscle fibres and tendons comprise several intersecting layers. The actual extent of movement of the diaphragm is probably only slight during normal speech. X-ray studies show that there is a displacement of about 1.5 cm during normal and 10 cm during deep breathing. (Wade 1954).

When the diaphragm contracts the increased pressure in the abdominal cavity causes the front abdominal wall to protrude. During exhalation the recoil elasticity of the abdominal viscera displaces the diaphragm upwards and the abdominal wall returns to its initial shape.

Sequence of Respiratory Muscular Activity

The various investigations carried out by Ladefoged and his associates have been concerned with the time course of respiratory muscular activity and how this activity relates to the mechanical properties of the respiratory system and the demands placed on the system during speech production. The technique of electromyography was used to record the activity in six respiratory muscles - the diaphragm, external and internal intercostals, the rectus abdominalis, obliquos externi abdominis and latissimus dorsi - during an utterance after a deep breath.

During deep inhalation before speech begins the diaphragm and external intercostals are both active. As speech begins the relaxation pressure of the respiratory system is greater than the sub glottal pressure required by phonation. It appears that for some speakers at least activity of the external intercostals continues into the utterance thus serving to prolong this relaxation pressure. (Ladefoged 1967).

Draper says:

"a short period when all muscles are inactive follows this and the relaxation pressure acts alone; then expiratory muscles, beginning with the internal intercostals and later involving other muscle . . . reinforce the diminishing relaxation pressure". (Draper 1960 : 1843).

Ths sequence of muscular activity was produced during a long steady utterance (counting) which can hardly be regarded as representative of normal conversational speech. In conversational speech, and even more so in broadcast speech, the demands placed on the respiratory system are quite different. Rapid fluctuations in pressure due to stop consonant occlusion settings of the vocal folds, all occur extremely rapidly and must be compensated for by the respiratory system. In broadcast speech there is the added problem of achieving all these activities quickly, but with minimum breath noise. Muscle spindle reflex systems associated with the intercostal muscles perform automatic length stabilisation of the muscles to compensate for transient loading changes arising for example from supraglottal activity. The intercostal muscles are well suited to this task as their inherent characteristics allow them to contract extremely rapidly. Their proper use is therefore most important for proper, noiseless, well produced broadcast speech and

broadcast voice quality. (Hixon 1949).

Respiratory Activity Associated with Suprasegmental Features

Increased activity in the respiratory muscles can alter not only the acoustic intensity of a sound but also its fundamental frequency (f_0). The relationship between sub glottal pressure and f_0 is a little more complex because of the speaker's ability to alter f_0 at the level of the glottis itself, independently of any sub glottal activity. (MacNeilage 1972). In English stress is usually accompanied by an increase in both intensity and f_0. There is extensive literature on the action of the respiratory muscles in speech.

I have carried out investigations into the pattern of respiratory activity in broadcast speakers, and in those with no formal voice training.

Out of 34 untrained broadcast speakers visually tested, 25% had reverse breathing, that is the respiratory action showed an inward movement rather than an outward one. In all cases this reverse action was linked with clavicular movement; and in 22% of these cases, clavicular movement associated with reverse breathing could be called acute. This meant that when given a running speech text to read into a microphone, (a) there was significant breathiness (not always audible to listeners); (b) there was significant inability to read the passage meaningfully because breath could not be inhaled in sufficient quantities and the exhalation breath stream could not be adequately controlled. This reverse breathing significantly affected the resulting voice quality.

After breathing exercises, and instruction in the correct inhalation pattern so as to use in the correct manner the respiratory muscles and the diaphragm, the change in voice quality, and the increase in the length of utterance was most marked. Interestingly however, in every case where a subject was found to have reverse breathing and subsequently re-trained to breath in the correct intercostal-diaphragmattic manner, such comments were common: "It doesn't feel comfortable".

The Speech Signal

There are at least four factors that are transmitted by means of speech. (Liberman 1970).

1. The speech signal conveys acoustic cues that serve to identify the individual speaker. I have in my investigations used both the telephone and the microphone, and the telephone in the broadcasting context. If the quality of the telephone call deteriorates to the point where the acoustic cues are not transmitted, the radio listener complains of unintelligibility and a 'tinny', 'thin' voice quality. Listeners begin to complain readily as extraneous noise is introduced into the background of the speaker, and fairly quickly say they can no longer listen. Listeners complain quite quickly that the voice was 'unpleasant' and 'tinny'. It is clear that the suprasegmental features are important in establishing the identity of the particular speaker.

2. The speech signal conveys the linguistic background of the speaker. Liberman says that at the phonetic level language-specific implementation rules are involved as well as specific features that may be drawn from a set of universal features. (Jakobson, Fant and Halle 1952; Chomsky and Halle 1968). There are also apparently language-specific elements manifested in intonation. (Ladefoged 1967; Liberman 1957).

3. The speech signal conveys the sex of the speaker. In many languages this occurs at the phonetic level. The fundamental frequency of the speech signal is usually lower for male speakers. This reflects the longer vocal folds that males usually have. (Negus 1949). The vocal folds are two pearly-white muscular folds (sometimes called cords) running posteriorly from a single point at the anterior end of the thyroid cartilage to the anterior processes of the two arytenoid cartilages. Their inner edge is about 23mm in men and about 18mm in women. Just above them is a second pair of folds, known as the false vocal folds (or vestibular folds) which do not seem to be involved in speech. The vocal folds usually increase in length in males at puberty as the thyroid cartilage grows larger. Adult females also have lower fundamental frequencies than juvenile females since their larynxes also grow larger. Other acoustic differences also manifest the sex of speakers. Male speakers of English for example seem to use lower formant frequencies than do females. (Peterson and Barney 1952).

4. The speech signal conveys the emotional state of the speaker. There is little doubt that much of the 'meaning' of speech is communicated at this level. I have carried out a short study with 34 students who were each given an opportunity of saying a word in a number of different ways to reflect various emotional states. They did not tell anyone but me beforehand what these emotional states were they were trying to convey. 30 listeners in another room, listening to the words through a radio speaker were then asked to write down the emotional states they thought were being conveyed. 94% of the words were correctly categorised. The emotional cues were accurately mirrored in the listeners' answers.

I further tested this by giving to a subject a page of the telephone directory (that is, a random nonsensical list of names) and asked the subject to read them attributing to them emotional meaning. The correct emotion was perceived by the listeners, despite the nonsense that was being uttered linguistically. Voice quality it seems plays a major part in our intelligent appreciation of statements.

Speech Production

Sound produced by the larynx is modified in its acoustic characteristics before reaching the listener by transmission through the vocal tract and in the case of nasal sounds through the nasal tract and by the characteristics of radiation from the mouth or nose. The radiation characteristics vary with the relative position of talker to listener and with frequency. These radiation characteristics though are essentially independent of the particular speech sound being produced. (Heinz 1974). Thus the class of sound produced is determined in part by the source mechanisms employed while the particular sound is determined by the acoustic transmission characteristics of the vocal cavities.

There are three major supralaryngeal cavities involved in speech production:

1. the pharyngeal cavity
2. the nasal cavity
3. the oral cavity.

1. The pharyngeal cavity extends from the base of the skull to the entrance of the oesophagus where the pharynx is closed off during speech by the cricopharyngeus muscle. The larynx opens into the lower part of the pharynx, the middle part of the pharynx is connected to the oral cavity and the upper part of the pharynx opens into the nasal cavity. The nasal part of the pharynx may be closed off from the lower part by action of the soft palate (velum) during the production of non-nasal speech sounds. The middle and lower portions of the pharynx are surrounded laterally and posteriorly by a group of circular-running constrictor muscles which can, upon contraction,

narrow the pharynx cavity.

2. The nasal cavities are of complex shape but cannot be varied in shape by muscle action. They are only coupled or uncoupled from the vocal tract proper by action of the soft palate. When the soft palate is lowered the nasal passages offer an alternate path for sound transmission in the production of the nasalised speech sounds.

3. The oral cavity extends from the anterior portion of the soft palate to the front teeth and is bounded from above by the hard palate (maxilla), laterally by the cheeks, and from below by a muscular floor formed principally by the mylohoid muscle which attaches to the lower jaw (mandible) and posteriorly to the hyoid bone. In addition much of the oral cavity is filled by the tongue which rests on the floor of the oral cavity and extends posteriorly to its root in the pharynx where it attaches to the epiglottis and to the hyoid bone. The tongue plays the major role in controlling the shape of the vocal cavities during speech. It is muscular in nature, consisting of entirely internal or intrinsic muscles which are generally thought to control primarily its shape and tone and extrinsic muscles which attach to numerous structures in the head and neck and are thought to control primarily the movement of the tongue as a whole. (Hardcastle, Heinz 1974). The tongue may be moved actively through contraction of its extrinsic muscles or passively through movement of the lower jaw.

In addition to these three major cavities, there is the oral vestibule which plays an important role in shaping the vocal tract for speech. This is the cavity which extends from the teeth to the lips. The lips may be protruded or retracted to change the total length of the vocal tract or spread, rounded, and in the extreme, closed to change the shape of the terminating orifice. Fromkin (1978) says these gestures are not entirely independent ones. The lower lip may be actively controlled through muscular action or passively moved by motion of the lower jaw. The total length of the vocal tract may also be changed somewhat by upward or downward movement of the larynx as a whole.

Speech Sounds

The acoustic transmission through the vocal and nasal cavities depends on whether the source is located somewhere along the transmission path or at its initial end, and whether the path is a simple direct one or has one or more side branches or shunting cavities along it.

These can be described as three basic types: (1) non-nasal speech sounds with laryngeal sources; (2) nasal speech sounds with laryngeal sources; (3) non-nasal speech sounds with non-laryngeal sources.

1. Non-nasal Speech Sounds with Laryngeal Sources

The acoustic transmission characteristics of the vocal cavities are most easily described from those speech sounds which are produced with the acoustic source located at or very near the glottis and with the velum raised so as to

close off the nasal passages. This is the case for non-nasalised vowels whether whispered or voiced, the semi-vowels /w/ and /j/, a simple voiced /r/ and glottal stop /?/ or fricative /h/, the aspirated portion of stops and the voiced part of voiced fricatives, stops and affricatives. For these sounds the acoustic transmission path between the glottis and the lips is a direct one and is usually considered as involving no significant side branches or shunting cavities. (Heinz 1974).

The acoustic transmission characteristics of a given configuration as represented by the cross-sectional area function of the equivalent vocal-tract tube may be determined by the use of an electric analog of a tube of varying cross-sectional area. (Fant 1960).

Fant used the arrangement of the uniform vocal-tract tube open at the mouth and closed at the glottis. He assumed the tube to have negligible radiation from the mouth, to have rigid walls and a small amount of frequency independent frictional loss. The magnitude of the transmission or transfer function (the ratio of volume velocity at the mouth to volume velocity at the glottis) was shown as a function of frequency. A number of features of this transmission function were evident. The tube strongly emphasised those components of the glottal input with frequencies near the resonant frequencies of the tube as shown by the peaks in the transfer function. There are an infinite number of peaks and the frequency of these peaks and their spacing depend on the velocity of sound, which may be considered a constant, and inversely on the length of the tube. For a typical male speaker with an average vocal tract length of 17.5 cm the resonant frequencies occur at odd

multiples of 500 Hz and are spaced 1000 Hz apart.

The resonances of the vocal tract are vitally important in characterising speech sounds. (Heinz 1974). They are usually called formants and the frequencies at which they occur, formant frequencies. While the resonances are usually manifested as peaks in the spectrum, especially in the case of vowels, Stevens and House (1961) have pointed out the fact that defining formants as being the peaks in the spectrum may lead to imprecise or even ambiguous results when one resonance moves sufficiently close to another so that each affects the location of the peak arising from the other. By convention the formants are numbered consecutively, the first formant being the one of lowest frequency.

Schroeder (1967) has worked out a way of determining how formant frequencies shift. He sees it as the way the cross sectional area of an equivalent idealised vocal tract tube is perturbed from a uniform cross section. Based on this theory, Heinz (1974) said that qualitative observations can be made concerning the way in which the formant frequencies shift, particularly the lower ones, as a function of departures of the vocal tract shape from that of the uniform tube. Heinz says that the vocal tract can be divided into two equal parts about the midpoint between the glottis and lips. Changes in vocal tract shape which are the same for each half have no effect on the formant frequencies. Changes in vocal tract shape which are different or opposite for each half, will cause one or more formant frequencies to shift. For each formant, the vocal tract can be divided into alternating regions equal in number to twice the formant number for the first two formants. These

regions (says Heinz) have the property that a constriction in one region will cause the formant frequency to shift in one direction while a constriction in an adjacent region will cause it to shift in the opposite direction. Widening the vocal tract at any point will have the opposite effect on each formant frequency from constricting it at the same point. And a constriction at the lips will cause all formants to shift downward in frequency while a constriction at the glottis will cause all formants to shift upward in frequency.

Thus those acoustic characteristics of a speech sound which arise from the sound modifying effect of the vocal cavities as contrasted to those arising from the source characteristics can be efficiently described in terms of formant frequencies.

2. Nasal Speech Sounds with Laryngeal Sources

The primary nasal speech sounds in English are /m/, /n/ and /ŋ/. These sounds are produced with a quasi-periodic source at the larynx but with the velum lowered to allow coupling to the nasal cavities and with a vocal tract occlusion in the oral cavity or at the lips as the production of the stop consonants. The direct acoustic transmission path for these sounds is from the larynx to the nostrils with a shunting cavity located somewhere less than half way along this path consisting of the closed oral cavity.

For /ŋ/ closure is made by the dorsum of the tongue in the region of the soft palate so that the shunting oral cavity is only 2-3 cm in length. A shunting cavity of this length would not be expected to affect significantly the

transmission characteristics much below 3000 Hz. There are, however, two major differences.

(i) The total length of the path from the glottis to the nostrils is greater than that from the glottis to the mouth. For a male speaker it may be typically 21–22 cm with a concomitant average formant spacing of approximately 800 Hz as compared to approximately 1000 Hz for vowels. Fujimura (1962) reported formant frequencies of 350, 1050, 1900 and 2750 Hz as typical of /ŋ/ for one talker.

(ii) The losses in the nasal cavities tend to be somewhat greater than those in the oral cavity so that the widths of some of the formant peaks will be greater than for the vowels.

For /n/ oral closure is made by the tip of the tongue at the alveolar ridge just behind the teeth producing a shunting oral cavity approximately 5 cm in length. The effect of an oral cavity of this length can no longer be neglected in the range below 3000 Hz. For a tube of uniform cross sectional area of this length resonances would be expected at odd multiples or in this case at 1750, 5250 Hz etc. At resonant frequencies of that portion of the oral cavity posterior to the closure, a dip will be introduced into the transmission curve.

The transmission characteristics for /n/ can therefore been seen to be quite similar to those obtained for vowels but differ somewhat in having a higher density of formant peaks in the mid-frequency range, a small depressed region

near the antiformant frequency and somewhat larger bandwidths for some of the peaks. (Fujimura 1962).

For /m/ closure of the oral cavity is made at the lips and may typically produce a shunting cavity approximately 8 cm long for male speakers. The acoustic transmission characteristics for /m/ are similar to those for /ŋ/ except that the additional formant and antiformant introduced by the oral cavity are located at a lower frequency. Thus the three nasal consonants may be characterised as differing spectrally primarily by virtue of the frequency location of the first additional formant and antiformant introduced by the oral cavity. For /ŋ/ the antiformant will typically be above 3000 Hz, for /n/ between 1450 and 220 Hz and for /m/ between 750 and 1250 Hz for male speakers.

The spectral characteristics of nasal consonants in general have: (1) a low first formant around 300 Hz well separated from the upper formant structure; (2) formants with relatively high damping factors; (3) a high density of formants in the middle-frequency region. Other speech sounds may be nasalised if complete velar closure is not obtained. This is particularly noticeable for sounds produced in the immediate context of nasal consonent. For these sounds, the acoustic transmission through both the nasal and oral cavities must be taken into account. (Fujimura 1962).

3. Non-Nasal Speech with Non-Laryngeal Sources

This is a vocal tract transmission corresponding to the case of a simple tube of non uniform cross section with no side branches or shunting cavities but with a source located somewhere within the tube. This is the case for the unvoiced parts of most non-nasalised, non-glottal fricatives, stops and affricatives. The transmission characteristics for these sounds have features in common with those of both vowels and nasal consonants. For these sounds, the formant frequencies are identical with those for a vowel-like sound produced with the same vocal tract shape though some of the damping factors may be somewhat larger due to additional losses which may occur in regions of turbulent flow associated with random noise sources or due to greater losses at the glottis which may arise if the glottis is more widely open than in vowel production.

Since for these sounds the source is located at or near a constriction in the vocal tract it is the shape of the constriction and the cavities behind it that determine the frequencies. If the constriction is short and narrow and is located at the lips as, for example, in the production of a labio-dental /f/ the anti-resonances due to that portion of the vocal tract behind the source will occur at approximately the same frequencies as the resonances of the tract as a whole and thus the formants and antiformants will almost coincide. Since the formants and antiformants have opposite effects on the transmission characteristics if they occur close to one another these effects will be cancelled and there will be little net effect on the transmission function. This is often the case for /f/ where throughout the frequency range up to 7000 Hz or

higher no significant peaks can be found. (Hughes and Halle 1956). As the constriction is moved back into the oral cavity the spacing between antiformants will increase on the average so that there are fewer antiformants than formants. The frequencies of the higher formants will also begin to move around, first upward and then downward as the constriction moves back to the alternating regions of the oral cavity. Thus for all the sounds produced by sources located in the front part of the oral cavity there will be little low frequency energy and the lowest frequency at which significant energy may be expected decreases as the source moves away from the lips back into the oral cavity. These observations also apply to stops and affricatives.

Formant Frequencies

For all speech sounds, the formant frequencies are uniquely determined by the shape of the vocal tract and nasal tract. For those sounds produced with the source at the larynx, and involving only a single direct transmission path to the lips or nostrils, no antiformants exist unless there are shunting cavities along the path. If there are shunting cavities their shapes determine the antiformant frequencies. For sounds produced with the source within the vocal tract the source location as well as the configuration of the cavities behind it must be known in order to determine the antiformant frequencies. In all cases the acoustic transmission characteristics can be completely determined if the frequencies of the formants and if present antiformants as well as their damping factors are known.

Resonance and the Resonators

Resonance is the amplification of sound resulting from a reflection and concentration of sound waves in such a manner that makes possible a considerable increase of energy output of the vibrating agent. (Anderson 1942). The greater the vibration the greater the energy released in one second. The number of vibrations in one second determines the frequency of the sound being emitted by the vibrator.

The resonator is a second body set into vibration by the action of the first. A resonator gives out no tone unless impulses are received from some other vibrator which in turn is activated by a generator. If the generator supplies a vibration of the vibrator which is the same frequency as the natural frequency of the resonator, the condition is described as 'free vibration' of the resonator. Different types of resonating bodies are capable of different types of resonance.

Resonance and Voice Quality

Resonance is present in voice production. The primary vibrator is the larynx. The number of overtones and their relationships are determined by the action of the vocal folds. There are five resonance cavities in the human vocal tract: the oral cavity, nasal cavity, pharyngeal cavity, laryngeal cavity (the space above the vocal folds) and the ventricle of the larynx. The relative intensities of the various overtones can be changed considerably by actions of these different cavities.

These are the air filled cavities to which the sound waves have access and from which they receive sympathetic reinforcements in their passage to the external air. The tracheal and thoracic cavities form the subglottic resonators. The ventricle and vestibule of the larynx, the pharynx, oral and nasal chambers compose the supraglottic resonators.

The subglottic resonators provide air spaces capable of vibration in unison with the vocal folds and so take part in the composition of vocal tone. The chest is especially sympathetic to notes of low frequency and resonates male voices of low pitch. The size and shape of the chest can to a certain extent be altered by posture; stooping shoulders won't help good vocal tone and voice quality, while standing upright certainly helps chest notes and chest resonance. This causes a problem for radio speakers who almost invariably have to sit while speaking into a microphone.

The Supraglottic Resonators

These - above the glottis - are capable of considerable alterations in size and shape. The laryngeal ventricle is influenced by the action of the vocal folds. Important variations in its shape and size take place in different vowels. The forward and backward movement of the epiglottis and the contraction and relaxation of the aryepiglottic folds, extending from the arytenoids to the sides of the epiglottis further alter the size of the laryngeal ventricle.

The pharynx is tubular in shape and extends from the level of the lower border of the cricoid cartilage to the under surface of the skull. It is 13–14 cm in length. Above it is continuous with the nasal cavity and below with the laryngeal inlet anteriorly and the oesophagus posteriorly. It consists of the nasal, oral and laryngeal parts formed respectively by the superior, middle and inferior constrictor muscles. These decrease the calibre of the pharynx on contraction. The stylopharyngeus and salpingopharyngeus muscles reinforce the lateral pharyngeal walls and on contraction raise and shorten them, decreasing the transverse and longitudinal measurements of the pharynx. At the same time, because they are attached to the larynx, they help elevate the larynx. This takes place in deglutition and, as already said above, to a lesser extent in speech.

The palatoglossus and palatopharyngeus may also be considered in relation to the pharyngeal resonator. Their muscular arches form a flexible and variable arch of communication between the oropharynx and oral cavity and if over tensed are capable of materially decreasing the dimensions of the oropharyngeal outlet and creating a cul–de–sac resonator. (West 1957).

The Oral Cavity

The oral cavity, generally described as the chief resonator, depends for its contribution to resonance, on the position of the lips, tongue, soft palate, and jaw separation.

The Nasal Cavity

It is of considerable importance in resonation of voice. Nasal obstruction reduces nasal resonance. Palatopharyngeal sphincteric incompetence and tension in the nasopharynx increases nasality. Both conditions contribute to an imbalance of overtones in the voice which are recognisably abnormal.

The nasal resonator's chief function is to act as a constant and universal resonator to the voice. Skilful use of nasal resonance is essential for proper voice quality. Deep resonant voices in men also contain nasal overtones due to a slight nasopharyngeal aperture.

The fundamental laryngeal tone is enhanced when it is transmitted to the resonating chambers above the larynx.

The resonators can be divided into infraglottal structures and supraglottal structures. (Boone 1971).

Infraglottal structures

Trachea

Bronchial Tubes

Lungs

Rib cage

Supraglottal structures

Laryngeal ventricle

Epiglottis

Thyroid cartilage

Aryepiglottal folds

Pharynx

Tongue

Oral cavity

Facial muscles

Cheek muscles

Mastication muscles

Velum

Hard palate

Nasal cavity

Paranasal sinuses

CHAPTER SIX

VOICE QUALITY AND ITS EFFECT ON THE LISTENER

Before the voice can be developed to its full potential in the radio broadcaster - since the voice is the only means of communication the radio broadcaster possesses - it is obvious that voice quality must be of the highest order.

The problem, however, is that while it is relatively simple to catalogue what makes microphone speech pleasant, the reverse is much more difficult. Crystal says: "It may be intuitively easy to recognise a normal voice, ie one with no features which make it stand out as unpleasant or interfering with communication; but what are the chracteristics of the voice which make it normal?" (Crystal 1980 : 179).

We will develop this further in Chapter Seven. However, in my experience, a "normal" broadcast voice is one which is clear, audible, easy to understand, friendly, warm, and appropriate to the broadcasting situation (a Radio 3 voice may not be "normal" or "acceptable" on Radio 1 or Commercial Radio).

Voice quality is acceptable to listeners when the fundamental laryngeal tone is steady, clear and strong. This will only be achieved by adequate attention to breathing technique to maintain a steady sub-glottic pressure.

The range of vocal pitch or register is also of great importance and must be attuned to the resonance pitch of the individual's total resonator system; a voice pitched too high or too low cannot benefit to full advantage from its resonator and from the point of view of the listener, a voice pitched too high is unpleasant and difficult to listen to; a voice pitched too low can be difficult to understand because radio muddies the low frequencies. (Herbert 1977)

The supraglottic resonators are in the main muscular and moveable structures. They must be voluntarily controlled to produce conditions of optimal resonance either by varying degrees of tension in their walls, or by alterations in the size of the orifices and cavities during articulation.

The texture of the walls of the resonators affects the quality of tone, and therefore of the voice. Paget (1930) found that quality varied according to the materials on which his vowel resonators were constructed. Plasticine, glass, rubber, cardboard and wood all produced different tones, but as long as the characteristic resonance pitches of the vowel formants remained constant the vowels were recognisable.

The relaxed muscular walls of the vocal resonators tend to 'damp', 'stop' or 'absorb' high frequencies and produce mellow tone, whereas hard or taut muscular walls act as reflectors and produce harsh tone. If the walls of resonators are sufficiently thin and flexible, sound waves can cause them to pulsate and so awaken sympathetic vibration of the air space on the other side. It is this which probably makes possible the use of nasal or head resonance even when the nasopharyngeal isthmus is closed because sound waves pass then through the roof

of the oral cavity.

The resonance pitch of a cavity depends not only on its size and shape, but also on the size of the orifice. Paget says that the musical pitch of a resonating cavity can be varied in three ways: by enlarging the resonator which lowers the pitch; by enlarging the orifice which raises the pitch or by lengthening the neck which lowers the pitch of the note produced by the resonating cavity. This means that the same resonant pitch can be obtained from resonators of different sizes provided we adjust the size of the orifice and length of the neck so as to compensate for the difference of volume of the resonator. (Paget 1930).

This explains how the small resonators of children can be adjusted to produce the same vowel sounds as adults, while some birds can imitate human speech despite gross differences in the structure, shape and size of their organs of articulation. During speech the oral and pharyngeal cavities undergo an infinite variety of changes in shape and elasticity, each variation contributing a change of tone colour (resonance). Consonants and vowels succeed each other in rapid succession as pitch and volume of the fundamental vocal pitch fluctuates and infinitesimal alterations in muscular tension reflect the psychological and emotional state throwing an ever changing kaleidoscope of light and shade over the linguistic and phonemic characteristics of utterance. (Greene 1964).

Vowel Resonance

The characteristic quality of the vowel sounds is produced by the coupling of the predominant resonance pitches of the oral and pharyngeal cavities. Vowels are distinguished by two characteristic formants, one high and one low, provided by these linked resonators.

Manuel Garcia, who invented the laryngoscopic mirror was the first to recognise that the vocal folds affect quality as well as pitch. (Russell 1931). He also contributed to knowledge of the action of the larynx, pharynx, tongue and soft palate in speech and song. He used a laryngoperoskop for direct observation and photography of the laryngeal cavity and lateral x-ray photography for observing movements of tongue and palate. He found that the laryngeal cavity undergoes radical changes not only when notes of different pitch are produced but also when different vowel sounds are formed. The vocal folds, for instance, become comparatively bunched and blunt-edged in the case of /i/ but elongate and sharpen for /i:/. The ventricle of the larynx is also modified by the action of the false folds which follow the movement of the true folds. When relaxed they act as soft surface filters but when constricted they press down on the folds and obliterate the ventricle. The tension produces the compressed tone. (Atkin 1951). The epiglottis also influences vowel quality. It is, for example, obviously pulled well out of the way for /i:/ hence the invariable instruction to say /i:/ to a patient subjected to a laryngoscopic examination. The epiglottis however is pulled well back towards the cartilages of Wrisberg and shuts in the laryngeal cavity for the vowel /a/. The influence of the laryngeal cavity on voice quality can be

summarised thus:

> "The larynx produces not only a fundamental tone but many overtones. It is by the relative amplification or damping of the overtones that sounds of different character and quality are produced while others may be added in the resonating cavities themselves". (Negus 1949 : 81).

The Pharyngeal Resonator

Paget says the pharynx, which he describes as the resonator on which nobility of tone depends, alters in depth constantly during speech as the larynx rises and falls in sympathy with the movements of the root of the tongue. The considerable changes in the size and shape of the pharyngeal resonator during the utterance of vowels, and backward, forward and up and down movements of the base of the tongue are of great significance in the determination of vowel quality. Gimson (1962) says that the tongue assumes very different positions for the vowel /i/ in the words: 'shilling', 'pithy', 'list', 'tit', 'kick'. The pharyngeal and laryngeal articulation or resonation of vowels is less sensitive to movements of the blade and body of the tongue in shaping consonants.

By observation, the lifting and tensing of the velum give clear bright tones. Baritones and speakers with deeper voices are often found to speak with a slight nasopharyngeal aperture (Greene 1964).

Balanced Broadcast Voice Quality

Vocal tone is achieved by the proper management of the whole resonator system, the larynx, laryngeal ventricle, pharynx, oral and nasal cavities all of which play an important and essential part in the production of the balanced vocal quality.

If the contribution of one resonator is excessive then there is an imbalance of quality. Excessive pharyngeal tone is achieved by constriction of the palatal arches and raising the back of the tongue. This results in the voice quality that can best be described as 'plummy'. Excessive tension in the nasopharynx and constriction of the oral outlet by the palatal arches and the formation of a cul-de-sac resonator can also cause nasality. Exaggerated lip rounding and compression of the lips imparts a muffled voice quality. (Herbert 1977).

The harsh (grating or metallic) voice qualities are all due to excess tension in muscular walls. This results in dissonant components of vocal tone.

Resonance and Hyperfunction

Once air flow and sound waves travel above the velopharyngeal opening and on into the nasal cavity there is very little that can be done to alter the resonance of a speaker's voice. But the sounding board and open cavity structure of the human vocal tract are sometimes misused in such a way as to create resonance problems. Unnecessary pharyngeal constriction and malpositioning of the tongue are the most common hyperfunctional behaviours which affect quality. (Boone 1971). Lack of

mouth opening, as can be observed in the person who speaks through clenched teeth will usually have a noticeably deleterious effect quality. Inappropriate posturing of the velum such as keeping the velopharangeal mechanism open when it should be closed will also produce an undesirable resonance effect. (Boone 1971).

Taut Pharynx

There are some people who have a metallic hard quality to their voices. Such metallic quality is produced by the tight contraction of the pharyngeal constrictors creating a relatively taut pharyngeal surface. Boone (1971) says this firmer surface not only decreases the horizontal dimensions of the pharynx but changes its sounding board characteristics. A speaker with this problem has to loosen the pharyngeal surface. It is a noticeable attribute of some radio sports commentators.

Faulty Tongue Position

Proper placement of the tongue is critical for developing best voice quality. Some complaints of voice quality change are reported to occur in certain situations that is, it may be only during the speaker's anxious moments that he places his tongue faultily and thus experiences a change of quality. Improper use of the tongue as a factor in poor quality can often be identified and then adjusted through voice therapy. (Van Riper 1958).

Little Mouth Opening

This is disasterous for the development of good voice quality. Such speakers are frequently observed speaking through clenched teeth. This places the entire burden of speech articulation on the lips and tongue with no mandibular movements assisting in the oral cavity size adjustments required for normal speech. The outgoing air stream and sound waves do not receive full amplification in such a restricted oral cavity. This is why most singing and speech teachers insist that their pupils open their mouths to produce the best sounding voice. Learning to open the mouth is an excellent way of developing a better sounding voice because it seems to promote greater vocal tract relaxation and provide a larger oral cavity for resonance amplification.

Excessive Mouth Opening

A few speakers open the mouth too much, creating some resonance distortion. For example neuromuscular difficulties such as the athethoid cerebral palsied child will lower their mandibles excessively as they speek, with much distortion of voice quality. Any successful attempt in voice therapy to develop a more normal posturing of the mandible will usually result in some improvement of voice quality.

Improper Palatal Movement

Some deviations in nasality (hyper, hypo and assimilative) are related to improper palatal function. (Boone 1971). When such nasal resonance deviation is related to functional misuse of the velopharyngeal mechanism and not to structural inadequacy such as cleft palate, it is often possible through voice therapy to develop a more oral sounding resonance.

Resonance Disorders

Although the human resonance system has a relatively fixed shape and size, its overall configuration changes with muscle contraction. The pharynx for example, while relatively fixed in its vertical dimension, lengthens and shortens in relation to the positioning of the larynx; as the larynx ascends for the production of higher pitch levels it shortens the length of the pharynx which then provides better resonance for the higher frequencies; conversely as the larynx descends for the production of lower pitch levels, the pharynx lengthens, thus resonating better for the lower frequencies. These vertical changes of shape and size of the pharyngeal cavity are all produced by muscular contraction. It is this factor of muscular contraction which permits us to change the resonating voices. (Boone 1971). Resonance improvement then basically involves learning to use muscles in such a way that faulty resonance is no longer perceived by listeners to be faulty. The speaker with structurally adequate resonating bodies can learn to do things to improve voice quality. This basically means improving oral resonance, eliminating excessive pharyngeal focus in resonance and minimising the amount of nasal

resonance.

The oral cavity is the most changeable of all the resonance cavities. Speech is possible only because of the capability for variation on the part of such oral structures as the lips, mandible, tongue and velum. Vowel and diphthong production is possible only because of size–shape adjustments of the oral cavity, requiring, as Boone puts it, a delicate blend of muscle adjustment of all oral muscle structures. It is true in the broadcasting world, particularly in current selection procedures, that while potential broadcasters with articulatory problems are judged to be 'fixable', it is less often the case that applicants with faulty voice quality, ie faulty oral–pharyngeal resonance or laryngeal problems, are viewed in any such favourable light. Which is a pity, because the identification of voice quality deficiences in potential broadcasters who otherwise would make excellent communicators, means a new avenue is opened for further broadening the types of personality and voice which will appear on our radio and television stations.

The determination of normality or abnormality regarding resonance is basically a perceptual one, depending mainly on the subjective judgements of both the speaker and his listeners. Any judgement of resonance is going to be heavily influenced by the appropriateness of pitch, the degree of glottal competence as heard by the listener in the periodic quality of phonation, and the degree of accuracy of articulation. It is these other speech–voice factors that contaminate judgements of voice quality. (Sherman 1954). Since quality of resonance appears basically to be a subjective experience, the goal in resonance improvement must be to achieve whatever voice sounds best. This is particularly applicable to the voice quality

which 'sounds best' on radio.

The Tongue

The tongue is divided into two areas: the anterior (oral) two-thirds is rough being covered with tiny projections (papillae) which can rasp and hold food; the posterior (pharyngeal) third is smooth, to facilitate swallowing. The blade of the tongue is loosely attached to the floor of the mouth by a vertical fold of mucous membrane (frenum) of the tongue. The extrinsic muscles of the tongue originate outside the tongue in the hyoid bone, mandible and skull, and alter the position of the tongue in the mouth and work to change the tongue's shape. The intrinsic muscle has fibres running in all three planes - vertical, lateral and horizontal, all interlacing with each other.

The tongue occupies the greater part of the oral cavity and because of its relative mass within the cavity has a primary role in shaping oral resonance. This has long been known in singing where the tongue plays a vital role in voice quality. While the postures needed to produce various phonemes will attract the tongue to different anatomic sites within the oral cavity with noticeable changes of oral resonance, Hanson has provided objective evidence of the role of the tongue in oral resonance by spectrographic analysis. Hanson studied the effects of tongue positioning and the distribution of spectral formants. He said the second formant seemed to 'travel' the most, changing position up and down the spectrum for various vowel productions. The primary oral shaper for production of vowels, he said, is the tongue. It is also involved in the production of most consonants.

(Hanson 1964).

Articulation Disorders

Effective broadcast speech cannot occur without effective articulation. A surprisingly large number of recruitment tapes show difficulty in articulation of single or groups of sounds ('lisping' or 'weak /r/').

Strident Voice

This is not often found in would-be radio broadcasters, but it can be present in a minor feature and is one of the most annoying oral-pharyngeal resonance problems. This kind of voice appears to be related to hypertonicity of the pharyngeal constrictors. (Boone 1971). The strident voice has exceptional brilliance of high overtones, to the extent that the fundamental frequency is often obscured, giving the tone a brassy, tinny, blatant sound. (Fisher 1966).

Physiologically, stridency is produced by the elevation of the larynx and hypertonicity of the pharyngeal constrictors resulting in a decrease of both the length and width of pharynx. The surface of the pharynx becomes taut because of the tight pharyngeal constriction. The smaller pharyngeal cavity coupled with its tighter reflective mucosal surface produces the ideal resonating structure for accentuating high frequency resonance. This is corrected by lowering the larynx, decreasing pharyngeal constriction and promoting general throat relaxation.

Improving Oral Resonance

There are two problems of oral resonance related to faulty tongue position. A thin type of resonance produced by excessively anterior tongue carriage and a cul-de-sac type produced by backward retraction of the tongue. The thin voice lacks adequate oral resonance making its user sound immature and unsure of himself. It is characterised by a generalised oral constriction with high, anterior carriage of the tongue and only minimal lip-mandibular opening. The user of such a voice appears to be holding back psychologically either withdrawing from interpersonal contact by demonstrating all of the symptoms of withdrawal or retreating psychologically to a more baby-like quality.

The cul-de-sac voice, regardless of its physical cause is produced by the deep retraction of the tongue into the oral cavity and hypopharynx sometimes touching the pharyngeal wall and sometimes not. The body of the tongue obstructs the escaping air flow and the periodic sound waves generated from the larynx below. While such a voice is often found in individuals with neural lesions who cannot control their muscles, and among deaf children and adults, it is also produced situationally by certain individuals for wholly functional reasons. (Boone 1971).

Nasality

The early literature on this subject usually suggested that most nasality problems could be successfully treated by voice therapy, by ear training (Bell 1890); by blowing exercises (Kantner 1947); by exercises for the velum (Buller 1942); or by relaxing the vocal tract (Williamson 1945). Most of these were developed for functional hypernasality. But for some problems, such approaches as blowing and relaxation were generally ineffective; if for example the velopharyngeal mechanism was structurally unable to produce velopharyngeal closure no amount of relaxation or exercise would have much effect in reducing excessive nasal resonance. (Boone 1971).

In summarising five separate research studies which considered the relationship of fundamental frequency to perceived nasality, Moll concluded that there was little such relationship at all. He says there is little evidence to support the view that lowering the voice pitch decreases the amount of perceived nasality; in fact in a few studies of cleft palate speakers he says it was found that elevating the voice pitch diminished the perceived nasality. What is clear from my own observations is that any person who demonstrates hypernasality must be individually evaluated with regard to his physical velopharyngeal mechanism and what he can do to produce greater oral and nasal resonance. What works for one individual in improving voice quality may not work for another with or without the same problem. (Moll 1968).

Under the broad heading of nasal resonance falls such subheadings as hypernasality, denasality, assimilative nasality and nasal emission.

Hypernasality : is an excessively undesirable amount of perceived nasal cavity resonance during vowel phonation. Vowel production in English is characterised mainly by oral resonance with only slightly nasalised components. If the oral and nasal cavities are open to one another by lack of velopharyngeal closure the periodic sound waves carrying laryngeal vibration will receive heavy resonance within the nasal cavity. Only three phonemes of the English language should receive the degree of nasal prominence produced by an open velopharyngeal port: /m/, /n/, /ŋ/.

Denasality : is the lack of nasal resonance for the three nasalised phonemes: /m/, /n/, /ŋ/. In the strictest sense denasality could be categorised as an articulatory substitution disorder. Generally denasality also affects vowels in that the normal speaker gives some nasal resonance to vowels. A voice with this inadequate nasal resonance sounds like the voice of a normal speaker suffering from a severe head cold.

Assimilative nasality : in assimilative nasality the speaker's vowels appear nasal when adjacent to the three nasal consonants. It would appear that the velopharyngeal port is opened too soon and remains open too long so that vowel resonance preceding and following nasal consonant resonance is also nasalised.

Nasal Emission : in nasal emission the air flow passes out of the nasal cavities producing an aperiodic noise which is perceived by the listener as consonant distortion. This aperiodic noise is not a resonance problem and from the point of view of classification nasal emission could be categorised as an articulatory distortion.

Voice Mismanagement

Obviously the major cause of unpleasant or unacceptable voice quality in broadcasters is voice mismanagement, or mild forms of vocal dysphonia (if the dysphonia was pronounced, the broadcaster would not be broadcasting). And as befits people who live and work by the voice, the most difficult and important area is that of vocal strain or habitual dysphonia.

This is not a resonator problem, but a laryngeal one. Vocal strain is caused by damage to the voice folds or their muscular coordination, due in turn to mismanagement of the laryngeal mechanism.

The majority of cases are suffering from dysphonia arising from slight or gross inflammatory changes in the larynx which may be simply attributed to infection, bad voice habits or bad voice production habits and vocal strain. (Greene 1973).

Vocal strain : can be attributed sometimes to psychosomatic aspects (ie the broadcaster suddenly has an onset of nerves when having to speak into the microphone). It may also be that stress brings about some organic tissue reaction in the mucous membrane of the vocal folds. Hoarseness in vocal strain is generally accompanied by some laryngitis. Moore (1963) describes the vibrations of the vocal folds in normal voices as having three components:

- each cycle has an opening, closing and closed phase;
- variability in the periodicity of consecutive cycles is small and predictable
- there is a relatively consistent similarity between the opening, closing and closed phases in consecutive cycles.

When the voice becomes hoarse the principal deviations occur in the regularity of the cycles as regards the duration of each cycle and the timing of the three phases within each cycle. An insignificant edema on the margin of one vocal fold may cause hoarseness as a result of the healthy fold moving through two cycles to the affected folds one cycle. When the closed phase of both folds coincides the closed phase is tighter and of longer duration than normal. Such divergencies cannot be seen in the customary indirect laryngoscopic examination and are only possible with electroscoboscope and high speed filming. (Greene 1973). It is clear though, as always has to be borne in mind by broadcasters and all who use their voices more than normal, that, laryngitis apart, over exertion of the intrinsic muscles of the larynx while speaking, shouting or singing may result in permanent impairment of the delicate coordination necessary in phonation, accompanied also by changes in the conus elasticus. The thyroarytenoid muscles may only lack tone and appear flabby in appearance, but in severe cases of strain they may remain permanently

bowed. This internal tensor weakness produces either breathiness of voice or cracking due to abrupt changes of pitch. The difficulty in phonation is accompanied by a natural impulse to force the voice, producing mounting muscular tension. For this reason this type of voice disorder arising out of vocal strain is sometimes called hyperkinetic dysphonia or phonasthenia. As greater effort is used the extrinsic muscles of the larynx may become involved. The voice becomes harsh and strident yet breaking easily with the false folds in a sphincteric action smothering and pressing down upon the true folds which offer increased resistance to breath pressure by the strength of their adduction. At the same time the voice may be forced well above its normal pitch. Van den Berg describes the harsh metallic voice produced when the ventricle is obliterated and the higher harmonics are not filtered. He also mentions that some singers with exceptionally strong voices have small ventricles which accounts for the voice quality. (Van den Berg 1958).

In such cases (when the ventricle is obliterated) the delicate membraneous coating of the larynx may become sensitive and the focus of infection by micro-organisms. Chronic laryngitis and sore throats are frequently the result of bad habits of voice production. When the movements of the folds are hindered by laryngitis the activity of the ventricular bands becomes greater and the sphincteric action of the larynx comes into play, described as dysphonia plicae ventricularis. (Ellis 1952). Both true and false folds may participate in phonation (ventricular band voice) and produce a double note (diplophonia). (Paget 1930). Ellis emphasises that the extrinsic muscles of the larynx also assist in adduction of the ventricular bands. Tension in the throat can be both seen and heard in vocalisation. The ventricular

band voice is quite distinct from the normal voice, being high and strident, lacking the pulsating vibration of musical voice engendered by the rhythmic excursions of the vocal folds.

Laryngeal tension is never an isolated phenomenon and on account of the intimate association of the larynx with the pharyngeal and lingual muscles, vocal strain is invariably associated with generalised tension in the speech musculature. The back of the tongue may be pulled up, and the larynx elevated. Tension in the neck muscles is often plainly visible during speech and the need for relaxation obvious. Broadcasters to whom I have spoken, and who suffer from this tension have all complained of the throat growing more painful as the day progresses. They complain of a 'frog in the throat' which they have to constantly clear by coughing. This is a very common aspect of broadcasting under microphone tension, particularly 'live' rather than recorded. The folds are bathed in an excess of mucus which is nature's way of protecting them from friction. Beads of thick mucus constantly form on the folds during phonation and the speaker feels obliged repeatedly to clear his throat which in itself is damaging to the vocal folds.

With a cold, laryngitis and pharyngitis are usual and the inflammation and swallowing in the larynx especially in the arytenoid region may be such that the folds cannot approximate and the voice is lost.

Vocal strain occurs most frequently in those whose occupation makes severe demands on the voice. Thus for broadcasters it is an occupational hazard unless their voices are properly trained or so naturally well produced that they automatically use it in the proper way.

A dusty or over dry atmosphere is also possibly responsible for vocal strain but this is an indirect cause. The membrane of the larynx possibly already rendered sensitive by vocal abuse becomes hypersentitive to irritants and these provoke coughing which aggravates the damage already in existence. Smoking particularly acts as a laryngeal irritant, as do alcoholic spirits.

Laryngitis

Functional or infectious laryngitis is an inflammation of the laryngeal mucose and vocal folds. (Ballengers 1947). In functional laryngitis the speaker experiences a moderate amount of hoarseness. Typical functional laryngitis may be heard in the voice of an excited football spectator. Because he is screaming at abnormal pitch levels, the inner glottal edges of the vocal folds become swollen and thickened because of excessive friction. This is accompanied by irritation and increased blood accumulation. Vocal folds functionally irritated in this way appear on laryngoscopic examination to be like the thickened, reddened folds of acute infectious laryngitis. This functional laryngitis also occurs in heavy smokers. Normal vocal activity returns normally when the cause of the irritant is ended. Chronic misuse of the voice, however, may lead to persistent vocal fold inflammation and the development of polypoid thickening which may result in

persistent laryngitis. (Lowenthal 1958). Chronic laryngitis may typically produce more serious vocal problems if the speaker attempts to speak above the laryngitis. The temporary edema of the vocal folds alters the quality and loudness of the phonation; the speaker increases his vocal efforts; the increase in effort only increases the irritation of the folds, thereby compounding the problem; and finally, if such hyperfunctional behaviour continues over a time, what was once a temporary edema may become a more permanent polypoid thickening, sometimes developing into vocal polyps or nodules. Broadcasters should therefore, when plagued by this, do little or no talking because of the thickening and irritation of the vocal folds secondary to their infection. Luchinger and Arnold say of infectious laryngitis that if a speaker tries to overcome the temporary hoarseness by increasing vocal effort, such as trying to broadcast with a cold, he may develop a localised hematoma, which may then degenerate into an acute polyp. The wisdom of vocal silence (they add) when the throat hurts should be respected. (Luchinger and Arnold 1965).

Cord Thickening

Prolonged abuse or misuse of the voice may lead to actual tissue change. Chronic edema, hyperplasia, hypertrophy, fibroid tumours and chronic polypoid corditis are the common sequels of continued abuse of the vocal folds. (Jackson and Jackson 1959). The free glottal edges of the folds become granular and somewhat rounded, with occasional blood vessels seen on their superior surfaces. The normal pearly-white surface of the fold becomes inflamed in its entire length, with increased redness often observed in the middle of the true vibrating fold. Cord

thickening, nodules, and polyps develop at the junction of the anterior and middle third of the cord.

Once thickening has developed the speaker will show evidence of a persistent change in voice quality. With the increase in mass of the vocal folds, there will be usually a dysphonia, characterised by a lowering of fundamental frequency and some breathy escape of air during phonation.

Vocal Nodules

These are one of the most common disorders of the larynx; sometimes requiring surgical removal, sometimes voice therapy and frequently a combination of both. Fitzhugh, Smith and Chiong (1958) report that of some 300 cases of benign lesions of the vocal folds, 134 involved vocal nodules. The primary cause of vocal nodules appears to be the prolonged hyperfunctional use of the vocal mechanism. When the vibrating vocal folds approximate to one another with excessive force their approximating inner margins begin to show irritation at the midpoint (the anterior, middle one-third junction) as in vocal fold thickening. With this irritation repeated every day, increased callous-like layers of epithelium begin to cover the irritated site. Eventually a clearly recognised nodule develops on one cord or more commonly on both.

Greene (1973) says that no particular kind of voice typifies the speaker with vocal nodules. Van Riper and Irwin (1958) state that a majority of writers who have dealt with the subject of vocal nodules emphasise the use of a voice pitched too high.

In adults bilateral nodules are more common, usually, says Green, accompanied on each side by obvious open chinking of the glottis. The open glottal chink on each side - produced by coming together of the bilateral nodules which are in exact opposition to one another - results in a lack of firm approximation of the folds. This leads to a breathy flat kind of voice lacking approximate resonance. The voice tends to tire easily but with prolonged use, phonation rapidly deteriorates.

Vocal Polyps

These occur at the same site as the nodules. They are more likely to be unilateral. Brodnitz (1958) says that a vocal polyp like the vocal nodule or contact ulcer usually develops secondarily to vocal fold abuse. Clearly defined polyps are usually the result of prolonged vocal abuse, their early genesis being similar to that of vocal nodules. The early thickenings of the fold become irritated resulting in haemorrhages. These are eventually absorbed and the tissue at the site becomes swollen and distended forming the polypoid body.

CHAPTER SEVEN

LISTENER PERCEPTIONS OF VOICE QUALITY ACCEPTABILITY

When is a voice on radio 'acceptable'? What should we be looking for in regard to pitch, loudness, quality, speed? Black has this to say about preferences of voice:

"Merit in the speaking voice generally is assumed to be determined by the preferences of listeners. Thus a so-called good voice is a matter of opinion and the judgement is rendered more valid when the opinion is a collective one. In working with group preferences, researchers in speech usually infer that judgements of some observers are more valid than those of others because of factors of training and experience". (Black 1942 : 67).

But it is certainly true that as soon as we speak a sound emerges which is unique to the person producing it. The sound produced reflects the size and shape of the vocal tract, the anatomy and physiology of individuals. This creates an individual, distinctive voice quality which enables listeners to recognise us and determine certain perceptions about us: whether we're tired, happy, sad, bored, drunk, young, old, male, female, sick or healthy. Once we have tuned in to a voice quality we simply accept it or reject it. Awareness of the broadcaster's voice quality affects interpretation of what is said.

Voice Quality Tests

These tests are divided into two parts. Part One is concerned with subjective discussions with a group of 28 people of differing socioeconomic, cultural and age backgrounds about the voices they listen to on radio. Each testee was asked to listen in normal fashion to the programmes they usually listened to on the radio over a period of week. At the end of that week I asked them their opinions about the voices (not the content) they had heard.

Part Two was a return visit to the same 28 testees, this time with a control tape of four short voice extracts taken from radio. Three of the voices were professional broadcasters; the fourth was not professional, but someone giving a talk on Radio 4 'Woman's Hour'. I made no comment about any of the voices to the testees before they listened to them.

PART ONE : Subjective Discussion

In Part One each testee was asked for impressions and comments on the voices on programmes in their usual personal listening pattern.

The age range of those involved was from 19 to 40 year old.

In the following, R1, R2, R3, R4 are used to denote radio 1, radio 2, radio 3, radio 4 respectively. Other abbreviations used are

LBC (London Broadcasting Company)

ILR (Independent Local Radio)

ITN (Independent Television News)

IRN (Independent Radio News)

1. FEMALE, 23, graduate

"In radio we normally associate people with voices because more often than not we never see the presenter's face. Instead we tend to conjure up a picture of the person in our minds from what we can gather from his or her voice, whereas in TV we normally recognise personalities from their visual appearance. I don't think there's any such thing as a good radio voice. If there were, all voices would sound the same and it would be tedious to listen to - a complete stereotype like French radio and TV where a great deal of effort is made to unify the voice and accent by making all potential presenters and actors conform to rules laid down by higher authorities. Broadcasting of any sort should be creative and therefore must depend on individuality and above all naturalness. But I think there are still some accepted obvious characteristics as far as radio is concerned. These stem from the nature of radio itself. The main aim is communication and therefore the voice must be clear and confident. A muffled, timid voice would probably succeed in irritating the listener. Above all, the type of voice depends on the radio station and the type of programme. If you were to switch from one network to another you can easily hear the difference. The warm, chatty style of Mike Reed early in the morning on R1 differs slightly from the gentle cheerful voice of Terry Wogan, which is different again from a typical R3 announcer and the slow, matter of fact voice of R4 John Timpson. This is largely because the different stations serve a different type of audience. The listeners who tune into Tony Blackburn on Radio London do so because they enjoy his lively friendly chat as much as they do his

music. A Robin Day type voice would be totally out of place and ridiculous for a programme like that. However his voice is totally suited for his lunch time programme 'World At One' on R4 as it's controversial and provocative and he obtains exactly the effect he wants - although it's interesting that he's often criticised for imposing his personality on his interviewees by a far too authoritative tone. The news programmes show different voices too. Take Ian Parkinson on R1: he tends to read the news at such a rate that you often get the impression that it's considered a nuisance for the station to have to break the endless music for something as trivial as news. Typical of a commerical station the IRN news is also read a lot faster and in a more chatty voice than say R3 or R4, where the voice of Brian Perkins, to name but one, is slower, clearer and more precise and the tone remains even whatever piece of news is being read.

On all radio stations (except 3) there are a fair number of 'phone ins'. I was listening to Brian Hayes on LBC the other day and was horrified at the brash and sarcastic tone he used to some of the people who phoned in to say whether they would vote for Benn or Healey. I honestly got the impression towards the end that he was taking it as a personal insult that everyone was in favour of Benn. Mike Dicken, on the same station later in the day, had, on the other hand, a great skill for putting people at their ease as his voice was sympathetic and encouraging to those who were nervous or not terribly eloquent. It's important when involving the listener to be friendly and helpful without, of course, being patronising.

One of the most crucial words in radio is the word 'interest'. The presenter must not only be interesting in what he says, but he must reflect this in his voice as

well as being interested. However enthralling a programme might be it'll lose its interest if the presenter sounds bored. One of the things that strikes me about Geoff Watts' 'Medicine Now' on R4 is the enthusiasm he displays in his voice about his subject. Obviously the voice must be appropriate. It would be a fine thing to announce a national disaster in a cheerful voice as if it happened every day, just as a serious solemn voice is totally inappropriate for a fun programme like a quiz show. Pete Murray on 'Pop Score' and Tim Gudgeon and Paddy Feeney in 'Top of the Form' are good illustrations of how a lively but firm voice can create and maintain the atmosphere. A dilemma might arise as to what kind of voice should be used for a factual programme like R4 'Financial World'. However interesting you might find the subject, monotonous details of facts and figures could be exceedingly boring, but the presenter deals with it well by speaking with a lively swift voice full of expression. It's probably true that there is a definitely recognisable R3 and R4 voice. By switching on the radio at either station it's easy to associate the slow, authoritative matter of fact voice with these two stations. I don't mean to say they are all identical. Sue MacGregor of 'Woman's Hour' has a far more motherly and cosy tone than the strong voice of Susannah Simons on 'PM'. And Robin Day has a quite unmistakeable voice, and lisp. But basically they all seem to boil down to much of the same. Surprising, in my opinion, it's the programmes which offer the least variation in themselves like those on R1 or Capital where music blares all day long that the presenter's voice seems to vary the most from the educated American voice of Paul Gambaccini, the husky voice of Tommy Vance, the infuriating one of Jimmy Saville - whom I dislike intensely - to the rather distinctive but less enthusiastic voice of John Peel. On Capital the well known voices of Michael Aspel, Greg Edwards and Roger Scott are also totally distinct from one another. I don't think

I can put my finger on what exactly makes a good radio voice and I don't think I should be able to either. It's very much a personal thing and depends on the kind of programme you're listening to. I tend to go for R4 type voice - clear, distinct, impartial and authoritative but the fact that 25% of the listeners tune to R1 and 22% to R2 compared with a total of 13% for R3, R4 might suggest that others think differently."

2. MALE, black, 32, unemployed but also part-time lecturer in business studies

"My first impression listening to voices round the dial on BBC stations was that they are trying to preserve the English language in its standard form. Most broadcasters are speakers of standard English and have RP accents. I couldn't find broadcasters who speak any form of non-standard English and those who do are usually broadcasting on programmes which are specific to ethnic minorities and are on local BBC stations. For instance, Alex Pascal on Radio London's 'Black Londoners' speaks nearly standard English with a very fine Carribean accent, which actually hails from Guyana which makes it just about acceptable to most listeners. Tony Williams on the same station is a DJ and speaks a form of anglicised Jamaican non-standard English which appeals to those of Carribean extraction and those 'into' the music he plays, namely Reggae. The ILR voice is also one which preserves the status of standard English although they tend to be less deliberate in delivery. They also have less of a correct RP accent and have regional brogues. This latter fact helps to make ILR voices more 'homely' than BBC voices, because they broadcast nationally, and they feel obliged to have voices which cut across regional boundaries. LBC's 'AM' programme has two presenters giving news and anecdotes and is a good example of presenter rapport. They are both relaxed and

conversational. They have a good verbal interaction which is non intrusive but sound enthusiastic enough to hold one's attention when doing the daily ablutions in a haze of last night's dreams and the coming day's activities. Neither ILR or BBC have broadcasters with affected voices. All voices on the radio are relaxed and natural and authoritative in that they tend to sound as if they know what they are talking about. A good broadcasting voice is one which sounds interesting. So what makes a voice interesting? Is it one which tries to be all things to all people? Changing its style according to subject matter? Well of course it isn't, if one tried to do this one would become too orally inconsistent and therefore too affected. No, a good broadcasting voice is one which is consistent and thus natural; one which sounds the same no matter to whom they are talking. But on the contrary we as people often change our voices according to our audience. For example, I speak Jamaican patois to speakers of Jamaican patois; a slightly more cockney voice to cockney speakers; and RP to RP speakers. And I think many people are in a similar position. But broadcasters must not open themselves to the charge of patronising any one group or individual. Other qualities broadcasting voices must have are clarity, for obvious reasons you must be able to understand what is being said. It must also contain inflection and rhythm; no one listens to a monotone which is totally devoid of feeling and animation nor, however, do we wish to hear ranting and theatrical garble. We want enthusiasm without manic over-indulgence.

The voices of women broadcasters, despite being at the most audible pitch, follow the same guidelines as do the mens'. To my ears, women on the BBC tend to conform to narrower guidelines than the men. They are the voices of reason and balance rather than of authority. And particularly on R4 'Woman's Hour' there's

sometimes a whisper of uneasiness when discussing more general topics with men, for instance, prison reform, when they often put questions or make statements with less weight than their male counterparts. Whereas when talking to women about women's issues, they become chatty. Possibly my favourite male voice is quite classical in its depth and resonance - dark and rugged, fashioned partly in the whisky and cigar style but certainly in the mode of the knowledgably seductive. His physical appearance on the other hand is conjured as the image of a tall but slightly built dark haired bespectacled reader of both the Times and Guardian who may be seen at social gatherings suggesting reasons for things. This is LBC's Brian Hayes, although I'm not sure I'd talk to him at a party because he comes over so rude. I think his voice reminds me of when I was young, listening to my father whose voice then seemed so deep and his shout so doom laden that this type of voice is also protective to me personally."

3. MALE, 22, science graduate, public school educated, from Bristol

"There is most certainly an obvious difference between the voices on BBC and ILR. The difference isn't immediately apparent when concentrating on what is being said rather than the manner in which it is said. Conventional radio listeners are rarely conscious of style because it's usually a subconscious process that decides whether a particular voice is nicer to listen to than another. I find the ILR voice much more friendly than BBC, totally personable and conversational. It is a friendly style although on occasion the voice on ILR, I think wanting to be cosy and chatty, seemed to become forced lower than it should. It sounds sometimes unnatural. The pitch and tone of voices I listened to all seemed different, although certain channels prefer a certain kind of voice. BBC R2, R3, R4

generally prefer a deeper tone where R1 prefers a higher pitched voice that sounds and appeals to younger listeners. BBC local stations that I've heard have a cross section of voices although there are marked differences in other aspects. ILR stations are fond of a deeper toned voice and also the accents tend to be more regional than classical Beeb. This is the case in Radio Bristol where a good many presenters have the accent of that particular region. ILR stations tend to favour American accents on programmes that are almost totally music. This is fine as far as letting you know what the next record is but they lose some personal friendliness; but then again music programmes don't necessarily have to be like that. American accents are found on R1, Kid Jensen for example. On their programmes they are personable and the effect is just as good as a Bristolian accent presenting records on Radio Bristol. When an accent is heard on radio the listener feels as if the message is being put across in his own language, especially if it's conveyed in a compatible style. Very few regional accents however are heard on national radio, they tend to be more neutral particularly on ILR stations. This could be because some accents are unattractive to some people and also the contrast of having a regional accent presenting local news as opposed to an unaccented voice reading national news is advantageous in that the listener really feels he is being spoken to personally from someone from that region as opposed to a 'foreigner' who doesn't really know how it will affect them. This doesn't mean all local radio station presenters should have an accent to coincide with the area they are broadcasting into, a neutral accent is just as good if it is enthusiastic. Enthusiasm is a quality that is essential for a broadcasting voice. It isn't shown a great deal on R4 where the speech style is slow and precise which is also true for some evening programmes on R2 and 3, such as Nick Jackson on R2. In specialised forms of radio speech such as newsreading and interviewing,

there is a variation of voices. Newsreading which conventionally was a rather serious business and still is on R2, R3, R4 has become more relaxed, fluent and conversational. Magnus Carter on Capital has these qualities and at one point swore during a bulletin. Voices on the BBC sound more formal and less relaxed than they do on ILR. A woman's voice is also well suited to broadcasting, in fact quite often in interviews a woman puts the interviewee, whether male or female, at greater ease than a man. At the stage radio is at the moment it is the ability to put the listener at ease and be conversational. Finally, I suppose you want to know what I think really makes a good broadcasting voice. There are of course freak voices that are excessively low or husky, that are naturally attractive but apart from these, it is the tone of the voice and the manner in which it is used that makes it nice to listen to and catches the attention. This is achieved mainly by enthusiasm, a clear voice and a friendly manner, something which, although there are differences as mentioned before, remains fairly constant throughout both BBC and ILR radio stations."

4. MALE, 31, advertising executive, single

"It's quite clear that you can say something about people from their voices. Look at the people on 'Woman's Hour'. They're all soft spoken, middle class; they clearly pronounce all their words, and they're what you would call easy on the ear. You wouldn't really be offended by them. They've each got the voice of a girl you'd like to take home to Mum; comfortable but quietly confident. On the other hand, Tony Blackburn has a brash, lively voice. A voice that even though you may criticise its constant barrage of very often banal sentiments you can still tolerate. The voice suits the occasion. The continuity announcers on R3 may

sound as if the devil has passed judgement on them but their sombre deadpan voices seem well suited to the job they do. Information is given which we can all understand. Solid, dependable, an echo from those days when the BBC reigned supreme. I'll always remember the story of the BBC cricket commentator who, for a reason which escapes me at the moment, was unable to give the commentary to the final test match. In stepped his replacement, a young American. Anyhow the transformation was quite remarkable. The sedate game of John Arlott had changed out of all recognition merely because of the sound of the commentator's voice. We had an expectation of what a cricketing voice was like, and this wasn't it."

5. MALE, 32, married

"The voices I like on the radio will be able to attract and command my attention. I like enthusiastic sounding voices. Personally I find John Peel impossible to listen to for this reason: his voice conveys to me such a strong impression of lethargy that I have never succeeded in listening to more than two sentences of his voice without falling into a deep sleep. However, Bernard Falk on 'Breakaway' on Saturday morning I like. I find all the voices on this programme refreshing, enthusiastic and cheerful and energetic with the exception of one reporter with an irritating predisposition for giggling. Enthusiasm is not the only thing I look for. I like to be able to identify myself with the sound of the voice, to paint a picture of the person . . . flesh and blood. The austere sound of World Service news is something with which many identify, conjuring up an image of colonial Britain. The slow delivery and cultured tones of these news readers project abroad the BBC's chosen image of its country – this is not an image which domestic listeners

may be proud of or indeed even recognise. It may not even be accurate.

Radio 3 has a similarly exclusive image, enhanced by the deferential well bred voices which treat classical music in such reverent tones. In the cases of World Service and R3, listeners may identify themselves with the social strata which they see these stations representing. Yet other listeners identify with accents of region or race. The LBC programme 'Rice and Peas' is presented in a strong West Indian accent and yet this programme expressly does not wish to exclude non blacks. A regional accent has many advantages in local radio; listeners may feel more convinced of the genuine concern of a truly 'local' reporter. They may also identify more closely with a radio station which broadcasts in the accents of that region. It's impossible to construct a blueprint of the perfect voice. He must be able to speak clearly; it must convey the commitment of that individual to broadcasting. It must project enthusiasm and interest for the subject with which he is dealing and it must demonstrate an understanding of the subject which will inspire confidence."

6. FEMALE, 23, secretary, non graduate, from Leeds

"I have definite memories of the 'AUNTY BBC' voice from my earliest childhood, though obviously not the ILR stations. The BBC image and voice is for me an institution and a part of being British. The ILR sound are just voices that provide me with news and music. Because of this I think that it's only fair to say that I have a definite BBC bias. The BBC IS the voice of authority. There are presenters on the BBC who have shown me through their eyes whole parts of the world. Alistair Cooke and his 'Letter From America' for example. His style and

voice ooze BBC and fair play. The richness of his voice and his civilised mid-Atlantic accent carry weight. It seems to sum up the quality of our way of life. Everything he says sounds true. However, it is, I grant you, now a bit dated, an echo from the empire days. This style can still be heard on World Service where even the music carries overtones of the Raj. An old fashioned style.

What do I think of radio voices today? I like the way that accents can now be heard on both the BBC and ILR. By accents I mean only regional accents. Alas all the voices that I ever seem to hear are toned down. Perhaps this is done for reasons of clarity. I think that it's being done intentionally at most stations and especially by the network stations such as R4, R2, R1. It's an attempt by the BBC to present an image of Britain that the BBC would like to see, that is, a single nation with shared goals and ways of life, albeit with 'quaint' regional differences. I think that the hope that lies behind this kind of thinking is that they want to keep presenting an image of Britain being made up of middle class families with 2.4 children, a mortgage, eat take-away food, etc. . . we might actually become the image. How many practising Rastafarians, skinheads, sikhs and homosexuals have a voice on network radio. When have we heard a skinhead from the wrong side of Bow Bells present a news programme? Or read the R4 news? The best voice it seems to me is the safe voice, the bland voice. Even the regional accents are softened by education. I like different voices but mostly middle class voices. ILR representation is very punchy and immediate."

7. FEMALE, 24, Personal Assistant to MP, postgraduate

"I didn't realise how much I took for granted in the way of radio voices until I listened to Radio Zodiac, a pirate station which operates on Sunday. This largely consisted of someone called Roger Vosene, who had a fairly pleasant voice but never succeeded in being any more than a sound between records. Then there was John the Pet Poet in his 'Poets Corner'. He read out three poems in a completely deadpan voice, the only hint of expression coming when he got to his own (the inevitable Ode to a Nuclear Holocaust). Even the eagerly awaited results of the programme's poetry competition failed to jog him out of a monotone. Perhaps he was depressed because there were only three entries. On top of everything he was nervous and his voice shook. These faults are not confined to the Radio Zodiacs of broadcasting. Peter Allen of IRN has a slight tendency to gabble at the beginning of the sentence and tail away at the end which makes him sound uncertain and quite a few broadcasters conceal nerves by over-emphasising. Tina Heed who presents a programme called 'New Ideas' on the World Service with Casey Lord swoops up and down the scale, sprinkles her sentences with far too many stresses and ends up sounding forced. Mr Lord on the other hand has a pleasant, deepish voice and the effect is natural. His enthusiasm is in proportion with what he's talking about. Another duo - on R4 - works much better, perhaps because both voices are calm and thoughtful and complement each other. This is 'In Touch', a programme for the visually handicapped presented by Hannah Wright and Peter White. They're both obviously very involved in what they're talking about and their enthusiasm is infectious without needing to be pushed on the listener. Peter White - because he's blind - sometimes sounds as though he's talking to himself, not to me. Very different from Tony Blackburn.

The formula of speed, polish and a dash of mid-Atlantic drawl seems to have worked well for him, perhaps because it washes over the listener so easily. It sounds too aseptic to me as if its been purged of any quality which might jar, and this in itself can become irritating. The American style's even more pronounced in Paul Gambuccini who produces a machine gun stream of words with a liberal sprinkling of emphasis. Presumably this is meant to numb the listener but it makes me feel bullied and patronised. Both these voices sound affected as though they've been carefully contrived for radio and for that reason seem to be easy not to listen to. These voices remain faceless and although they make fewer demands on the listener they are less rewarding than the voices with character. Margaret Howard, who presents 'Pick of the Week', on R4 has a very individual, slightly ironic, style but she's very pleasant to listen to and her style suits a programme which, after all, reflects her personal taste. It's also a fairly deep voice and free from the trills and swoops which sometimes creep into more feminine voices. A hint of irony is also an attractive quality in Libby Purvis' voice. Here again its a deeper voice, and sounds direct and unaffected as a result. Still with the 'Today' programme there's some quality in Brian Readhead's voice which I find very irritating. It may be that he's too ironic to the extent that he never seems to be taking anything seriously. Another niggling voice is Robert Robinson's. I think here the problem is that he's too fluent and instead of sounding spontaneous, he sounds as if he's been practising in front of a mirror. This detracts from the pleasure of a programme like 'Stop the Week' which is meant to sound like a natural conversation. Some time ago George Melly filled in for Robert Robinson for a few weeks and he sounded much more spontaneous and unaffected. For some reason a regional accent on the radio immediately catches the listener's attention. The World Service broadcast a programme called 'A Taste of Honey'

from Belfast on Saturday and the lady presenter's Irish accent was so pleasant to listen to that I found myself hooked. As well as having an Irish accent the voice was natural, clear and chatty, without being forced. A programme called 'Viewpoint' on Radio London was equally gripping though here the reason was Geetha Bala who talked about the Indian film industry in a musical, feminine voice with a very slight Indian accent. Otherwise regional accents aren't much in evidence on the radio in London apart from the Irish racing commentators and the Northern football commentators who are presumably brought in for the earthy, open air quality they bring to sports programmes. In some cases the ILR presenters lack the polish of their BBC counterparts but they may gain in freshness as a result. Therese Birch of LBC's 'London Life' has a pleasant melodious voice and is easy to listen to. She did once sound dangerously close to giggles and occasionally when reading the news she stresses the wrong word but these are very small things. The IRN news reading sound is less stylised than the BBC and the phrasing less careful. But it doesn't lose in force and authority as a result. At the top of the BBC scale come the World Service news readers who speak unnaturally slowly and meticulously enunciate every word. Finally the ILR presenters do seem to be mercifully free of the R3 tendency to tiptoe round the listener. 'Music Weekly' introduced by Michael Oliver had three people talking amongst themselves about a British composer. The conversation was relaxed and it was clear that all three knew what they were talking about. The greatest danger with voices on radio is that the listener should be distracted by slips, too much stress, too little stress or false enthusiasm. Someone who sounds too much as if he's reading from a script is as indigestible as an incompetent ad libber and the most successful broadcasters seem to be those who can step out from their script through the pleasant, easy tone of their voices. A touch of irony seems to help

in this process, giving the feeling the message is being understated rather than overstated. The higher women's voices run the risk of swooping, and the lower, sexy Dilly Barlows type voice is easier on the ear. The best news readers are those who keep up a brisk pace without gabbling. The listener wants to hear what's being said without fidgeting between items because they're being read out so painstakingly. The more you listen to radio the more you realise how narrow the gap is between what sounds good, and what irritates and how it may be quite an insignificant quality in a voice such as a slight accent which makes it interesting."

8. FEMALE, black, 28, secretary, non graduate, educated in America

"There doesn't seem to be much of a range of voices when I listen - the standard is very middle class, slightly nasal, rather arrogant voice with clipped, stilted diction announcing 'This is the BBC'. I'd like to think that ILR is slightly less class-conscious but although the norm is certainly not the Queen's English and leans more towards a less class distinctive, more relaxed, well modulated voice, there still doesn't seem to be much variance. Actually, after a few evenings of sitting intently in front of the radio, I came away very disappointed. After a while the voices suddenly seemed to blur together so that eventually one BBC upper crust voice became indistinguishable from another and one LBC voice sounded exactly like a voice I'd heard earlier on Capital. Once in a while I was lucky enough to be entertained by a few endearing idiosyncracies of certain reporters or presenters like a lisp or a slight adenoidal problem or an inability to pronounce r's properly but I'm sidetracking. Those are mannerisms rather than the question of the qualities of a good broadcasting voice. I think there are slightly different standards for presenter and reporter voices in broadcasting. It

seems to me that a presenter's voice is generally slightly higher pitched, chatty and more expressive, whereas the reporter's voice appears to be lower in pitch, weighting it with more authority, serious and businesslike, with just enough inflection to make the story, whatever it might happen to be, interesting without distracting from the news itself. In a large city, say London, where you have a wide cross section of listeners the radio voice should be fairly bland, that is, not easily characteristic of any particular class, race or culture, unless of course broadcasting for a specific programme dealing with a specific topic in one of those areas. There are exceptions. I mean it's unlikely that you'd hear a heavy German, American or Scottish voice reading the news on a national or local radio station in London. It would be too distracting because it would be identifiable to only a small minority of Scottish, German, or American listeners living in London and the general vicinity. But I'd like to qualify that by saying I would expect to hear Irish accents reading the news on Northern Ireland BBC and ILR stations and Yorkshire accents reading the news on Radio Hallam in Sheffield or Radio Leeds so I was pretty surprised listening to Radio Scotland one morning to hear one of the BBC's standard upper crust voices floating out of the radio.

Voices that irritate me no-end are DJ's voices. It's very difficult for me to listen to many of the DJ's on the radio today. They usually go completely over the top exuding vim, vigour and vitality and wind up teetering on the brink of hysteria dragging their listeners with them. One particular DJ, Greg Edwards of Capital, has the most annoying habit of aping a very loud, very brash and very pseudo American accent. Their aggressiveness is also irritating. I resent being grabbed by the throat and pummelled into listening to some nutcase talking about some titillating article we happened to miss in the Sun that morning. I personally prefer

the low well articulated soft voice. One presenter I really enjoy listening to is Sarah Ward who does the 'London Tonight' programme on Capital. I also like Douglas Cameron who reads the LBC news reports. They both have voices which are easy and pleasant to listen to. I can't say the same for most of the voices on BBC. Richard Baker, who presents a classical music programme puts me to sleep. The most disturbing voice that comes to my mind is that of Maggie Norden who used to broadcast a Sunday morning programme on ILR. She has a nasal, grating, nastily arrogant voice and I pictured her as a rather shrewish, hard faced young woman. When I actually did see a picture of her I wasn't far wrong about her looks. But for the most part I'm terribly romantic about conjuring up faces to match the radio voices I hear. Because most have attractive voices even if somewhat bland, I picture them as being glamorous looking. I see swarms of tall, well-built dark-haired men and svelte clear-eyed husky-voiced women. If I were to find myself amidst a congregation of radio journalists sometime I'm sure I'd be quite shocked and hard put to believe the resonant, deep, authoritative voice I had heard so often actually belonged to a 5'1", balding, slightly buck-toothed, bespectacled gentleman."

9. FEMALE, 25, fashion designer

"If you assume the content hasn't changed much over the years, what is it that makes a 1985 broadcast essentially different from a 1935 broadcast? I think it rests strongly on the voice and the way it is presented. The phrasing, intonation, style, accent and the use of 'in' words all go to differentiate modern broadcasting from that of previous times. Unlike previous decades we are becoming far more natural in our speech with a distinct dislike for those upper class voices of the

stodgy inter-war years and the Lord Reith era, when radio was regarded as an arm of the establishment, and a means of solidifying an overall language standard. Because today's society is highly mobile and broadcasters must need move around the country to progress in their careers, all types of voices may be heard in all parts of the country. But that is not to say that there is not a regional difference in accents, for as is well known the voice of a Yorkshireman can be picked out in London, and a Southerner's voice becomes conspicuous in the North. For the network stations most announcers have voices which do not display any exaggerated regional characteristics. This 'neutral' accent which originated in the South - a fact often resented by Northerners - seems to be acquired as students pass through higher education and it is a fact that most public figures have developed a 'bilingual' facility which enables them to switch from their native regional accent to 'neutral' English at will. Some of those who possess this facility are Mike Neville, Michael Parkinson and Richard Baker. When the class structure of Britain was more definite and sharply defined, largely perpetuated by those from Public Schools and Oxbridge, the voices of this elite stood out sharply against those of the ordinary people and exacerbated the feelings of them and us at the time. However, since the Second World War a great levelling process has taken place and people no longer revere a 'posh' accent. Today it seems that communicators must appear to be all things to all men and any trace of an upper class accent immediately turns off the common man. Most regular broadcasters try to appear in the role of a 'friend' who has been invited into the home by the listener who switched on the radio, and whose duty it is to instruct or entertain. In this the quality and control of the voice is particularly important and because the voice betrays the emotions it follows that the emotions must also be under strict control. Because the voice is 'the mirror of the soul' a broadcaster might have to 'laugh

while his heart is breaking'. A classic example of this was when the broadcaster continued to describe the holocaust through his sobs when the Zeppelin 'Hindenberg' exploded at its moorings at New York. Many broadcasters have a naturally pleasant voice and it is possible for some talented people to change their voices according to circumstances. An extreme example of this is the mimic Mike Yarwood whose act largely depends on his ability to imitate the voice of his victim. Of contemporary broadcasters Jimmy Young is one of the most successful at the present time due to his good diction and chatty sincere voice. His pleasant manner and quick repartee is a great asset in phone-ins. Another broadcaster in the same mould is Terry Wogan whose rich Irish brogue and bantering manner appears to appeal particularly to lady listeners. Although not to my taste their success seems to stem from their ability to communicate with their voice alone. Others who are expert at projecting their personality through their voice whether zany as when compering 'Top of the Pops' or sincere and serious when taking to the disabled are Jimmy Saville and to a lesser extent Kenny Everett. Some broadcasters have voices and personalities which seem to appeal particularly to young people and their mums and among these I would rate Noel Edmunds, Tony Blackburn and Anne Nightingale. Richard Baker's quiet but clear voice seems ideally suited for news reading and the compering of concerts while Robin Day's harsher tones and the lawyer's no-nonsense approach make him a perfect anchor-man for the more controversial political forum. Other presenters, such as the DJ's on Mercia Sound, try in their amateurish way to imitate the Goons with their funny voices and have reduced the humour on their early morning show to the level of the Junior School playground. The less formal framework into which most local radio stations need to fit their programmes makes it possible for them to be much more flexible in the timing of their programmes. This enables them

to run the equivalent of a 'stop press' service where hot news items and local characters can be immediately brought onto the air. This topicality and the close relationship with the local community enables them to act as a sort of club into which local characters can be introduced from time to time, to air their views and grievances. In this way they can justly regard themselves as The Voice of the People. The voices heard on the radio network, ILR and BBC local radio in my opinion do tend to reflect the society in which they are operating. In any given community in this country the professional people tend to have the 'neutral' voice with perhaps just a trace of the local accent, whilst the remainder of the indigenous population will have a more or less pronounced regional accent. Radio voices seem to be similar in kind over most of the country and vary most to suit the type of material which they are broadcasting. In some cases the voice seems comparatively unimportant providing that it is audible and capable of conveying the message. For instance on the World Service, which is concerned mostly with politics and world events, the dry matter–of–fact voices of political reporters seem to predominate and often these are distorted by appalling landlines. On the R3 music programme the cultured, dulcet tones of the College of Music professor may be heard while on the R4 magazine type programme the whole gamut of spoken English may be covered, over a period. For instance, the 'Today' programme opens the service with the racy voices of Brian Redhead, John Timpson and Libby Purves and later in the day the rasping tones of Robin Day are followed by the gentler voices of the 'Woman's Hour' presenters. R2, which endeavours to involve the older age group in matters of national importance, relies on the persuasive voices of Jimmy Young, Terry Wogan, Tony Brandon and Benny Green to put over its message and leavens the heavier features with popular music and comedy shows. R1 is basically for the young or at any rate the young at heart who need

a background of pop music, short, sharp features on sport and leisure topics and phone-ins and request programmes. This programme, slanted mostly towards the under thirties, is carried along at a fast pace under the auspices of such extroverts as Tony Blackburn, Adrian Love, Rosko and Jonathan King."

10. MALE, 34, actor

"The voice is the only direct link between me, the broadcaster and you the listener. And it doesn't just tell you the information I've got to put across but a lot of other things as well. One reason I believe one person and not another is the mental image of their subject that their voices convey. Colin Turner and Julian Wilson are both racing tipsters but Colin Turner's mechanical drawl paints a picture of a losing afternoon in a smoke-filled betting shop, whereas Julian Wilson with his squires huntin', fishin' shooting voice always puts me in mind of winter days. In the same way I listen to Jimmy Armfield's match reports on Sports Report and not Stuart Hall's because Jimmy Armfield has the voice of the man on the terraces, whereas Stuart Hall sounds as if he has spent the match in the VIP lounge. I don't think there's any such thing as a good radio voice in isolation. I can only judge it by the way it personally affects me. You may think that Richard Stilgoe and Ray Gosling are great but I hate them both. Why? Because listening to them sends a shiver down my spine. They both have in their different ways a poorly concealed smugness and conceit inherent in their voices. We are being funny, what we are saying is funny. Laugh. I shudder instead. I don't think there's any such thing as THE good radio voice because I want the voice to be different in different situations. For example, in a chat show I want the voice to be just that. Chatty. I want to feel that the presenter is a person I could get

on with easily. Whether he is or not is immaterial but that is the impression he must convey in his voice. Jimmy Young and Michael Aspel both host the same sort of show with much the same format, but they affect me differently. Jimmy Young has warmth and approachability in his voice. I feel I could stop him in the street and pass the time of day. Whereas Aspel's voice is slightly distant and his tone rather condescending. I don't think I could chat to him in the street because the windows of his expensive car would be wound up. Syd Burke on 'Rice and Peas' usually talks about subjects that in the normal run of things wouldn't interest me that much but I listen because his voice is so accessible; I feel he's sitting next to me. The quizzes in Tommy Boyle's show always leave me feeling like a moron, but I still listen because his voice has an immediate personalised quality. So does that mean that a good chat show voice has to be warm, accessible and personalised? Because it's subjective it isn't that simple. 'Stop the Week' is pompous, psuedo-intellectual waffle but I like it because I like the voices on it. The voices of Robert Robinson and Laurie Taylor are aloof and smug, but so is the programme. But when Robert Robinson chairs 'Brain of Britain' his voice grates because his smugness is out of place. What about when I am listening to the news? Do I want a chatty voice? No. I want a voice to have a certain neutral authority. I want the facts given to me without comment by a voice that I can trust. Doug and Bob, LBC's answer to the 'Today' programme, are too friendly. They have a matey, singsong quality which makes me feel that they are terribly nice chaps, one of the lads. But I want to feel that the person disseminating the news isn't one of the lads; I need to feel that he knows something I don't. Julia Summerville, on the BBC, may well be immensely knowledgeable in her subject but I can't take her seriously. Not because she's a woman, but because her voice is so lightweight I don't believe she

can really grapple with such a weighty subject as industry. But when Brian Martin reads the news, I take it in hook, line and sinker. His calm, measured unemotional voice deals with all news on an equal footing. It's just news. He leaves it up to me, the listener, to decide whether I think its good or bad. So what do I consider a good radio voice? Obviously it has to be clear and sound interested in what it is saying. Otherwise voices can too easily sound like Mike Allen and Roger Scott who sound like colourless wallpaper and seem by the drab sameness in their voices always to be apologising for interrupting the flow of the music. So the voice must have clarity and interest and also it must fit with my preconceived ideas of both the subject its dealing with and the situation in which it's being used. Who measures up to these standards? Here are three of my personal favourites. Dominic Harrod, Margaret Howard and Syd Burke. Dominic Harrod because he maintains my interest in a subject about which I know next to nothing - finance. Every time I hear his voice I can see the pinstriped suit and old school tie. He sounds just like I think a city gent should look. But at the same time he has warmth, and an eagerness to impart his knowledge. Margaret Howard is my special favourite because with her warm, easy going voice with just the occasional hint of school mistress she sounds just like my mum." (It is interesting here to note that Margaret Howard has been voted several times the best loved voice by merchant navy seamen listening to a World Service Merchant Navy Programme - JH).

11. FEMALE, 24, broadcast technical operator, graduate

"Just off the top of my head I'd say that BBC voices are calm and controlled, with an almost confidential quality about them; and ILR voices leap out of the radio and beat you about the ears. When I'm listening to someone like Brian Perkins presenting BBC News or reviewing the morning papers, it's as if I personally am being let into a secret. I almost want to move closer to my radio. But there's no way I'm going to want to do that to Capital's Mike Smith. He's got a light sunny voice, he sounds as if he smiles a lot but he keeps me at a distance by talking at the top of his voice. I find it easier to listen to relaxed voices. But like any generalisation, that particular theory doesn't stand up. R1 DJ's, with the exception of the funereal John Peel, all talk at the top of their voices, but not all of them smile. It seems to be very fashionable to use an upward inflection for most of the sentence and then suddenly plummet to finish off. Simon Bates in particular uses this strange way of speaking. I think he has a very attractive voice with a slightly throaty quality to it . . . it's what he does with it that puts me off. On the other hand, surprise, surprise, I did find a relaxed voice on an independent station. Unfortunately it happened to be Benny Green which is cheating a little because I know he also appears on R4 occasionally. To me he sounds friendly, natural, down to earth . . . someone who might live next door. I'm sure a lot of this is just because of his accent, he's very definitely a Londoner and, just as a Northern accent, makes me think of someone slightly cheeky, intelligent and good humoured. I was also impressed with Alan King. An authoritative voice which sounds just one step away from being totally natural and I think that step is probably the fact that he's presenting a concentrated stream of information. Perhaps what impressed me really was that he

didn't seem at all flippant. That's something that really does irritate me, and I've heard it on both Capital and R1.

This led me to wonder whether the voice is used differently according to whether the programme does or does not have music in it. I've heard Capital's Sarah Ward wind herself up for music and down for speech and I'm afraid that makes me feel seasick. In direct contrast R2's Brian Matthew has one of the smoothest voices around. He sounds mellow, secure, friendly and warm; and whoever he's talking to or whatever he's presenting, he himself sounds interested and that catches my interest. Now whether I'd want to listen to a programme that relaxed and easy at 8 am is difficult to say. Early morning presenters sound cheerful and lively on most stations and in the case of Tony Brandon who sometimes appears between 5 and 6 am on Radio 2, far too cheerful. Using phrases like 'Branders at the Beeb' I can imagine him grinning from ear to ear unbearably awake and lively. Radio London's Suzy Barnes finds a nice compromise, she seems to wake up with me. But then her light slightly husky voice just isn't strong enough to penetrate the layers of sleep at 7 o'clock in the morning. On R4, Libby Purves often seems to be straining to lower her voice, which has a slightly breathy quality to it; even when she laughs it can sound contrived. Right at the beginning I said the BBC voices were calm and controlled. And I don't think you'll get any more calm and controlled than Sue MacGregor. She sails through 'Woman's Hour' with the fluency and ease of years of experience; you never hear her take a breath or phrase a sentence so that it doesn't make sense, and yet it's all colourless. I never feel that there's a real person laughing at a funny item or enjoying a recipe for lemon souffle. I admire her relaxed manner, the way she can switch from a conversational interview to introducing someone else's item and make a programme with such diverse items flow together. I'd call that a

professional job; but would the real Sue MacGregor please stand up . . . or would that spoil the whole effect? Do I listen to Sue MacGregor or do I listen to 'Woman's Hour'? The answer is both . . . she makes it easy to listen to but I like what goes into the programme. I think it is important that the presenter and content should be in harmony. The approach to information is understated to let the facts speak for themselves; the approach to entertainment is more lively to allow the listener to join the presenter and enjoy themselves. Both are an invitation to join in, one to engage the mind, one to engage the soul. Let me start with an example of what makes a good voice. There's a certain lady who owns a very shrill high pitched voice with a speech impediment to boot, she wears large glasses and she's heard with alarming regularity on radio and television. If you haven't guessed by now, I'm talking about Janet Street-Porter. No doubt a good journalist but a more irritating voice I've never heard. So that's my first point; a radio voice should have rounded edges. There are better ways of attracting the listener's attention than setting his nerves on edge. I'm not saying that a radio voice shouldn't have character but it should only be heard when it's relevant. As to how you get this into your voice, well, breathing in the right places helps, and so does phrasing a sentence so that it makes sense."

12. MALE, 28, journalist, non-graduate

"The voices we hear on the radio tell us information; make us think when we hear points of view; entertain us; keep us company and perhaps cheer us up when we feel down. A beautiful woman with a horrible voice holds our attention on the telly but wins no admirers on the radio. The voice's got to do it all. So it's got to be the voice we like.

I remember the voices between the radios. Terry Wogan's gentle Limerick lilt, calm, kind and cheery is what people like to hear regularly. Wogan's voice is relaxing. Why worry about things? Take things easily. Remember the Irish haven't got a word expressing the same sense of urgency as 'manana'. On Capital there's Mike Aspel's smooth, dapper voice to charm you through the morning. Tony Blackburn's public school vowels, jumped around with the accompaniment of 12 year old dormitory laughter may be extraordinary and inane but the voice sounds caring to me; it wants me to be happy. And smile. I like this voice. I prefer John Peel's voice, which at first hearing drones in a nasal, cultured Scouse way. In fact the rhythmic patterns which make a voice pleasant and easy to listen to, are all there. It's quite underplayed, fatalistic. On Capital at the same time is Nicky Horne, whose voice, I've decided, I don't like very much. It's deep and macho, and sounds projected so it appears to try and make the most ordinary thing sound really exciting and important. It's too melodramatic. Personally, I don't picture radio speakers in my mind as regards how they look in the flesh, except those I know from TV or photos and those in plays, where imagination is obviously vital. I'd never have guessed that Nicky Horne was only 5 feet, or that Gerald Priestland's thoughtful, deepish, nearly-but-not-quite pompous voice belong to a man of 6'7". Broadcasters are too professional to let things get in the way of their voice, except age. I could tell that Priestland was older than Horne from their voices. But on the whole, bumbling, fat politicians and businessmen or livewire showbiz people tend to be easier to envisage. Women's voices are increasingly common on the radio and it often seems to me that they sound harder and less vulnerable than many male voices. Although there's no doubt they are feminine there's often a hint of masculinity in that their voices are deeper and stronger than a lot of women. Partly this is to carry weight and authority and

partly because just as growly men's voices don't work well except perhaps in the DJ line, a shrill, high-pitched woman's voice is too hard on the ears to stand for long. We listen to Libby Purves reading the news and don't think about the voice because it's a BBC news voice. It's clear and deeper than the average woman's voice so it carries authority. If actress Ami McDonald, sometimes heard on radio quizzes and panel games, were to read the news, we wouldn't take it seriously because her voice is too tiny and girlish. It's attractive only in small lighthearted doses. Anne Nightingale, who holds the women's banner for their DJ contribution, often has a low, husky voice one minute and a high excitable one the next. It shows good range but it's too often stupid for me to warm to her low potentially sexy voice. Anna Raeburn is an example of a woman with a powerful voice. By powerful I don't mean loud but that in her clear straightforward voice she can clearly show various emotions - from a schoolmarmy directive to sincere caring. Although I'm used to it, I'm not too keen on John Timpson's voice. Perhaps it's because I've usually just burrowed out of bed when I hear him but his voice sounds as if it's burrowing through the earth or as discreetly as possible, gargling with gravel. In comparison David Jacobs' smooth, dulcet tones sound like delicately trailed silk, or the gentle breeze after the storm of a violent disagreement on the 'Any Questions' panel. Half way between Timpson and Jacobs is the guy who presents 'Black Londoners' - Alex Pascall. His voice isn't growly, but it's beautifully resonant in the best West Indian lower pitched style. In short, cool. Alistair Cooke's voice is slightly nasal with a touch of gravel and interrupts itself with deep breaths, which together show signs of age. The whole picture is also that of a wise man. His voice convinces us that he knows. In Anthony Howard, politics has a commentator's voice which sounds youthful but experienced, enthusiastic but also sceptical. However serious his subject Howard's

strong dynamic voice sounds as though he's happy. You can almost hear him smiling. His voice is punchy, slightly breathy and shows real interest in his subject. Two of my favourite radio voices belong to Robbie Vincent and Peter Clayton. Vincent's voice is a real personality to me. It's basic, straightforward, with no airs or graces; it can easily show anger and irritation but also kindness and consideration. Clayton's voice is warm and friendly enthusiastic but natural. He sounds as if he's conversing whether he's got someone to interview or whether he's telling us what the next record is."

13. FEMALE, 34, civil servant, from Devon

"I think ideas are changing. Once upon a time you could dismiss the BBC voice as plummy and definitely upperclass. Some of R3 continuity announcers are still guilty of this stodginess but it's surprising how few presenters do have this so-called typical BBC voice. More common is someone like Richard Baker who has a pleasant easy listening voice. It's very warm and immediately gives an idea of a relaxed person who's at ease with himself and whoever he might be talking to. At the other end of the scale is Tony Blackburn arguably one of R1's favourite DJ's who always sounds as if he's scared stiff of the microphone. Despite the fact that he's been in the business for x number of years he could be a raw recruit judging by the nervousness in his voice. It's insincere and shallow and would be even if he was saying something that mattered. In between these two are the Terry Wogans of this world. He's an ideal choice for a breakfast show with his bright and breezy voice. When the rest of us are just coming to, Terry Wogan chatters on in his inimitable style, never at a loss. He sounds amusing and friendly but too much of his personality and don't care attitude comes

through for him to host anything other than a programme where talking rubbish is all that's necessary. In comparison listening to Libby Purves presenting a morning show drives me back under the bedclothes. Her voice is hoarse and grates on the ear. Perhaps she has a permanent cold because that is what it sounds like. I feel bad enough myself first thing in the morning without hearing someone else's groggy voice sounding as if they too have only just woken up. To me the point of an early show voice is to bring me gently back to the land of the living not remind me that I'd really much rather be asleep. I'm afraid Miss Purves' 'Today' on R4 is a definite turn-off. Judging from their voices there does seem to be a younger group of people on the independent network. Having said that, my favourite voice is Michael Aspel, who's certainly no chicken. His programme is aimed at the housewife audience and his friendly voice must help to make it a popular show. He sounds very much at ease with himself and others, as if he's having a chat in his own front room. He manages to create a cosy uncontroversial image which has a soothing effect on all who listen to him. The voice I've been most impressed with must be that of Carol Barnes. She sounds relaxed and friendly and really interested in what her interviewees have to say to her, which is guaranteed to make any listener curious. Depending on the subject she can be sympathetic and caring or amusing and entertaining, all without distracting the listener from what she's talking about and who she's talking to: altogether a responsive interviewer who is fascinating to listen to. Steve Allen is another who made me sit up and listen to what he had to say, simply by the enthusiasm in his voice whatever the subject he happened to be covering. He had me convinced that I really did need to listen to him, otherwise I'd miss something worth hearing. He sounded great fun, as if he enjoyed every moment of his job. It's not all bouquets for ILR though. Keith Howell has the worst kind of voice

for a broadcaster. It's up and down, hits the heights and sinks to the depths. Instead of listening to what he had to say which is after all the reason he's there, I was following his voice pattern waiting for the next variation. It's also very nasal, which annoyed me even more. Strange what one's mind does listening to the radio but I could imagine Mr Howell riding a rollercoaster with his nose pinched delicately between two fingers. One other voice on commerical radio which I really did dislike was Capital's Country and Western presenter. He had an American drawl and certainly not a pleasant one. It sounded harsh and forced and if he was trying to sound slick he failed miserably. However much I may have been interested in the music, his jarring voice was enough to put me off for life. I was prompted to wonder how Capital could think that he added anything of interest to the programme. I thought the days of the obligatory American voice on British radio were long over, and that's not the kind of voice I want to hear. It's got to be one that I could listen to quite happily all day without getting bored. Unobtrusive enough so that I actually listen to what's being said, and so that I'm getting something out of the programme I'm listening to. At the same time, it has to sound interesting and interested and to suit the programme that's being presented. Some light-hearted buffoon like Tony Blackburn could never give a programme like 'World at One' any kind of authority just as a Douglas Cameron type would be useless on a programme designed to be entertaining rather than informative. Of course there are broadcasters whose voices are flexible enough not to be typecast in any role. And that's the voice I'd like to hear a lot more on the radio."

14. MALE, 20, unemployed graduate, Media Studies

"There's so much missing in radio, and the only way the listener can create a picture is through the voice, a sound, a scrap of information. In radio just like at a party there are certain people we would like to stand and talk to and others we wouldn't. To me the voice must show a real person, warts and all, with a regional accent if he has one. The age of the BBC accent is over. People we meet in pubs aren't like that so why should broadcasters have to slot into neat regimented categories. The voices on radio now must carry the stamp of being a bar room approachable. The broadcaster is black and carries the fluency of a black language emphasising the concern of a black community. John Peel is laconic and his voice is couched in tones which spell out to his audience that there is a presenter who is not going to turn out the usual mealy mouthed DJ platitudes. Terry Wogan's voice sounds like cornflakes and coffee. Bob Holness and Douglas Camerson sound like semi-detached voices."

15. MALE, 38, advertising executive, non-graduate

"It's only when you are analysing that you separate image and prejudice; material and such things as content from the actual physical quality of the voice. Do I prefer men's to women's voices? How accurate are the pictures or mental images the mind creates from voice alone? What voice qualities delight or offend my ear?

Just as people often agree in general terms about visual beauty; lovely eyes, mouth, skin and so on, so with certain voice characteristics you can be fairly sure to please a lot of the people a lot of the time. Pitch or deepness of voice - and

I like a deeper voice, find it easier on the ear. I also like a clear voice, like Michael Aspel. I like the voice that is smooth, natural, distinctive and deep. BBC announcer Peter Barker, whose voice is a classically developed voice, is one I like. He once quoted some ancient phrase in praise of singing as a good voice developer. Peter also gave a valuable personal tip and that is you can make your voice do anything. BBC voices I like in moderation. They fail to sound nice, as with an overplayed pop tune, then we get a series of clones, Roger Scott, Kenny Everett, Brian Hayes, Robin Day. I like deeper women's voices on radio. The old style Audrey Russell voice, now mercifully less common on the BBC, with its taut strain, used to envisage in my mind some warn-out old blue stocking who really was rather embarrassed at having a woman's voice. Now it seems to me the Beeb is more adventurous with its ladies' voices. BBC World Service financial news presented by Ed Mitchell. Strong, unfaltering voice but a bit too edgily aggressive. No warmth but perhaps this is the voice suiting the cold hard facts. Essex Radio presenter Andrew Marshall: young, flat, boring, with ILR clone symptoms. This programme also included Marshall's pet 'expert' Colonel Colpepper with a revolting middle aged taxi driver voice and as much charisma as a doughnut. UK 'Top 40' presenter Tony Blackburn. Don't like the voice; 'hyped' to the point of self caricature although he's got away with it for a long time. Nicky Horne on Capital - always distinctive and natural but when I listened especially I didn't like it because of over modulated reading of his magazine rehash material. But interestingly, since listening, I've actually met him and now I like his voice a lot more, because I liked him when I met him. R2 'Jazz with Humphrey Littleton'. Not at all an attractive voice; rough, hacked and worn out by the rigours of a musician's life, it sounds to me. He even coughs and sighs on air. But you don't mind because it fits his image. R4 continuity announcer.

Lovely deep clear assured controlled male voice. My type of voice.

Wynford Vaughn Thomas presenting a talk. As a voice I just don't like it: the erratic histrionic delivery cancels the pleasure of his lyrical accent. I found him distracting not arresting. A boring old ham. So what then of the idea that the mind accurately tells you what a person looks like? Not in my experience. The mind flatters the broadcaster and makes him younger and better looking. I listened to 4 broadcasters with no knowledge of their physical appearance. These were Des Fahey, Eddy Blackwell, Cormac Rigby, and Suzy Barnes. I was wrong every time. In the case of Eddie Blackwell I pictured a 35 year old with dark hair and a face like Ray Moore. Eddy is actually 50, bald and totally dissimilar from Mr Moore."

16. FEMALE, 40, married, housewife

"The voice is the only tool the broadcaster has to communicate to his or her audience. And therefore it's natural to assume that it's the voice not the content that initially grabs or doesn't grab listener's attention. I'm glad to hear that gone are the days when the only acceptable voice heard on radio conjured up images of croquet lawns, Eton and Harrow and cucumber sandwiches. There's now a shift towards the more natural voice on radio and above all a voice that listeners can identify with.

Having listened to a lot of voices on radio this past week, I've come to the conclusion that not all those employed by radio stations have what I would consider a good radio voice - in fact I'd run miles to avoid listening to some of them. A broadcaster who falls into this category for me is Stephen Jessel, a BBC foreign correspondent. After listening to him I came away thinking his voice

would be an ideal cure for insomnia. Though his voice was clear, he failed to generate any enthusiasm in his subject. His voice sounded formal, flat and uninteresting and I got the impression that he was merely reading a script verbatim. On the other hand some of the DJ's on R1 and ILR have such forced enthusiasm in their voices that it's equally sickening. It's almost as if the voice is riding a helter skelter. Both Tony Blackburn and John Sands of Capital demonstrate the sort of enthusiasm in the voice which extends beyond the realms of human possibility. However the voice of Alistair Cooke strikes just the right cord. His Letter from America gives me the impression that all 15 minutes of it is unscripted. His conversational style relaxed voice induces in one a state of concentration rather than boredom. More importantly his voice displays an interest and enthusiasm for his subject which inevitably attracts the attention of the listener. Similarly both Douglas Cameron and Brian Redhead possess voices that are easy to listen to, clear, friendly and yet authoritative. Whilst it is important that the voice is lively and to a degree animated, it is equally important that the voice remains neutral. If the voice has too many personal characteristics intruding you no longer pay any attention to what is being said.

I discovered this problem while listening to Robin Day. I found myself listening to Robin Day rather than what he was actually saying. Therefore, though it is important that there should be as little uniformity of voice on the radio as possible, if there are too many overt mannerisms intruding on the voice then it detracts from the content. Though there is a thin dividing line between neutrality and blandness in the voice a number of broadcasters are instantly recognisable without encroaching on their material. Examples that spring to mind are Richard Baker and David Jacobs.

When it comes to female broadcasters there is a tendency for many of them to adopt a school mistress tone. Listening to Margaret Howard on Pick of the Week I was struck by this very thought. Her voice was rather high pitched, stiff and formal. In fact the image that sprung to mind was that of a Margaret Rutherford. Sue MacGregor of 'Woman's Hour' has a voice which seems to have struck the right pitch. Her voice has a smooth fluency which is very easy on the ears. Whilst being a kind mature sounding voice it also has a trace of humour in it which prevents it from sounding sanctimonious. Carol Allen has a much younger sounding voice with just the right amount of enthusiasm and character in it to prevent it from impinging on the content.

Though there is a move towards a more natural voice on radio, BBC Radio Network still seems to have more than its share of what I consider to be starchy, aloof sounding voices. David Lay and John Morgan who both appear on 'The World Tonight' have voices which though not exactly hostile nevertheless seem aloof, distant and detached - not the sort of voices the listener could identify with. The voices of the people on R3 are without doubt starchy, boring and monotonous and must surely go some way to explaining the reason for many listeners' reluctance to tune to R3.

One final point I noticed was how the voice must have a fluency on the radio and how unobtrusive pauses should be. To give an example, when listening to Anthony King on the programme 'Talking Politics' I noticed immediately how every time he paused for a deep intake of breath it sounded like a force nine gale coming through the airwaves. Perhaps this seems an insignificant point to make but it was surprising how it affected my concentration as I found myself paying more attention to his breathing patterns and less to what he was saying. To return to the original question - namely what constitutes a good radio voice - it is

of course subjective. I can identify with Michael Parkinson's Northern twang (she's not a Northerner - JH) though I appreciate that many people may not be able to. However one aspect of the voice that all listeners can detect immediately is whether a voice is easy to listen to or not. The voice must be one that is not totally devoid of character and yet one without too many obtrusive mannerisms. It must be a voice that is clear, confident, relaxed - in the sense that no tension can be detected in the voice and above all also a voice that sounds enthusiastic."

17. FEMALE, 20, airline stewardess, from Jersey

"If the voice is too shrill or very grating or if you simply can't stand the person at the other end you switch programmes. That's how important the voice is. I for one switch off the moment I hear Stuart Henry's voice. Thank goodness the Beeb got rid of him. What is a radio voice I like? First it should please me to listen to it - if not, the voice will lose its audience. Different voices suit different situations. Who better than John Arlott to commentate on the test matches? Put him in Richard O'Sullivan's place and he'd sound completely wrong. Likewise put Robin Day on 'Listen with Mother' and the programme would never be the same again. More people listen to him for his voice than would otherwise. Ideally a voice should have character but once you listen to that person's voice you're not listening to what he's saying. It's also more difficult for the producer to put that presenter onto any other programme. DJ's are the exception. They exaggerate their mannerisms to develop and emphasise their own particular personality. Kenny Everett or Dave Lee Travis wouldn't be the same if they changed their voices. They are their programmes. A good DJ will chat to you as if he's in the same room. After all radio's a conversation - even if it is one

way - and the voices should be the same as that used at home or with friends. You wouldn't talk down to your friends or speak to them in a monotone. Listen to an old broadcast and every broadcaster sounds the same - each equipped with a BBC voice. There was no individuality. Unfortunately R3 still sounds like that - devoid of all character and in this case recognisable not for the voice but for the way it's used. Listen to an announcer on R3 and you'll soon notice that nearly every sentence sounds the same. And what a lack of enthusiasm. You'd think they were announcing the football results not a beautiful piece of music. Why can't R3 announcers really sound enthusiastic and interested in the music they announce. Some of this would also rub off on the listener. BBC voices tend to begin on a low note and finish on a high note. Boring.

A voice can be colourless or have character. By character I don't mean changing the voice but leaving it natural. Unfortunately far too many broadcasters change their voices the moment they're on the air. How many women, or men for that matter, lower their voices because they think it sounds sexier? Take Sue MacGregor into the pub and she'd probably sound no different. Do the same with Gerald Harper and you'd probably shatter the illusions of half London's housewives. His is a cultivated voice; one which he thinks people are going to like listening to. Of course he's a DJ which as I mentioned before isn't quite the same. But it is true that a lot of presenters change their voices for broadcasting. Changing the voice isn't the same as adapting to different situations. Listen to Richard Baker when he's presenting the Proms and you'll notice that he speaks in a much softer voice than normal so as not to detract from the atmosphere. A similar situation arises when there is background noise or when an interviewer has to change the level of his voice to suit that of his interviewee. In all these cases the broadcaster is adapting, not changing his voice, as necessary. Radio doesn't

require a specific type of voice. As long as it's natural and sounds pleasing to the ear it's good. It must also be clear. The accent doesn't matter. In fact a local voice will probably appeal more than others. So are there any rules that a broadcaster should follow? Not really. The ideal voice should neither be too distinctive or too bland. But it's up to the presenter/reporter to find the happy medium. If the voice he uses to broadcast is his natural voice and not one which he thinks is suitable then he's won half the battle. I've mentioned voices with too much character and those with too little and I still haven't touched on the most important thing . . . emotion. Above all a broadcaster shouldn't take the emotion out of his voice. The voice does, and should, say everything. Remove the emotion and you'll lose the impact. In a conversation with a friend you use eye contact - a broadcaster has to establish voice contact. He'll only do that by the enthusiasm in his voice. If the broadcaster sounds bored - going back to R3 again - then you won't be very encouraged to carry on listening."

18. FEMALE, 26, Research Assistant, graduate

"It seems to me that the range of broadcasting voices is set within certain objective limits. Just as you wouldn't expect to be served burnt toast at the Ritz so you wouldn't expect to hear someone muttering incomprehensively on the radio. The objective limits are probably set by the stylistics of broadcasting. In practice when you consider what is actually holding the attention of a listener it is difficult, if not impossible, to divorce style from the quality of the voice and similarly from the content of what is actually being said. So we see that 'muttering' would be stylistically bad and 'incomprehensibility' would mean poor content so that in neither case can you blame the voice. However the most appealing voice in the

world would not hold my attention to R4's shipping forecast or financial news. Only when you concentrate exclusively on a broadcaster's style or voice does the content become irrelevant. It is voice quality plus content that makes the broadcaster. But of course some voices appeal more than others. If the style is fluent and the content clear then my ideal voice is a natural one with no pretentions to speaking in Queen's English in a voice trained in the ivory spires of Oxford. As well as being natural the voice must be enthusiastic, thus taking the listener along with it, like two friends sharing a journey. But the enthusiasm must not be overwhelming. The type of voice I have in mind is Robbie Vincent who presents the Radio London soul show. It is interesting that he's just won the radio personality of the year award so perhaps there is an objectively good voice or at least the suggestion that subjective agreement is possible. Vincent's voice doesn't suggest that he is handsome, though I have no idea what he actually looks like, but it does conjure up the image of an interesting individual with a sincere and warm character. Capital's Greg Edwards presents a similar show but his voice is not so agreeable precisely because it lacks warmth. Edwards has a deep gravelly voice which is not unattractive but it gives the impression that the personality would like the man to be perceived as something of a smooth operator. So the voice is not simply a tool of communication but something that can be used to push out a 3-dimensional image of a friendly or hostile nature. The voices give a radio station a character much more than the music it plays does. In this way R4 is the voice of authority. To me R3 propagates the voice of the stuffed shirt - its aim appears to be to attract the middle aged culture vulture. R1 and R2 voices are appropriately in line with their program content, more relaxed. IRN and ILR voices are more average, natural. These are the voices of the pub rather than the club. However, despite the fact that I find these voices

more appealing I would still opt for R4's comment on the news of the day - a decision based on a preference for their content rather than on the voice quality. On the other hand if I ever found myself locked in a padded cell with headphones padlocked to my ears I would have to choose an ILR voice if I didn't want to go crazy. The image conjured up by an ILR voice is that of a real person who wants to communicate with me. It is not an obtrusive style but it imparts a friendly message - shouting out 'hello'. Take for example, Steve Allen. He speaks in a fast, confident and footsure manner but he sounds friendly and approachable. I visualise a normal person at work, a guy who enjoys what he's doing with no special axes to grind. He is a personification of a hamburger and chips washed down with house plonk. This contrasts sharply with the BBC style. Pauline Bushnell was reading the news on R4 last night - her voice is a useful example of the contrast. She has a very clear voice and her style incorporates confident pauses for breathing, there are traces of a slightly upper class accent and the overall effect, in my opinion, is one of a detached and not particularly enthusiastic approach. Her voice sounds cold, but it also shakes slightly.

It is perhaps unfair to generalise to the extent of a BBC voice. There is a tremendous range in the voices used between Newsbeat and the 'World at One'; but nevertheless it takes a personality like Robin Day or Terry Wogan to step noticeably out of the vocal line. The conclusion is to recognise that the voice is an important part of radio communication. I would say that the content and style of the presentation determine which programme a listener tunes into but, and it is a very large but, within a particular programme or a particular radio station it is the voice which determines how closely the listener identifies with the communicator. Communication is necessarily a two-way process. If the listener can identify with the broadcaster then there will be a greater arousal of interest

and a better understanding of what is going on. To work towards an acceptable voice, in the stylistic terms of fluency and clarity, as well as a friendly natural yet confident voice is a legitimate pursuit for any broadcaster be he or she a news reader, reporter, presenter or continuity announcer."

19. FEMALE Asian, 24, secretary, non-graduate, from Lincolnshire

"I always think of the BBC as having set the mode whereby broadcasters sounded authoritative and laboriously enunciated each point. A distinct line was drawn between a distant broadcasting authority which was in both a socially and intellectually elite class of its own and which almost condescended to inform that other class of person, known as 'the listener'. Today ILR has digressed from this rigid form of broadcasting. The voice is far more relaxed and whilst not going as far as to popularise regional accents it does promote the classless voice. More recently accents are beginning to creep into local radio; you wouldn't hear a broad Lincolnshire accent if you listened to the local stations, you'd be more likely to hear a voice with a northern, vague taint. Independent radio has a more informal image than BBC - it strives to be at one with the listener without intruding into listeners' homes with its news. It's a less awesome and more approachable sound than the BBC - which is nevertheless moving slowly towards a more relaxed sound. From the listening I've been doing it seems clear that a good broadcasting voice must first of all sound clear and appear that the broadcaster is comfortable and totally familiar with the prospect of an audience. Terry Wogan and Kenny Everett both succeeded in sounding relaxed and conversational. Su Newland sounds as if the confrontation with a microphone in a studio is a daunting experience - and the result is that her voice sounds tense and

shaky. I as part of her audience begin to feel nervous on her behalf. It is essential that a newsreader doesn't stumble and is completely in control of the script. The next requirement is that the broadcaster must be aware of the content of his script. Some local radio broadcasters can become too concerned with reading fluently and sounding interesting, and ramble on regardless of the words they are actually saying. I feel that if they themselves are interested in the information they have in front of them, their voices will automatically strike the right tone. A broadcaster must sound as if he's got something to say. A hard voice that doesn't allow the personality to pervade it at all will sound bland and monosyllabic. It won't catch and retain the listener's attention. Brian Redhead verges on this point but not enough to sound totally uninteresting. Mike Gardiner is racy and enthusiastic. Both male and female voices on BBC conjure up images of 'older' people. Most BBC voices sound in the 35-50 year age group whereas Independent Radio voices sound younger - more in the 26-30 year group. The image a voice projects is important in that it either succeeds in gaining the listener's identifiction with the radio station or else, as must happen frequently with R3 audiences, the listener simply cannot relate to the image of the station. It is probably more difficult to gain the attention of the younger audience - that is teenagers ranging from 14 upwards to young people of about 22. An older male voice, particularly in the style of the World Service, would disorientate young people. It's very important that the voice should match the audience. One shouldn't forget the style of programming. A young chirpy voice would be distracting if placed between 'Start the Week' and 'Kaleidescope'. Female voices are the most versatile in radio - they are more acceptable both to young and old. A flat voice becomes tedious to listen to, but a broadcaster must also avoid overdoing it. The aim is to blend, not to shine, (at least not too much). Olga

Hubicka's newsreading has a tendency to be too 'sing song' – although she has a good warm voice, her pattern of inflection was too pronounced and back-to-front – she usually ends on a high note. I'd say that a good male voice according to today's fashion requires a broadcaster with a classless style who allows his character to pervade. A female voice mustn't be too shrill and should be conversational, perhaps more so than a males, because women have a tendency to sound condescending or 'mumsy'."

20. FEMALE, 27, teacher, graduate

"What makes a good or bad broadcasting voice? I'm afraid it can be as subjective as simply disliking an accent or as in my case detecting a slight pompous edge in the voice of David Jacobs.

Too many of the DJ's I listened to just didn't ring true. They're too often Americanised to the point where Kid Jensen and Roscoe sound as if they're imitating the same trendy accent. Then there are the stutterers, voices that repeat and qualify incessantly. Tony Blackburn's happy sound is guilty and on LBC's 'Jellybone' I found the same mistakes, hesitations and fumblings. Turning to a good broadcasting voice I immediately think of R4 'Today' programme presenters and I think any sound that could arouse my zombie mind at 6.10 am must be good.

It's the enthusiasm that strikes you – Libby Purves weaves a tone of interest and questioning enquiry when presenting a topic, any topic. Just like Brian Johnston's voice, there's real enjoyment in the topic, excitement at discovery, pleasure at new sights and people. It's as if these presenters are really involved and their enthusiasm lures us. Another important characteristic of a good voice is authority,

particularly in newsreading and serious topics. John Timpson and Libby Purves sound reliable and concerned. I believe them. Brian Redhead's recent comments perhaps confirm just how much authority voices can assume. Referring to a leakage of sulphuric acid and its possible danger to motorists he said, "Now listen this is really, really serious, really important for those of you living near-by". I think this thought is projected in the tone of newsreaders such as Gordon Clough most of the time. But I'd soon get sick of voices if they were serious and authoritarian all the time and indeed the best ones are masters of variety. Just think how the voice of a sports commentator such as Peter Jones expresses emotions, movement, a picture of the pitch, the players etc. Those voices are moving up and down and changing tone all the time. I like warm friendly questioning voices. I usually picture the well known faces behind the radio speakers and make up faces for those I've never seen. It all depends on the voice - whether my face smiles, is attractive, dark haired - you name it, the sound provides it. Brian Johnson must be lanky and smiling.

Those voices without faces for me tend to be link or introductory ones. Perhaps their anonymity's a good sign - they've linked clearly, done their job, and bowed out without intruding on the subject. Interestingly many radio voices (male and female) conjure up dark pin-striped sages with bland faces. Although always grammatically correct and perfectly clear, I tend to dismiss these John Snagges as a bit too impersonal, stilted and old fashioned. Independent radio stations try to move away from these proper voices. In a programme such as Peter Allen's phone in, the presenter's voice is younger sounding, and one that you'd meet in the street or amongst friends. These less stilted voices are much less likely to alienate me than many of the Beeb's radio and World Service programmes. I also tend to find that voices on R2 don't hold the right kind of appeal for me. From

Terry Wogan and Jimmy Young to Brian Matthews they are often more relaxed, easy and without worries. For me the best voices are forever reaching out, presenting the new, activating my interest. If I had to choose a favourite, Richard Baker would win. A little dated you might think but no, his voice has a head start to begin with, rich, varying in tone, and then, full of contrasting authority, lightness and humour. Most of all its the enthusiasm; he sounds intrigued - I'm interested; his voice spreads excitement - I'm excited; that voice is talking; I'm all ears."

21. FEMALE, 38, unemployed

"As I listened, so many voices became so similar. But the more you listen the more familiar voices become. The most obvious thing I noticed was that many presenters and newsreaders - especially women with low voices - adopt what I'd call voice cliches. For example to get a bit of variety into an item some broadcasters suddenly raise their voices and emphasise totally unimportant words or syllables. I heard a Scottish reporter with a light, pleasant not too obtrusively Scottish voice but who lowered her voice so much at the end she sounded boring. Sue MacGregor on R4 adopts patterns too. Because it isn't natural speech, you doubt their sincerity - the ups and downs or see-saw disguise the voice itself. I listened to Alan King who seemed to have a nicely balanced voice - not too interested and not too disinterested. He didn't adopt many voice cliches and read quite naturally. But I said read. He rushed through single items which was snappy and interesting but from item to item he left no pauses in between, and I thought he was looking at the clock and script to spew all his material onto the air in 3 minutes. I also heard a chap on a late-night phone in whose voice was

friendly, very casual in its approach but very indistinct. Douglas Cameron on LBC's 'AM' programme has a really well-mannered voice, more BBC than ILR. He's very good for news because there's a certain relaxed calm tension there that makes you listen. Every word is clear but not over enunciated and the tone of his voice is consistent, unboring and not at all see-saw. I imagine him as once having worked in the Civil Service or the Stock Exchange and commuting from Surrey. His entire voice every single day never alters - no frogs, no coughs, no croaks, wonderful. To be quite frank I've heard more BBC voices than ILR and because they're more familiar I automatically thought them more friendly. Even though I loathe Terry Wogan he's terrifically friendly, going straight to you and you alone. Michael Aspel spent several years at the BBC and he puts across that casual but organised feeling which ILR tends to do less. His voice is deliciously relaxed and very natural. When he makes asides to the listener he's almost saying I'm on your side and I like it. Tony Blackburn is similar - he's a happy little man always smiling (you can hear that in the voice) who likes you. Sarah Ward doesn't much - she just wants to get through the job, fit in what's got to be fitted in.

R4 presenters really give you a picture of arrogance. R3 presenters are an absolute disgrace to broadcasting in the 80's - or 70's for that matter. Especially some frightful woman who's got an aged Julie Andrews voice but worse. (Note: This person referred to here won the "Clear Speaker of the Year" award three times - JH). There's also a quality in a voice connected to consistency that's something like the musicial term legato. Basically it means that different notes follow a line and flow into one another. It's a strength and technique that allows a musician room for meaning without actually splitting up notes. It can refer to speech as well. I feel, listening to Tony Blackburn that he's never had a bad day

never in a bad mood. Brian Matthews voice is urbane, gritty, relaxed and would not fit hard factual news I think. Douglas Camerson has a snappy clear but calm voice, not friendly, but efficient. It does the job of telling a story and you believe every word. He adds his own stamp of authority. Douglas Cameron could tell you Margaret Thatcher had been arrested in Shepherds Market for soliciting and you'd believe him. So what must a voice be? It likes you, it's consistent, it's authoritative, it's natural preferably distinct, and stylish (easily recognisable). But it's not obtrusive and doesn't have to be friendly. Most importantly it mustn't adopt dishonest voice patterns or a listener will turn off no matter how interesting the topic."

22. FEMALE, 29, secretary, non graduate, from Leeds

"Brian Redhead has a voice that is dignified, clear and informative sounding. He speaks with a middle class accent and I always imagine him being a well dressed middle aged English gentleman. I like his voice but I sometimes feel it sounds condescending. Libby Purves has a slightly higher voice which contrasts nicely with that of Mr Readhead's. She has a smooth, creamy relaxing kind of voice that is perhaps deeper than that of the average woman. It's a voice with depth of thought that always sounds knowledgeable to me - perhaps because of her ability to introduce news items without sounding as if she's reading the cues. On R3 the most frequently heard voices are those of the announcers. These are the people who introduce the various programmes. I find their voices dull and boring. They speak slowly and pompously as if introducing a death march. You could describe their voices as typically BBC. BBC R1 has entirely different voices featured in its output. The presenters, DJs, are lightweight and immature sounding. As an

example, Dave Lee Travis who broadcasts in the afternoons. His voice fits in well with the overall sound of the network. It's lively, humourous and chatty. He raises and lowers his voice constantly and even imitates other voices to bring in a variety of sounds. I find his speech irritating, it always sounds false. The only thing authentic about it is his Manchester accent. Other DJs have much smoother voices, to give a relaxing easy listening sound. Some of the music programme presenters on Capital fall into this category. Gerald Harper is a good example. He has a soothing, slightly velvety kind of voice which is relaxing to listen to.

Newsreading also differs from station to station. R4 newsreaders speak formally and slowly. They put emphasis on certain words which make their voices sound slightly rhythmic. Independent radio news sounds entirely different. Newsreaders speak quickly and their voices are slick and sharp. They sound sensationalistic because they use an excited tone of voice. This style is also used within the BBC on 'Newsbeat'. I find R4 news easier to listen to because the voice penetrates more. The Newsbeat sound is too racy for me. The natural see-saw phrases make listening more difficult.

ILR and BBC local radio are easy to recognise because some of their presenters speak with regional accents. I like the voices on local radio - they are always warm and friendly. The local dialect gives you a feeling for the community the station is broadcasting to. I noticed when listening to a R4 programme about evolution that the presenter had an excited, gushy sounding voice. He conjured up an eccentric image of himself. I could see him with his hair sticking out all over the place, waving a walking stick. His voice made the programme interesting, I wanted to hear what he was excited about and share this enthusiasm. Another type of voice is that of the late night presenter. R2 broadcasts all night and most commercial stations broadcast until the early hours. It's interesting to observe how

voices become softer from the later part of the evening onwards. The presenter's voice almost sends you to sleep, it's deep, smooth and relaxing. On R4 late night news programme 'The World Tonight', the presentation has a much slower sound compared with similar programmes during the day. The presenters on 'AM' sound brisk and cheerful. The variety of voices makes the programme sound more interesting - but it would be refreshing to hear a few more female voices. All the presenters are well spoken and sound young. Finally, what is a good radio voice? In my opinion it is one which is easy to listen to and communicates instantly. It's a voice which is firm but not harsh. It should be natural and friendly sounding."

23. FEMALE, 36, interior designer

"All kinds of voices are heard on radio. However I hear a distinct difference between the style adopted by the BBC and that of its competitor, ILR. The BBC has a formal voice, ILR has a more informal voice. The presenters on R3 have chosen a style which I presume they feel is in tune with the programme content. I have come to the conclusion that the powers that be at R3 regard classical music to be a sophisticated, elitist art form and in consequence prefer to use voices which are slow, pedantic and on occasions very solemn. One gets the impression that they are not interested in reaching a wider cross section of the population but are quite happy with their minority audience. However, having criticised them for their lack of variety, I have to admit that I find this form of presentation extremely relaxing to listen to. The voices are soothing and unobtrusive - one example is John Lade who introduces the 'Record Review' programme. To find the total opposite to this type of presentation we turn to R1 where the DJs sound

as plastic as the records they are spinning. A mindless chatter from Mike Read starts the daily routine and this continues throughout the day. Simon Bates, Andy Peebles, Paul Burnett and many more all chattering away about nothing particularly significant. Simon Bates has a hard heavy tone in his voice which is not improved by his pompous superior manner. Although he makes an attempt to sound chummy I do get the impression that he has an exceeding high regard for himself. Andy Peebles is far less offensive although he and Bates can both sound rather shrill at times when they are excited or enthusing over some insignificant point. The tone of Peebles' voice is softer and his manner is certainly milder than Bates. There is little variety in his programme so its easy to ignore the waffle and to switch attention to the programme only when the music is being played. The one point that all R1 DJs have in common is the ever present sound of laughter or forced cheerfulness in their voice. A DJ must always sound jolly, if not then he isn't doing his job well but at times I find that this sounds extremely unnatural. Capital Radio has fortunately only one equivalent DJ, Mike Smith, who replaced Graham Dean on the breakfast show. He sounds merry and enthusiastic all the time about everything. This forced cheerfulness has been injected into the voices of the R4 presenters on the 'Today' programme. John Timpson and Libby Purves chat together in a light hearted vein. I find this distracts from the hard news stories of the day which is really what I want to hear. The BBC have introduced a number of women's voices to the radio over the past 5-10 years. Libby Purves' voice is unexceptional. Although she uses inflection and emphasis, her tone is monotonous. However she does have natural vowel sounds and has not acquired the typical BBC voice which is more than I can say for the vast majority of BBC presenters. Margaret Howard who presents 'Pick of the Week' is also an exception. Surely it's time that the BBC realised

that the vast majority of listeners do not want to hear the Oxbridge accent or the so called Queen's English continually on the radio. It certainly grates on my nerves. I should like to see the 'Today' presenters replaced by the 'PM' presenters Susannah Simons and Bob Williams. Their voices may be slightly impersonal and more formal but I find them both easy to listen to. Susannah uses inflection and emphasis with ease and comes across as an intelligent and sophisticated person and Bob Williams keeps up an easy relaxed pace. He has a gentle approach and is not aggressive or pompous like Gordon Clough. Clough can have a soothing deep reassuring tone to his voice when he's not sounding aggressive. The most acceptable woman's voice on the radio is Capital's presenter Sarah Ward. The tone of her voice is warm, friendly and relaxed. She always sounds enthusiastic and has one of the most natural conversational voices on the radio. Her articulation and voice production are extremely good.

Too many Independent radio presenters exaggerate the use of emphasis and inflection and therefore sound unnatural and I find this tiring and irritating to listen to. Too much inflection is as bad as a monotonous tone. Carol Allan and Jenny Lacey, both ILR presenters, have this tendency. On the whole ILR accepts a greater variety of voices. Many of their presenters and news readers have slight regional accents. In general the voices are more natural than on the BBC stations. For example, Bill Bingham on ILR, Keith Hart on ILR and Mike Dickin on his evening phone in. Dickin has a personal approach to his callers he has immense patience and consideration and I find his manner refreshing, especially for a phone in programme. Both BBC and ILR adopt a formal approach to newsreading, the main difference in presentation being the pace. LBC's newsreader Alan Clark races enthusiastically through the news, cramming as much as possible into the short time available. The BBC's newsreader Peter Donaldson must have

one of the hardest and most humourless voices on BBC radio. He reads at an even pace, never changing his style or the pitch of his voice to any great extent throughout the broadcast. I'm sure you can gather from what I have said that I prefer the broadcaster's voice to be relaxed and unobtrusive, and whether the content is serious or lighthearted the voice should sound agreeable, enthusiastic and intelligent."

24. MALE, 26, lawyer

"A voice coming over the air isn't much for a listener to latch on to. The listener is so subjective because one may think a voice short and fat, while another may think the same voice long and thin. Broadcasting from the BBC has been with us for a long time. For many years the slow, clear, well-enunciated tones of the Oxbridge graduate has readily identified the World Service, giving an air of authority which the Russians try to imitate. But is the traditional BBC way of speaking English the only one which gives authority? Many broadcasters would say and even more would agree with them in saying that you don't have to sound pompous, slow and heavy to convince people that you're the oracle of truth.
The voice can seduce the listener, indeed that's what it's supposed to do. But one presenter who definitely didn't seduce me was a man in BRMB. He was shouting down the microphone assaulting my ears with his relentless patter. Then he broke off while another announcer gave the sports results, and this one sounded so dead and flat in comparison to his ridiculous voice which seemed to belong to some kind of music hall entertainer. I prefer presenters with softer tones. The voices on BBC local radio stations lack the concern that every word is measured for length and given exactly the right amount of weight as it is on R3, R4.

Nevertheless they seem to have men and women with perfect Oxford English although some of them have slight regional accents. They seem, from their voices, to be intelligent people whose personalities are now allowed to take over any programme to an outrageous extent. Whether it is Radio London or Radio Carlisle, it's the BBC sound with a fairly standard BBC sound image to protect. As ILR is more fragmented there's greater scope for each station to do its own thing. The voices are more variable and contrasting, and there's a good cross section of people whose voices lack the public school or discreet middle class training. This helps to make the station more approachable and cosier to the ordinary listener. The best local radio broadcasters have voices which appeal to all classes of society and all levels of intelligence and they know how to avoid insulting the intelligence of listener by talking above him. To get the right balance isn't easy and he's always got to think of his audience when he's drawing up his script and remain clear, flowing, accurate, and sure of himself. One of the greatest broadcasters for grasping the listener's attention is Kenny Everett. Early BBC announcers and many R3, R4 announcers of today sound as though they are speaking from a script. It's the broadcaster's personality that must shine out. The best broadcasting voice puts you in the right mood for the particular type of programme being put out."

25. FEMALE, 27, teacher

"Listening to the radio is a very personal pleasure. Each ear is attracted for a variety of reasons to a particular voice and the beauty of the voice lies very much in the ear of the receiver. I always feel that to like a voice I must be able to see the person in whatever the situation is and be able to share their experience.

I need the personal touch: after all, I am the only one at home. Roy Gosling is just such a presenter with a jaunty Northern accent which he uses to lead me through the passages of power. He imparts a feeling of compassion for his subject with a carefree casual voice. The question of whether a serious issue does need a serious voice so that the listener can concentrate and weigh up all the issues made me turn to R3 and a programme called 'Six Continents' in which the voices were neutral - so neutral I cannot even remember the name of the presenter nor many of the details he gave, despite his annoying habit of over emphasising words or odd parts of words. But I didn't listen for long; his voice told me he wouldn't miss me.

I would rather listen to the gently ironical voice of Libby Purves. She has a faintly husky voice which seems to move easily from the lighthearted item to the very serious; from a quip about Brian Redhead to the plight of Poland. Her voice addresses you alone and she seems to sense that at that time of the morning you may be flagging so she lightens the tone of voice. Then her voice will assume an element of gentle compassion or a slight edge of authority but it is always a voice that can be easily absorbed even at 6.30 in the morning. The voice of Richard Skinner didn't grab me at all. His mid-Atlantic voice fell on my ears sounding more and more like a badly made advertisement for rather shoddy goods which had to be cleared very rapidly. Keith Howell reminded me very much of the typical man next door who just wanted to tell you about the play or film he had seen. He wasn't going to go over the top but his voice with it's soft London accent did manage to have an edge of excitement whether he was talking about Sam Costa or a recital at the Museum. His conversational voice tone gave everything a sense of immediacy and his slight hesitancy every now and then made it seem more like a friend trying to ensure that you had lots to do this week.

Certain voices have the power to shock or surprise us out of our role as complacent listeners; Barbara Woodhouse has just such a voice. I suppose that really I can't believe that such a schoolmarm voice from the Home Counties via the lost Empire can really be entertaining me by telling me her life story and yet she does. She can tell me very firmly that she has a lot of time for old people and I dare not disagree. I always have a very clear picture of her sitting opposite me, cup of tea in one hand and looking over her glasses. But her voice also has the power to betray her, as its slightly 'arch' quality will not allow us to take very seriously the first meeting with her husband which may have been a sweet memory for her, we can never be sure. The other fault is that while I will happily spend fifteen minutes with her in the morning I would not want to spend any longer with her voice, it is too mannered, too removed from the world to be taken seriously. In a similar way I cannot take a voice that is too polite, placating his subject too easily, too quickly remining me of a patient parent. Roy Plomley has just that kind of voice, a voice which I always associate with the Home Service an elegant age of long ago which no longer fits. So the voices that make me listen, make me turn the volume up, are not the voices of the schoolroom, or the lecture halls, they are not the distractingly careful tones of the well prepared, no, none of these. They are the familiar tones of people who sound as though they might be friends, faithful, friends who casually drop into my house for a chat or to tell me something of importance or to persuade me to join them in understanding a situation, these are the people who make me want to listen."

26. MALE, 30, professional sportsman

"Different regions of Britain have different vocal patterns. So much so that in certain parts of the country it's possible to tell even what village a person comes from by the sound of their voice. The man who sent the alleged 'Ripper' tapes to the police in Yorkshire was pinpointed by his voice to have come from a particular part of the country, but he didn't. It was a hoax. One distinct voice type is Southern, which seems to predominate in my listening. But when you listen closely, there is far more variety in BBC voices than this classification suggests. Different sorts of voices are used in different sorts of programmes by both the BBC and ILR and quite a strong pattern emerges from this. I find the voice types on the various newsprogrammes very similar. Douglas Cameron of IRN has a well known voice with a punchy style and an assured quick pattern of speech. It's a voice that gives confidence and carries a conviction that makes it ridiculous to doubt anything that is said. It is probably the ideal radio news voice in my opinion. There are certain features of this voice that are the same as other newscaster's voices, newscasters such as Tim Gudgeon of R2 or David Geary, or Paul Hollingdale. They all speak very directly and all place a particular stress on the words they use. It is interesting to note how people's voices change. For example, now that Jimmy Saville has become an establishment figure and his faithful audience has stayed with him he directs his programmes at the middle aged and in my opinion tends to talk down to them. So the individuality of R1, R2 lies in the voices of its presenters; R3, R4 and World Service have a peculiar style of their own but it relates to the station and not to individuals. There is a pattern and voice type that belongs so much to one station. The best example is the voice on R3. The material is confined largely to classical music and plays.

The presenters are therefore usually just voices introducing or concluding long pieces of music or drama. For all that, the voice of, for example, Peter Clayton, is boring. The fireside chat voice is unsuitable to my ears or the '80's' and it still harks back to the good old days thinking that its audience is confined to elderly spinsters sitting in front of their blazing hearths. Consequently the R3 audience can only diminish. R4 by contrast tries to appeal to a greater cross section. It avoids the rigid stereotype voice of R3. There is more variety but it is to this station that the title BBC Southern can be applied. R4 presenters speak English as it is meant to be spoken. Libby Purves, Sue MacGregor and Ray Gosling all speak in largely unaccented voices, clearly and though lacking in characteristics, not lacking in character. As with the BBC World Service the R4 voice is one of informed enthusiasm and you get the impression that the subject matter and the broadcaster are both of the highest repute. The voices are cultured voices giving great weight to what they are saying; sometimes they are ponderous but they seem to have the right to be. ILR and local BBC radio has more of a grass roots voice appeal. The local radio voice is trendier, closer to the language of the street; sometimes ungrammatical, always vitally enthusiastic. Brian Hayes in the LBC newsroom has a jauntier voice than a BBC counterpart: so too Geoff Stelling, the sports presenter, who is quite prepared to use slang if it gets the message across. Obviously regional radio uses voices that show the rich texture of local accents, and while a Northern accent is not out of place on a Southern station nevertheless you would be unlikely to find a strong Welsh accent on Radio Orkney. The BBC is the establishment medium and this is reflected in the voices used."

27. MALE, 28, journalist

"When you asked me what makes a good broadcasting voice I suppose my first reaction was: the deep dark brown tones that sound so good whatever the guy might be saying combined with friendliness, warmth and character. Yes it would be rather nice to sound like that. But surely it depends on the programme and to a lesser extent on the station. I feel there is a distinct difference between the voice to be found on BBC compared with its ILR counterparts. Mind you it could become very easy at this stage to confuse vocal qualities with presentation styles so I'll try not to confuse Brian Perkins with Peter Donaldson. I feel that all the voices on R1 succeed in sounding remarkably friendly for a national station although this is even more so on R2. Having said that, there are one or two personalities who have rather hard, abrasive qualities. Simon Bates and Andrew Turner spring to mind, the latter being a member of the 'Newsbeat' team. His colleagues have much warmer voices, but don't appear to lose their authority. Ian Parkinson's almost relaxed approach by Newsbeat's standards, is far more pleasing to the ear than Andrew Turner's aggressive pseudo commercial sound. There's a healthy balance of many different voices on R1 ranging from John Peel to Paul Gambuccini and from Adrian Juste to Jimmy Saville. Could the 'larynx on legs' sound of Tommy Vance or Alexis Korner be a strong contender for the best R1 voice? By the way, have you noticed that Steve Wright doesn't seem able to pronounce his w's properly?

R2 has a similar collection of pleasant voices but many are cast in the old BBC mould and some could easily sound at home on R4. I'm thinking of John Dunn, David Jacobs, Robin Boyle, Sheila Tracey. They all have the correctness of speech that would allow such a transition. There is of course the usual helping of

more limiting, but instantly recognisable, voices that have distinguishable mannerisms or accents. Jimmy Young, Steve Jones, Tony Brandon and Benny Green to mention just four. Two voices that to my ears sound quite ordinary and yet hold my undivided attention are those of Tim Gudgeon and Colin Berry. R2 also has its share of dark brown voices that must include Brian Mathew, David Symonds and Nick Jackson. One voice that has a sort of indefinable mannerism belongs to ex-LBC man, David Geary who, nevertheless, has that vocal quality that makes me want to listen. There are two voices on R2 which have tones which I dislike. After some thought I can't really say why, just one of those personal things I suppose. But the chaps involved are Ed Stewart and Pete Murray. Oh how they grind on my eardrums. The R4 voice would appear to be stereotyped to a large degree with all of them speaking very precisely and concisely and with an air of unhysterical authority. The newsreading team demonstrates the requirements for the network in no uncertain terms. Brian Perkins, Peter Donaldson, Pauline Bushnell, Harriet Cass - these are the voices that leave you in no doubt that you're tuned to the Beeb. The voice of Sue MacGregor calms the nerves - understanding, cosy, motherly, warm - its almost like sitting next to an open log fire each afternoon. Of course the unmistakeable personalities are there too - Brian Redhead, Robin Day, Brian Widlake, Richard Baker and Robert Robinson. But once again there's a chap that sounds good to my ears, but he does appear to have an undefinable mannerism. I'm thinking of John Timpson. That man's voice reaches out and grabs my attention whatever he may be saying. At local level, Radio London would appear to be turning a little commercial in its sound by comparison with its counterparts around the UK. The voices of Tony Blackburn, Tony Williams and Robbie Vincent make it difficult to instantly decide whether you're tuned to the BBC and ILR. But I do think that this decision is made

easier between the hours of 6.30-9.00 when I feel that the voices of Susie Barnes and John Waite are once again, typically BBC. It's difficult to put your finger on why the voices on BBC are generally different to those on ILR. I suppose BBC voices demand a little more effort from the listener. The BBC voice is shallow when compared with the deep, animated sound of ILR. Sarah Ward's voice almost seduces me into listening - Susie Barnes demands concentration. To become a presenter with LBC a firm authoritative voice seems necessary. AM's Bob Holness and Douglas Cameron are prime examples but it's largely pace that sets this programme apart from 'Today' - its rival on R4. Alan Clarke tries to induce some form of excitement and an air of urgency through his voice, while his co-presenter Bill Bingham approaches things a little more calmly. There are two phone-in presenters on LBC which display differing vocal characteristics. Brian Hayes asserts much more authority through his voice than his late night colleague Mike Dickin. It would seem that if you're one of the blokes looking after the London traffic situation you can get away with blue murder in vocal terms with the exception of Michael Meech who is obviously capable of so much more. It's a similar case with radio sport; voices don't seem to matter so much in this area of output whether it be Tony Adamson on BBC or the Irish brogue of Colin Turner on LBC. The one exception here would be Derek Thompson. So finally what about Capital? Sarah Ward has already been mentioned and all her colleagues have similar qualities - the stereotype ILR presentation voice, though thankfully not as mid-Atlantic as some of its sister stations. It can be difficult to distinguish one from another at times - aren't Roger Scott and John Sachs one and the same person? Such deep seductive tones. Mike Smith has a bouncy, cheery tone to his voice and it isn't particularly deep either. But the enthusiasm is definitely there. Duncan Johnson on the other hand is postively bland and

enthusiasm for anything seems to be a bit of a strain - perhaps he should take lessons from Greg Edwards. The one voice on Capital that I wouldn't class as being remotely commercial, belongs to Mike Aspel. Quite a plain sound really, with no obvious mannerisms and a soothing tone of voice. Yes, he could transfer back to the Beeb tomorrow. The R3 voices would offend the mass majority of the listening public. Why must the voice on this network be so obviously governed by class? I would suggest that the voice plays a greater part in ILR programming than the BBC, or at least they are more conscious of its importance in attracting an audience. Voices are all important in radio broadcasting as its 'the only means of tapping that potential listener. You are in effect painting pictures in sound. It's a task that would be easier on television but the possibilities are much greater on radio. If you can communicate effectively through a voice that is pleasant in tone and clear, but above all enthusiastic then you're well over half way in attempting to hold an audience."

28. MALE, 22, lorry driver

"I remember listening to a certain DJ on R1 many moons ago. Johnnie Walker had I think a good radio voice. It was clear, friendly and warm. It was full of confidence and betrayed no sign of nervousness. He sounded as if he was interested in the music he was playing. However when I came to see him on 'Top of the Pops' I was surprised to say the least. He just didn't fit the image I'd created at all. His voice had helped to create a false image of his actual physical face. Sometimes of course the voice will suit a particular person. But if a speaker sounds as good as he looks, why isn't he presenting television programmes? Of the voices I've listened to this week, whether on the BBC or

ILR I've noticed a few common denominators. Confidence, warmth, friendliness and enthusiasm seem to radiate from the voice. If the person reads the news, the tone is usually an authoritative one. Good diction is also important. Obviously the listener won't be able to understand a word you're saying if your diction is bad. It's important that the voice fits a particular style of programme. After all, could you imagine a R4 announcer on R1? Apart from the obvious difficulties in talking knowledgeably about the records the cultivated voice would sound awful. When I listened to Alexander McLeod on 'World Tonight' I was impressed by his authoritative and confident voice. The diction is good and he's able to hold the interest of the listener. Yet, if he had to replace, say, Nicky Horne he'd be like a fish out of water. Nicky Horne's style is totally different. Horne has a more personal approach. He has an individual, clear and friendly voice. He also manages - successfully - to vary the pace of his speech. I was listening to Richard Skinner on R1 the other night. Although his voice is rather thin it has an individual sound. He talks at a fairly quick pace without stumbling.

I think the real radio voice must sound enthusiastic, credible, warm, friendly. Capital's Sarah Ward is a fairly good example. She sounds friendly and has a warm voice. At the risk of being condemned as a chauvinist, I'd say she's got a sexy voice. She manages to hold the interest of the listener with her enthusiasm. She talks at a fast, lively pace without gabbling. Linked to a quick thinking mind, she presents her shows with ease and fluency. She also has a neutral voice. This is another important point. When I say neutral I mean she doesn't talk with any sort of strong accent."

PART TWO : Control Tape Discussion

In Part Two each of the above testees was given a short tape of four voices to listen to, in order to gauge their impressions about the voices and the people behind the voices. The reactions from testees 1 to 28 are given after each voice.

Voice One : Radio 3 Announcer

1. Unmistakeably a R3 continuity man. It's soft and slow, warm and cosy. The best time to listen to this sort of voice is on a cold winter's evening when you're tucked inside a warm room perhaps even lying on a thick piled carpet in front of a log fire. You should have an intimate friend with you so that your real concentration is on more interesting matters. But it's far too dull and soporific to keep my attention for long by itself.

2. Male, definitely from R3. His deep voice does not sound very enthusiastic and even sounds quite bored. Not bored with the content of the programme or the fact that he's doing it but bored with the knowledge that his audience is committed to the music, to the programme. He's resigned to the fact that his is a minority audience that will neither increase or decrease. He doesn't have to work very hard as a broadcaster.

3. This voice was as colourless as thin soup. It is not considered necessary for him to express anything so vulgar as enthusiasm for a forthcoming programme. The announcement is treated with traditional reverence. The Anglo-German pronunciation of Bach alone attaches a label of elitist entertainment which will

only be expected to be enjoyed by a minority.

4. It's not very difficult to recognise a typical stereotype R3 announcer voice, and this is it. It lacks the chattiness and familiarity of the DJ type voice and tends to be slower and more authoritative. Very often it's difficult to put a name to a voice as they do sound so alike, nor is it easy to conjure up a picture of the person in your mind as the main vocal qualities seem to come from a slow formal neutral tone. This first R3 voice is clear, deep, and matter of fact. From his confident tone he appears to be quite knowledgeable on the subject although surprisingly it's hesitant at times almost as if he is not quite sure what he's going to say next. You almost get the impression he lost his way half way through.

5. Seems about 40-ish. Very relaxed, laid back approach. I don't think this is too bad since it has to blend in with the classical music and the generally slower pace.

6. I feel sorry for this man, it sounds as if he is at the end of a long boring day and this past piece of announcing is the straw that breaks the camels back. The sooner he can fill this 20 seconds the sooner he can go home. Not only does he sound as if he doesn't care but almost every phrase ends with a small sigh of breath that's almost tiring to listen to. He's speaking very slowly and repeats the information to make it last longer. He also goes into unnecessary detail and sounds unsure if he's getting it right. He's got a rich dark voice which I imagine could be very powerful if injected with a spark of life, but I'm afraid that I can't actually remember much about what

he said.

7. A typical R3 presenter. He has a strong resonance in his voice and this coupled with his use of inflection would normally hold my attention; if it were not for his consistent slow pace. It's as if he has too much airtime to fill with too few words to fill the space. He articulates every word very carefully using too much emphasis and in consequence he comes across sounding rather stilted.

8. I don't like it. Because he sounds bored. Bored and elitist. Clipped and precise. Everything he says is drawn out – presumably to fill in airtime. He sounds as though he would rather be anywhere than where he is which is rather an insult to the listener. The sound level of his voice though is just about right.

9. I would describe this voice as positively laid back. The announcement is clear but the voice is detached. The breathing is regular the voice unobtrusive on the ears. It is not a voice I enjoy listening to because the style is painfully slow. The emphasis on the beginning of each phrase is so regular that the voice eventually becomes soporific.

10. I think voice one is from Radio 4. Rich authoritative tone makes us believe the content but at the same time remains friendly and interested in the subject, music. It does its job – slowly and clearly emphasising the names of composers and programme times and only reminding us that this is scripted speech by hesitating once.

11. I found the first voice quite soporific and I think for two reasons. First the voice seemed to me quite unanimated and second the announcer appeared to be reading from a list rather than talking to me in any personal sense; his broadcast was broken up by hesitations and sudden pauses for breath. I can't imagine having my attention grabbed or even held by this announcement. And whereas I might have noted that Bachs No 2 suite was that on Monday evening had I particularly been waiting for that information or was I a wild enthusiast of Bach I don't think that this announcement would've fired me with enthusiasm to hear the concert. I felt I was being informed of a coming performance rather than being positively encouraged to attend it.

12. The R3 announcer is pompous and appears to have no interest in the subject. He sounds as though he is obviously reading from a script, parrot fashion. I feel this would not be an acceptable performance on, say R4.

13. This first voice is a Richard Baker clone speaking in the reverential pre concert murmur R3 announcers so often go for. The voice is calm and clear with nice little gaps between the words, so there's no chance of missing so much as an opus number. That is if you're listening. The voice is so unassuming and so devoid of either emotion or personality that you'll miss the lot if you don't make an enormous effort to concentrate.

14. This voice belongs back in the dark ages of radio broadcasting when the announcer was dressed up in bow tie and dinner jacket just to say his piece. It's the typical R3 continuity announcer voice, boring and monotonous. For all the interest he's taking in what he's saying he could be repeating the same

words over and over again. There's absolutely no enthusiasm in his voice. It's a voice that alienates the vast majority of listeners straight away.

15. The first voice, on R4 (!) classical programme is very relaxing but a bit slow as if he's talking to children. It's homely though and his tone's quite nice. For no reason he clips words at the end of phrases which gives a strange impression that he's grateful he's got over some sort of hurdle. I think because of the slowness and pauses you get a sense of one lonely chap in a studio with no one else around as if he's running the station all himself. The silent hush of this and the following voice really does make you feel that you're delicate and sensitive and that's why they don't shout and project vitality. If they did just think what all the old ladies of Great Britain would do? Fall out of their chairs I suppose.

16. The voice is on R4. The pitch is a bassy one, and he has a very modern elitist pronunciation, ie correct pronunciation the modern way, in so far as received is a modern concept which must be in increasing doubt – but let's just say the term used to be synonymous with that of King's/Queen's English.

17. The first voice gives itself away and as soon as it was played I said Oh Radio 3. There's something about a R3 voice that sets it apart from everything else. First of all the voice is extremely relaxed and easy. There is no excitement in the voice and no enthusiasm. In terms of broadcasting this is a great mistake: an unenthusiastic voice will not attract the listener. It didn't attract me. So relaxed has this kind of approach become that it

associates itself entirely with a certain sort of listener. The ponderous assured tone that identifies this voice undoubtedly reassures its audience but it has so lost touch with the contemporary demand for radio that it is cutting its own throat.

18. Definitely a R3 presenter. Why so recognisable I ask myself? Well to me it's very BBC, predictable. If you listen to the sentences they all sound similar because of the sing song quality of the voice. It is very clear but it's also lacking in any enthusiasm. He might just as well be announcing the football results by the tone of his voice.

19. Unashamedly BBC. Slightly upper class, very cultured, slow and authoritative. Such Reithian voices leave me cold. Apart from his uncharacteristic hesitancy over one programme's starting time, nothing he said has stayed in my mind. Perhaps because I detected a slight condescending tone in his voice. If I were introduced to such a chap at a party I'd try to escape his measured tones as soon as I could. Maybe I'm just being intolerant but I feel that this R3 voice delivery has become a caricature of itself.

20. Voice one, plummy, a Richard Baker type. Sounded very R4.

21. A standard R3-4 voice. I can't identify the presenter but since many of them sound so similar I don't think it matters that much. He has a slightly nasal tone with stilted, clipped diction. It's unfortunate that the myth is still perpetuated and reinforced time and time again that only a particular class is associated with classical music, and that this type of voice is appropriate in

presenting such a programme.

22. Only a boring straining sombre and old fashioned person could be the owner of this voice. This is the typical BBC voice – slow pompous and formal. It drones and has no feel for the words it is trying to communicate. Nobody speaks with such an upper middle class accent these days except the old Colonel. I'm instantly alienated by this voice.

23. The music programme announcer had a pleasant masculine voice with a mellow timbre and clear precise enunciation. There was very little emotion to be detected in his voice and he presented the facts of the programme in an even and apparently disinterested manner. He did not seem to relate very closely with the content of the programme he was announcing and the listener would be unable to discern whether he, the announcer, would enjoy the programme himself. In fact the delivery appeared detached and impersonal with the correct relating of facts but with little or no reaction. The general impression of the character of the announcer is that he is probably a donnish intellectual, neatly dressed in a good suit, particularly well informed about music and the arts and whose main concern was the impeccable presentation of the programme.

24. A typical R3 voice; the sort of voice you hear linking one musical item to the next. In this case it tells us what's in store for us on the programme. It's formal and informative. There are long breaks between phrases which give you time to understand what's being said. The voice has a rising intonation giving it a slightly softer feel.

25. Sounds as though he's just run into the studio very breathless and panting. The voice is clear, a typical BBC one.

26. A R4 continuity announcer. He previewed and talked about the classical music which that particular station would be featuring over the next couple of days. The presentation was low key. That's to say he certainly didn't sound enthusiastic or excited about the prospect of these future programmes. Although he talked about the music in a knowledgeable way his style was slow and deliberate. You could say that his voice sounded almost monotonous. He was, to be frank, a rather staid type of broadcaster. I don't really think though that many people would be actually listening to the coming programmes.

27. The first voice without doubt typified the R3 presenter - aloof impersonal formal and unethusiastic. The voice sounded flat dull and monotonous and reminded me of the type of voice one hears at a train station reading out the arrival and departure times. In fact for all the interest I took in what he was saying he could just as well have been reading a timetable.

28. Voice one sounded like a talking notice board perhaps because of the indifference to anything except his script. Each sentence was given with the same bland voice only broken by a rising inflexion at the end. It became increasingly obvious that he was reading every word and that he was not really interested in whether we listened to any of the music or not. His hesitations didn't add to the performance.

Voice Two, Radio 4, Newsreader

1. This voice is from R4 news. It's clear, harder and more alert than the first voice. Although it's not as stentorian as a lot of news voices tended to be in the past, it sounds like the typical modern male news voice pitched neither too low so as to be difficult to understand easily nor too high so as to lose its authority.

2. More rhythmic than the first but seems to use pauses to provide the tempo rather than tone. Though the latter does change a little. He's trying to sound interesting rather than schoolmasterly as do some newsreaders. His voice slightly nasal, is quite clear but neutral. Probably trying not to place any inflection and thus slant the news.

3. Measured tones. Any trace of a regional accent is lacking. The entire newscast is delivered in a flat monotone, no attempt is made to provide any emphasis which would increase the clarity of the news. The listener is left to search for the headlines from the porridge of the rest of the news. The impression is, here is a newspaper report being read aloud. The newscaster is completely immune from the significance of anything he is reading. This is news reading to BBC text book style which has probably altered little since the early days of broadcasting. The question is: is it appropriate to radio in the '80's'? I don't think it is. There is nothing in the voice of the newsreader which makes for compelling listening which must be the acid test.

4. His tones were brisk, a R4 newsreader, suggesting a much livelier and possibly younger man but still retains this completely impartial tone. Although each item of news is read on an even note it's much less solemn and softer to the ear and therefore far more likely to catch the idle listener's attention.

5. The R4 newsreader - I think it was Peter Donaldson - was 'downmarket', very nasal, reverberating and there was even a trace of a lisp. In fact I find this kind of BBC voice to have more character than IRN newsreaders. It is more effective and catches my attention.

6. A voice that tries to present facts in some kind of perspective. For the story about the hunger strikers, he sounds concerned, there is a downward beat to his speech rhythm; for the story about the airport strike more upward inflections are used, so many in fact that he begins to sound singsong. The man has a clear easy to listen to voice but I have no idea as to his character or appearance . . . however I do remember what he said.

7. A Radio 4 announcer/newsreader whose voice is reassuring although it has a hard edge to it. His style is impersonal and perhaps a little too serious although he does manage to inject a small measure of enthusiasm into it. He has a pleasant natural tone which makes it a good reading voice.

8. This voice sounds positively jaunty compared with voice 1 - or at least he sounds as though he knows where he is and why he's there. It's interesting to note the way he uses a different voice treatment for the two separate stories in the news bulletin. Downbeat and restrained for the hunger strike

item. A slight lightening in tone for the Heathrow story. You could say he's colouring the complexion of the news with his voice. Mind you he still sounds a little clipped. He also sounds as though he's got a cold coming on.

9. A newsreader is totally normal to the point of being bland - not unpleasant but not very exciting. The flow of words is quick leading to an irritating breathlessness at the end of sentence chunks; the content is conversational, which is acceptable although the oft repeated word 'morning' begins to grate on its third appearance. This is not a memorable voice in any way which is perhaps something of an indictment.

10. What struck me about the male newsreader's voice was the faster pace, an injection of urgency and gravity, almost a reverent tone, perhaps demanded by the content, hunger strikers. Once again the voice was clear and authoritative stressing key words; and even though it moves quickly to the second item a lighter tone and fresh injection of interest immediately clarifies the move to an area no less serious but somehow less sensitive. Here the voice focuses on Stanstead and Gatwick and they stick out in the memory.

11. The news presenter appeared fluent and relaxed. His voice was natural and compelling and he seemed to breath on a 'per sentence' rather than a gasping 'per paragraph' basis. His voice was very authoritative and the delivery was quick but clear. I imagined an impeccably shaven, immaculately dressed businessman making this announcement. There's none of the effusiveness I associate with the politically motivated, just a no-time-to-lose, here's-how-it-is, you-can-like-it-or-lump-it approach. This announcer should

be in sales; I'd believe anything he told me.

12. This voice belongs to R4 newsreader Peter Donaldson. He demonstrates all the attributes of a good R4 voice, firm, clear, authoritative and well paced.

13. This voice immediately catches my attention - unlike voice 1 - because it's brisk and authoritative. There's a slight sense of urgency and the pauses between news items are kept very short so that the tension doesn't slacken. At the same time the voice is clear and steady and the even pace remains unhurried. This voice gets the message across much more successfully than the first because it impinges on your consciousness instead of lurking in the background.

14. I found it hard to analyse the second voice because it does what a good newsreaders voice should do - makes me listen to what he has to say. It's bland and non committal and manages to give importance to the news that's being relayed. It sounded as if he was reporting direct from the source, as if he had actually been talking to Bobby Sands and the air traffic controllers themselves.

15. This chap has a slightly breathy voice, very uppercrust, even vaguely rolling his 'r's' on words like 'tomorrow'. He and the other man (voice 1) definitely read their information, it makes no bones about seeming informal relaxed or spontaneous. It's a literary style not a spoken or conversational style. His voice is very clear and articulated but dreadfully bland and uninteresting. I don't think you listen to a monotonous voice without any

distinctive marks.

16. The R4 newsreader has a higher pitch than voice 1 but identical pronunciation and similar inflection. Presence or attack is stronger though there is a distinct nasal tone and his style seems a little more modern.

17. Voice 2, in direct contrast to voice 1, is incisive, direct and vital: behind the positive presentation is information that you feel must be known. This is certainly suitable for a newsreader's voice. The audience does not demand time to think, what it demands are facts in a surefired authoritative manner. One thing to note is how exaggerated the stress is in what I believe is Peter Donaldson's voice particular emphasis is placed on the key words in the broadcast (ie Sands, Gatwick etc). This approach seems common to all newsreaders.

18. I knew straight away that the second voice was a BBC one. Perhaps because I recognised the voice of the newsreader. But also again because of the clarity. This is the type of voice I like to hear reading me the news; it's neither too dramatic nor too bland. If he put any more drama into his voice I'd find myself listening to that rather than what he's saying. Somehow you also don't expect to hear a local accent such as a cockney reading the news. It's always this type of what I call BBC voice. He also sounds as if he's got a cold.

19. No condescension felt towards this voice but I felt he was trying to persuade me how frightfully important each news item was. So much so that the air

strike was portrayed in exactly the same weighted tones as the hunger strike piece.

20. I think I recognise this voice as an LBC newsreader. Which one I can't tell. It showed urgency and concern and reflected the best apsects of the LBC style. It showed a style but the style did not interfere with the content. Not as formal as a BBC voice on R3, R4.

21. Someone mentioned this voice as belonging to Peter Donaldson of R4 news. Again not a very interesting voice. He has an even more pronounced nasal quality almost as if he has a stuffed nose. What can you say about a voice you consider boring?

22. The voice of a R4 newsreader. He sounds very clear and although he speaks formally his voice is still warm and friendly. He has a constant rhythmic movement in his speech which makes the content easy to absorb. I like the cultured authoritative sound of his voice.

23. The male news announcer has a good baritone voice with excellent presentation and clear diction. He had a brisk extrovert manner, and he did more than just read the news. He also used his voice and expression to transmit some of the feelings he had about it. However this was kept to a fairly low level and was achieved mostly by a slight variation in the pitch of the voice. He sounded as if he would be a busy, active type of man who would favour sports jackets and casual clothing. His interests would be mostly politics and current affairs.

24. The second voice sounds like Peter Donaldson. He has what you could call a hard voice. This adds an edge to news stories so that you instinctively take them seriously. There's less rising intonation than in the first voice but there are similar breaks in between the phrases.

25. A male newsreader with a deepish slightly nasal voice. He is speaking too fast for all the information to be retained and indeed some of what he does say makes no sense at all to me.

26. This male voice more lively. This voice - presumably a newsreader on either R2 or on an ILR station sounded more enthusiastic and interesting to listen to. At the same time the person had an authoritative tone as you would expect of someone in his kind of job. Although he spoke at a fast pace he didn't gabble his words. His diction was extremely good.

27. The second voice possessed every quality essential for easy listening. It was clear, unobtrusive, easy on the ears, friendly and yet confident in tone. Perhaps what struck me most forcibly was the interest and enthusiasm the voice conveyed. I found this particular voice required little effort to listen to.

28. Neither reading nor giving basic information need necessarily mean that an item becomes unattractive or that a voice sounds bored or even boring, as the familiar voice of Peter Donaldson proved. His pleasant deep fluid tones give credibility to the news not only because each item is given the same amount of emphasis but also because his is the voice of someone you can trust. It is a voice which is mature and while carefully considering the information will

only do so in thoughtful ways without excessive emotion.

Voice Three : Radio 4 Presenter

1. Women's voices are much more common than they used to be, one of the most well known being 'Woman's Hour' presenter Sue MacGregor. Basically it's warm and friendly although every now and then it grates a little. I imagine this voice belongs to a very professional person; not someone to mess around with. There is a breathy quality often evident on 'p' and 'b'. The pitch is similar to all BBC women.

2. Very enthusiastic female voice. She is convinced that her subject matter is interesting and her regular listeners will be attentive. Her enthusiasm is quite infectious. I was almost ready to listen to the broadcast. Her tone is neither patronising nor scholarly, but more nearly missionary. She is after converts. If you listen once or twice you too will be hooked. A very pleasant voice nevertheless.

3. The woman, obviously Sue MacGregor, carries warmth and feeling lacking in the other two voices of the men. Emphasis is provided, highlighting the theme of the interview. The voice is no longer divorced from the language of conversation. The voice carries the stamp of being confident and relaxed with good use of upbeat and downbeat phrases emphasising positive and negative associations.

4. Probably one of the most recognised women's voices on R4 is Sue MacGregor on 'Woman's Hour'. It's a warm relaxing but nonetheless expressive voice. One of the really noticeable things about Sue MacGregor is the interest and concern she puts across when she's speaking as if she really enjoys what she's doing. The fairly deep tone suggests a highly efficient and strong minded woman quite different from the younger voice that follows. Lively, enthusiastic, catchy.

5. This voice, could be Sue MacGregor, had a typical condescending 'mumsie' sound that seems so popular for the BBC female sound. Her voice is strong, confident and authoritative in a womanly way. But it just sounds a little overemphasised. It's quite blatantly aimed at the ever-rarer breed of listener, the average housewife. It's the type of voice that only a certain narrow group of listener would want to tune into. One appealing factor was that it did convey a very sunny and relaxed mood, very characteristic of the BFBS sound. However I could never identify with this kind of voice. It reminds me of a type of situation that I can't relate to - a sort of afternoon tea party, a real ladies get together.

6. A pleasant relaxed voice that seems to come from just below the throat, with a slightly breathy quality to it. A 'nice' voice sounding as if it might belong to a sister aunt or friend who's done well for herself. A polished careful voice that leaves nothing to chance but with just enough friendliness to save it from total blandness. Do I detect a faint note of condescension or am I just jealous?

7. Sue MacGregor the presenter of 'Woman's Hour' has adopted a very personal approach. She has a deep resonant voice and always sounds enthusiastic. Her voice conveys the personality of someone who is friendly and approachable and who cares quite genuinely about each and every subject on the programme. I imagine her to be a smart middle class woman about 5'4" and slightly overweight.

8. She sounds pleasant, cheery, nice, and ever so slightly patronising. Very 'Woman's Hour'ish.

9. Sue MacGregor's voice is lively and interesting and projects a personality. The breathing is good and you wonder if she actually needs to take in air. Again the style is quick but the emphasis on particular words is varied so that you find yourself concentrating without really meaning to, which is certainly one means of capturing the listener's attention.

10. Interestingly my first reaction to the female 'Woman's Hour' voice is to like it. It's at once warm and friendly, really involving listeners with words such as "we'll be"; and it's a positive voice, interested and intrigued by its topic without going over the top. It rings true and I want to listen partly to the rich relaxing variations in tone and also because the central theme is built up to sound intriguing and promising. Yes this voice definitely works for me.

11. This voice would normally send me diving frantically for the 'off' button. It careers from low to high tones as though the presenter is singing to me rather than talking to me. She seems a crooning mother figure, gently

soothing and encouraging a sickly child to swallow its medicine. I find the presenter's voice condescending and pitying.

12. Sue MacGregor has a very female BBC voice stereotype. However, MacGregor tones take on a slightly warm feel as she waxes lyrical in an educated middle class surburban way. She is introducing an item on becoming a new woman.

13. The 'Woman's Hour' voice. This smacks of the jolly kindergarden teacher, all bright enthusiasm and verbal head patting. What she's saying is conversational but the over-emphasis makes it sound patronising. With a bit of pruning, it would probably be a pleasant, cheerful voice but as it is it soon starts to grate; and the streamlined, professional flow of the chat makes it sound glib.

14. I immediately labelled this voice as straight out of a woman's programme. It's so well suited to the audience it's aimed at. The average housewife/ listener could relate to the presenter because she's so relaxed and friendly, she could be having a chat with her next door neighbour. It's a spontaneous capable voice. She sounds well in control and able to deal with any thing that might happen. So it's reassuring to the listener as well, someone pleasant to listen to for an hour or so and forget mundane things like housework.

15. This voice is maybe Sue MacGregor. It's a friendly voice and well articulated and clear, but see-saw like, ups and downs. The friendliness and openness

come from the feeling that at least this woman's interested in her subject and of course you get interested. I expect she's smiling while she's talking, voices are like eyes, they completely reflect a smile basically because the shape of the mouth alters.

16. This voice belongs to Sue MacGregor of 'Woman's Hour'. Very much a typical BBC woman's voice in the contralto range with a little more pronounced inflection than her previously heard colleagues. In my notes I've put: stylised official cheerfulness a la Margaret Howard. Its exponents are a definite type of broadcaster more acceptable to conservative R4 listeners but a few have escaped to R2 where one, Sheila Tracey even does a programme for truck drivers: utterly incongruous but apparently successful.

17. This voice identified itself at the first instant. There is no programme other than 'Woman's Hour' to which this could belong. It is a 'nice' voice in all the worst senses of the word. It is educated, cultured and fundamentally middle class. This voice lacks accent and distinguishing characteristics but it is not totally bland, for there is the vital enthusiastic spark behind it. Everything she says carries conviction and it is easy to see how successful R4 is at holding its middle class, largely housewife audience.

18. Unmistakeably Sue MacGregor. Again this is a voice which is pleasing to the ear. Now she really does make voice contact; she really sounds as if she's chatting to you in the same room. Hers is a very natural voice. I think if she's not careful she can go a little over the top - her voice becomes too sing song.

19. This voice baffled me. She must work for Capital I thought. I found her friendly and warm. She came across as being happy even when mentioning the item about tension and depression. I could tell she was both interested and interesting. Perhaps she is a presenter on R4. Where have my Reithian demarcation lines gone? How dare the Beeb employ a voice I actually find friendly and exciting. I actually listened to what she had to say to me.

20. This voice I felt sure must come from R4. Her voice is very 'aunty' BBC and totally devoid of regional accent. I had an image of a lady who was once at Roedean or somewhere similar. She was an upper class woman trying to sound cosy and middle class. On the whole patronising.

21. Sue MacGregor is a guess. It's actually a relief to hear a voice which I consider quite pleasant. The life and enthusiasm in her voice makes me interested enough to want to listen to what she's saying.

22. I can hardly keep up with what she is saying. She races through her sentences without any pauses. I expect she had to use the time during the music insert to get her breath back. Her voice is haughty and condescending and cold.

23. A pleasant medium pitch voice which she used to good purpose to project a considerable amount of feeling and emotion along with the facts. This expressive quality tended to give the listener the impression that the announcer was interested and enthusiastic about the content of the programme to be broadcast and that the listener ought to feel that way too. The image

suggested by her voice is that of a mature attractive woman in her thirties, well groomed and wearing good tasteful clothes. Her general demeanour gives the impression of an ex-teacher or businesswoman.

24. This voice is soft, pleasant and relaxed. She has a high voice but because the rhythm of her speech is fairly fluid it's got a relaxing effect. Of course you could argue that it's very patronising - she could be talking to a child instead of an adult audience but you'd have to be pretty sensitive to feel this way.

25. Female. She is speaking slightly too fast.

26. The female presenter of 'Woman's Hour' was lively. As she linked items together in a skilful manner, she sounded enthusiastic and interesting. It seemed that she was actually interested in what she was doing. As a listener it's difficult NOT to listen to someone like this especially when she has a warm personal voice.

27. Instantly recognisable as that of Sue MacGregor. Despite the fact that her voice was so easily identifiable she is one of the few broadcasters who, while displaying character in the voice, does not encroach on the material. Her relaxed pleasant voice can best be described as a voice that 'smiles' at you through the airwaves.

28. This voice was too smooth, sounding old fashioned; rather like listening to a favourite auntie full of home truths. It was a voice that seemed to be suited

to talking to other women as it was cosy, careful, yet bubbling over at certain points, willing you the listener to stay a while longer. It was a voice that was very easy to listen to as it was neither too high nor too deep, relaxed and pleasantly chatty, an ideal radio voice.

Voice Four : Non-professional radio 4 contributor

1. This voice is younger than Sue MacGregor's I think. It's a news voice slightly thicker than the previous one, with breaths frequently audible. The pitch is very similar to Sue MacGregor's.

2. This is very rhythmic but also quite deliberate.

3. This voice feels tense, nervous and lacking in confidence. My first impression was that this was someone reading someone else's words, with complete indifference.

4. Younger voice, boring and neutral. This woman is clearly trying hard to be clear and fluent and to put some kind of expression in her voice but fails to do it in the same natural way as Sue MacGregor, partly because it sounds as if she is reading from a script.

5. I liked this voice, better than I did Sue MacGregor's. It typified the ILR sound far more than the previous voice because it was lighter, younger, although not as relaxed and controlled as the Sue MacGregor voice. I'd describe it as a classless academic college voice rather than a working class or

a middle class. Her voice reflected the well brought up preppy voice image of an intelligent young girl. Hers was the type of voice that would be on a programme that aims to inform rather than a programme like 'Black Londoners' where the female presenter has a pronounced London accent.

6. I'm sure what she is talking about is very worthy but if she's not interested then neither am I. She makes no attempt to disguise the fact that she's reading from a script, she's speaking in virtually a monotone and it sounds stilted. Her voice has no confidence in it, she's not attacking the words with any conviction or expression; she doesn't sound friendly because she's not smiling. The whole effect is a turn off.

7. This is a woman who approaches her subject in a matter of fact way. She sounds impersonal and not over enthusiastic about the subject. I'm very conscious that she is reading from a script.

8. I prefer this lady to Sue MacGregor. She sounds more approachable more natural. But still 'Woman's Hour'-ish.

9. This is the Radio 4 voice to me, clear, slow, lacking in variety or enthusiasm. She seems to put emphasis on every tenth random word which sounds rather unnatural. The overall effect is dull and this voice doesn't make for easy listening.

10. This voice just isn't successful. It doesn't reach out and really sell its subject to me. Somehow the deeper tone lacks the sparkle, the sing-song notes, the

uplift of the previous presenter. It sounds too serious, too introverted. Yoga? This voice wouldn't begin to know how to relax me.

11. This presenter immediately attracted and held my attention. She sounded interested and involved in her subject and so interested and involved me. She seemed to use her words very efficiently; each sentence flowed easily from the last, and contributed new information to her narrative. Her voice was compelling but also convincing. She appeared in possession of all the facts and her level, coherent delivery inspired me to expect a balanced and sensible argument from her. I imagine this presenter is an efficient, well dressed, ambitious 30 year old immersed in her job and determined to be good at it.

12. This woman really believes that relaxation can help solve all your problems, but she sounds too amateurish and the script is being read.

13. This lady is far less blatantly feminine and at first sounds a bit flat by comparison with Sue MacGregor. But as you get used to her she sounds natural and unforced. Her voice is deliberate and rather serious. But she seems involved in what she's talking about and is easy to listen to because she speaks to rather than at the listener. This is a deeper voice than the previous one, which seems to make it more digestible.

14. This voice is a real contrast to Sue MacGregor. I didn't like it at all. She seemed to be trying to command her audience to listen for their own good. I doubt that she could keep anyone interested for long because she sounded as

if she was reading off her set piece, parrot fashion. There's absolutely no interest in her voice, it's completely deadpan and monotonous. Her listeners could have been morons for all the enthusiasm she shows in her subject. Not a voice I could listen to for long on the radio.

15. This girl is reading from a script and injects very little into what she's talking about. Her voice is a bit dull and needs more authority and confidence behind it. The piece she read needed at least the impression that she was thinking it through and not just reeling off a list of remedies for tension.

16. This speaker is higher in pitch but otherwise very similar to Sue MacGregor only half an octave higher. Her tone is squeaky.

17. This female voice differs from the previous one in that it is less chatty and more instructive. Your attention is grabbed far more by this woman's voice; the reason I think is that this woman has more character and it is easier to imagine the face behind the voice. However there is less vitality in what this woman is saying and it would not be easy to listen to for long. This shows that while a voice with accent is more interesting to listen to, if it lacks enthusiasm it soon becomes tiring.

18. I had to listen to it a few times before I could say anything about it. It's clear, sounds pleasant and first time round sounded rather like that of Sue MacGregor. But it's not the same. Apart from the different voice level she also sounds bored with what she's saying. I can picture her looking at her notes, reading them out and thinking of something completely different. She

might have sounded a little more enthusiastic when she introduces 'Dr Storr'. This is not such a natural voice.

19. This was a BBC mannered carefully enunciated voice. This was the 'Woman's Hour' voice I'll always remember. The style of delivery that drives me away. I felt she was lecturing me. She sounded bored and so was I.

20. This lady doesn't appeal to me at all. She came over as a school ma'am. She was talking Yoga and taking it very seriously. She wasn't having any fun at all. It was as if she was teaching Yoga out of a sense of duty to all our backs. She was not aiming at the audience but just talking.

21. A very pleasant voice. The voice is slightly lower in pitch. The enthusiasm and interest she has for her subject is reflected in her voice.

22. It's ironic that the woman introducing the item giving advice on how to relax sounds so nervous. She sounds stilted and tense and her voice is slightly rigid. I notice that she cuts her words rather sharply at the end of sentences. It's a boring voice to listen to as well. She sounds monotonous.

23. The second female voice was clear and precise and of excellent quality. The slightly hard tone which was discernible now and then suggested that she might be a person used to giving orders or at least issuing instructions to people in her charge. The fact that she seemed to be speaking of medical matters suggests that she could be a nurse or therapist or at any rate something to do with the medical profession. The image which comes across

to me is of a neat, efficient youngish person probably in uniform and dedicated to her profession.

24. A friendly, warm voice.

25. The voice in itself is not too bad but she doesn't sound the slightest bit interested, although she sounds as if she is trying to be. She gives two cues to Dr Storr and I'm not keen on some of the phrases she used.

26. Slightly too authoritative for me. The woman behind this voice was doing some kind of feature on relaxation. She linked the various pieces of interview together well and managed to sound fairly interested at the same time.

27. The vocal chords of the second female voice sounded very tight and tense. Her voice sounded forced and too controlled and made for rather aloof unfriendly tones. I could almost envisage the veins in her neck protruding at the strain of speaking in such a highly controlled fashion. It's definitely a voice that would make for a lot of unnecessary hard work on the poor ears of the listener. There was no light and shade in the voice rather it was monotonous, disinterested and thus failed to command the attention.

28. I found this voice as attractive as Sue MacGregor's and easy on the ear, although it was quite different. A harder, younger tone and much more formal in her approach to the listner but still careful to ensure that someone was listening. This presenter carefully emphasised certain words and phrases

by giving her voice a slight edge of authority with an occasional break in her voice; all these aspects made very easy and pleasant listening.

CHAPTER EIGHT

PERSONALITY JUDGEMENTS AND VOICE QUALITY

Subjective Dependability

From the research developed throughout this thesis, it is apparent that each member of any audience receives a clear impression of the personality of the speaker. This impression is gained through judgements made as a result of the broadcaster's voice quality. Complex visual perceptions of his physical build, posture, clothes and movements, in addition to auditory perceptions derived from his speech and voice, make this impression seem accurate and complete. On radio the rich and informative visual pattern is absent; only the voice and speech remain. The resulting judgement is somewhat fragmentary and uncertain. This situation has already received popular recognition in jokes concerning the disillusionment of those who learn to their sorrow that the radio voice with which they fall in love does not reveal accurately either the appearance or the nature of its possessor.

In spite of such hazards, however, it was clear from my research that most people who listen to radio feel assured that their personality judgements are dependable. Often the impression is nothing more than a feeling of favour or aversion, but sometimes it represents a surprisingly definite judgement concerning the speaker's physical, intellectual, and moral qualities.

Allport and Cantril quote one broadcasting official as saying: "The human voice when the man is not making conscious use of it by way of impersonation does in spite of himself reflect his mood, temper and personality. It expresses the character of the man. President Roosevelt's voice reveals sincerity, good-will and kindliness, determination, conviction, strength, courage and abounding happiness". (Allport and Cantril, 1934 : 71). Others may well have felt that this voice revealed very different characteristics.

T H Pear used nine speakers of different ages, sex and interests. He secured over 4,000 listeners' judgements concerning the vocation, place of residence, age and birthplace of these speakers. Although Pear's chief interest was in phonetic problems such as accent and dialect the free descriptions submitted by the listeners enabled him to make some tentative statements concerning the accuracy of judgements of other personal characteristics. Sex was stated correctly; age was on the whole estimated with fair success. Physical descriptions seemed frequently to be apt, and vocation was sometimes stated with surprising exactness. Since Pear did not prescribe the manner in which the judgements should be made or instruct listeners concerning all of the features of personality which they might judge, his results are difficult to express or compare with chance. (Pear 1939).

Allport and Cantril undertook ten experiments designed to determine to what extent the unanalysed natural voice is a valid indication of various features of personality. Certain precautions were taken to exclude the cues which might arise from the individual differences in speech. Inasmuch as uniform material was read from typewritten texts differences in vocabulary, fluency of speech, grammatical accuracy, and subject matter were virtually eliminated. They made no attempt to analyse

voice into its various attributes.

In the main part of their investigation eight separate experiments were performed. Six of these took place in the Harvard Psychological Laboratory where a complete broadcasting and receiving unit had been installed. The other two experiments were conducted from a Boston radio station. In the six laboratory experiments students acted as judges, the number in the different experiments ranging from 32 to 85. In the two studio experiments the public was asked to send in judgements. From one of these appeals 190 replies were received; from the other, 95. The total number of judges participating in these eight experiments was 587. The procedure employed in each of the laboratory experiments and in the two studio experiments was practically identical.

Certain features of personality which could be reliably measured or otherwise determined objectively were selected for study. The features chosen ranged from such definite physical attributes as age and height to certain complex traits and interests of the 'inner' personality. The meanings of the two semi-technical expressions (extroversion-introversion and ascendance-submission) were carefully explained to the judges. In each of the eight experiments several of the following features of personality appeared.

Physical and Expressive Features (Outer characteristics)

1. Age
2. Height
3. Complexion
4. Appearance in photographs

5. Appearance in person

6. Handwriting

Interests and Traits (Inner characteristics)

7. Vocation

8. Political preference

9. Extroversion–introversion

10. Ascendance–submission

11. Dominant values

12. Summary sketch.

Speakers were selected for each of the eight experiments. Eighteen different speakers took part; twelve participated only once, and six participated in two experiments. All the speakers were male. In general a diversity of voices and personalities was sought, although extreme eccentricities or abnormalities were avoided. Before each experiment objective information for each speaker was obtained on all of the features included in that experiment.

Their conclusions were:

1. Does the voice convey any correct information concerning outer and inner characteristics of personality? The answer was 'yes'. Not only are the majority of the results positive (74%) but 47% were significantly so, often by very large margins.

2. Is there uniformity in the expression of personality through voice? So that it could be said that certain personality qualities are consistently revealed and

others not at all; or that certain types of individuals are always revealed by their voices and others never? To that they answered 'no'. Results which are exclusively positive and significant were obtained for no single feature except age and complexion. Nor were the results for all of the personal characteristics of any one of their eighteen speakers always positive and significant. Therefore the only certain generalisation they felt could be made was that by and large many features of many personalities can be determined from voice.

Stereotypes

I have found in my own experiments that stereotypes play an important part in making these judgements. I was often told, "He talks like a politician": "You can tell from his voice he's scared" (bored, tired, happy etc).

Allport and Cantrill found that not only were the more highly organised traits and dispositions judged more consistently than such outer characteristics as physique and appearance, but they were also judged more correctly. One third of the judgements on physical and expressive features were significantly positive, whereas one half of the judgements on traits and interests were positive and significant.

The Archers

At Sheffield University some interesting research was conducted into the voice characteristics of members of the cast of 'The Archers'.

Lesley Arnold set out to find whether the actor's real voices were close to their character voices. She also wanted to find out which voices were most recognisable as a pair and whether age or sex made any difference. She used 15 testees to see how closely people could estimate height, weight and age of voice. She then collected the physical descriptions together and compared them against a general description made by herself. The actors could be described physically but the characters had to be given general personal descriptions. She found that people were a lot more accurate with general physical descriptions of female voices than with the male voices, especially with the actress voices. With the male voices the actors were more accurately described and with both sexes the younger people tended to inspire more lengthy descriptions. Where the voices were very similar between actor and character the descriptions were almost identical. Where the character and actor voices were very different descriptions also changed. She felt that it was the type of voice quality which encouraged similar descriptions. She also found that voice quality seemed to have affected the testee estimation of age, height and weight. The three most similar pairs of voices were very closely estimated in all three judgements and those furthest apart scored least well. (Arnold 1978).

Analysis of Part One

In my own research it emerged that vocal qualities together with the way broadcasters used their voices to communicate with the listener combine to form the listeners impression of the speaker and the message being communicated. The vocal and presentational characteristics are inter-twined.

In general accent/dialect/age/sex are less important than these physical and presentational characteristics.

However it was also evident that there is not always a clear cut distinction between qualities described as "liked" or "disliked". (For example "husky" and "formal" descriptions of voice and presentation may be liked in one context but not in another).

However the preferred characteristics in a radio voice which arose repeatedly were "clear", "natural", "relaxed", "friendly", "enthusiastic", "authoritative", "deep-pitched".

The main presentation classes were therefore chosen to be: "clear", "natural", "lively", "confident"; and the most liked physical class: "resonant". These positive qualities are balanced by the classes "formal", "condescending", "dull" and "nervous".

The open-ended format of the part one tests produced spontaneous reactions and opinions. This was felt to be better than pre-judging the issues by suggesting categories beforehand.

Analysis of liked and disliked qualities into the categories above gives the general classification table below.

Table 1

POSITIVE PRESENTATIONAL QUALITIES

CLEAR	NATURAL	LIVELY	CONFIDENT
Distinct	Pleasant	Enthusiastic	Authoritative
Precise	Informal	Well paced	Assured
	Relaxed	Cheerful	
	Conversational	Energetic	
	Friendly	Brisk	
	Fluent	Expressive	
	Chatty	Bright	
	Warm	Animated	
	Casual		

Table 2

NEGATIVE PRESENTATIONAL QUALITIES

FORMAL	CONDESCENDING	DULL	NERVOUS
Detached	Affected	Boring	Timid
Cultured	Patronising	Monotonous	Scared
Correct	Haughty	Slow	Hesitant
Stiff	Well-bred	Colourless	
Old fashioned	Bullying	Flat	
Educated	Ironic		
Upper crust	Arrogant		
Distant	Smug		
Cultivated	Conceited		
Stilted	School marmy		
Dignified	Aloof		
Impersonal	Starchy		
Clipped	Mumsy		
Well-educated	Superior		
Neutral	Elitist		
Measured			
Impartial			

Table 3

POSITIVE PHYSICAL QUALITIES

RESONANT

Deep

Mellow

Rich

Plummy

Bass

Dark

Reverberating

Medium/low pitch

Table 4

NEGATIVE PHYSICAL QUALITIES

Forced

Thin

Breathy

Throaty

Rough

Nasal

Grating

Squeaky

Gravelly

Hoarse

Rasping

Hard

Husky

High pitched

Shrill

Shaky

Gritty

Analysis of Part Two

Four voices were analysed by the sample group of 28 testees according to the general classification tables produced in part one. The aim was to see if a voice print could be derived for a given voice.

The numbers given are the frequencies with which the corresponding voice characteristic is mentioned or implied by the testees for each voice.

Table 5

	VOICE 1	VOICE 2	VOICE 3	VOICE 4
CLEAR	8	13	2	4
NATURAL	6	7	22	6
LIVELY	-	14	15	4
CONFIDENT	7	10	8	3
FORMAL	12	10	3	9
CONDESCENDING	3	-	8	-
DULL	22	7	2	15
NERVOUS	4	-	-	6
RESONANT	8	4	3	2
VOICE FAULTS	4	11	2	4

Precise interpretation of a Testee's subjective reaction is not always possible but a general pattern does emerge for each voice.

Table 6

DOMINANT CHARACTERISTICS

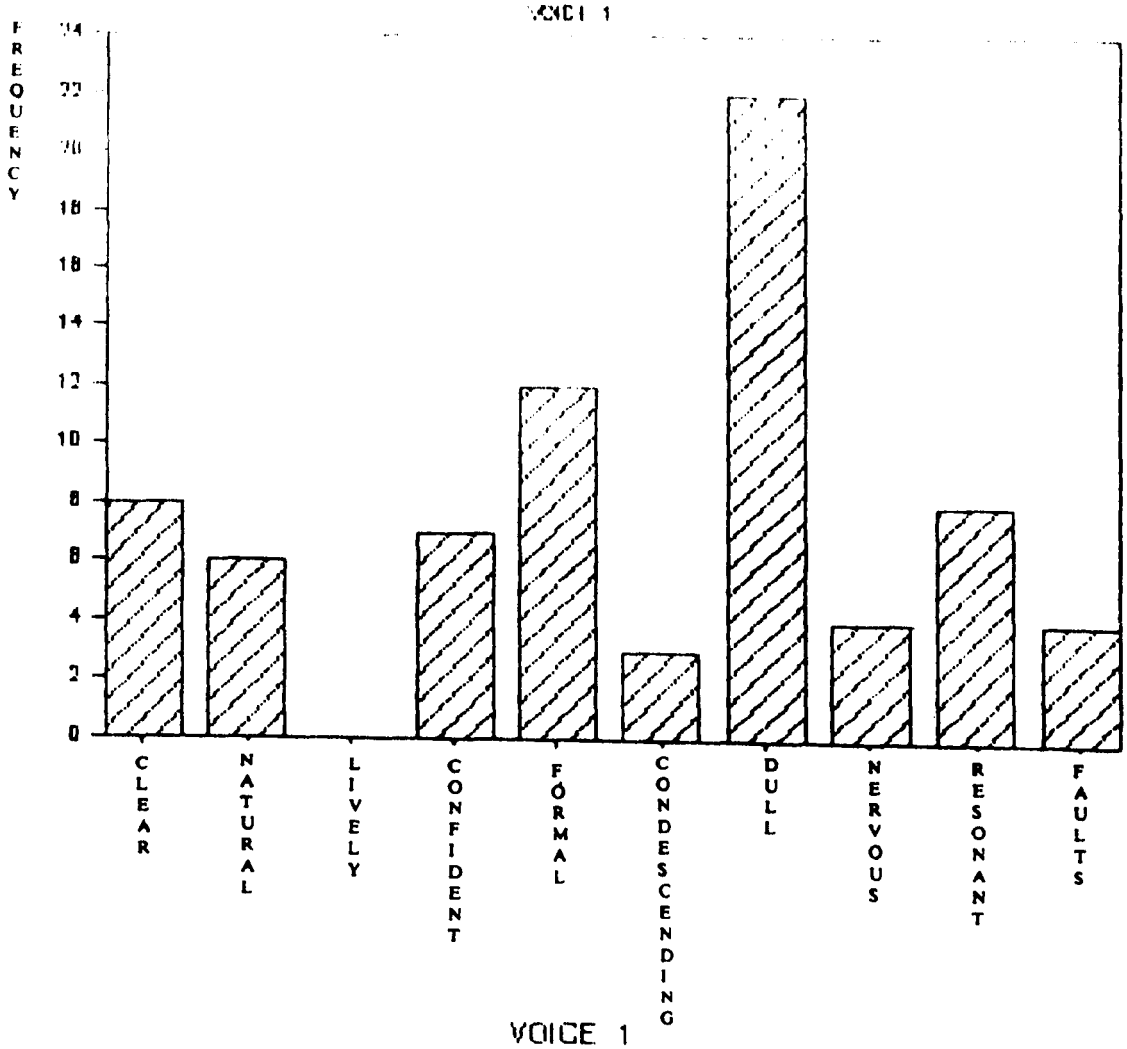
	VOICE	PRESENTATIONAL	PHYSICAL
1.	Radio 3 announcer	Dull, formal, clear	Resonant Breathy Nasal
2.	Radio 4 newsreader	Lively, clear, confident, natural	Resonant Nasal Hard Breathy Lisp
3.	Radio 4 presenter	Natural, lively confident, condescending	Resonant Breathy
4.	Non-professional broadcaster	Dull, formal, nervous, natural	Resonant Hard Breathy Squeaky

Graphs

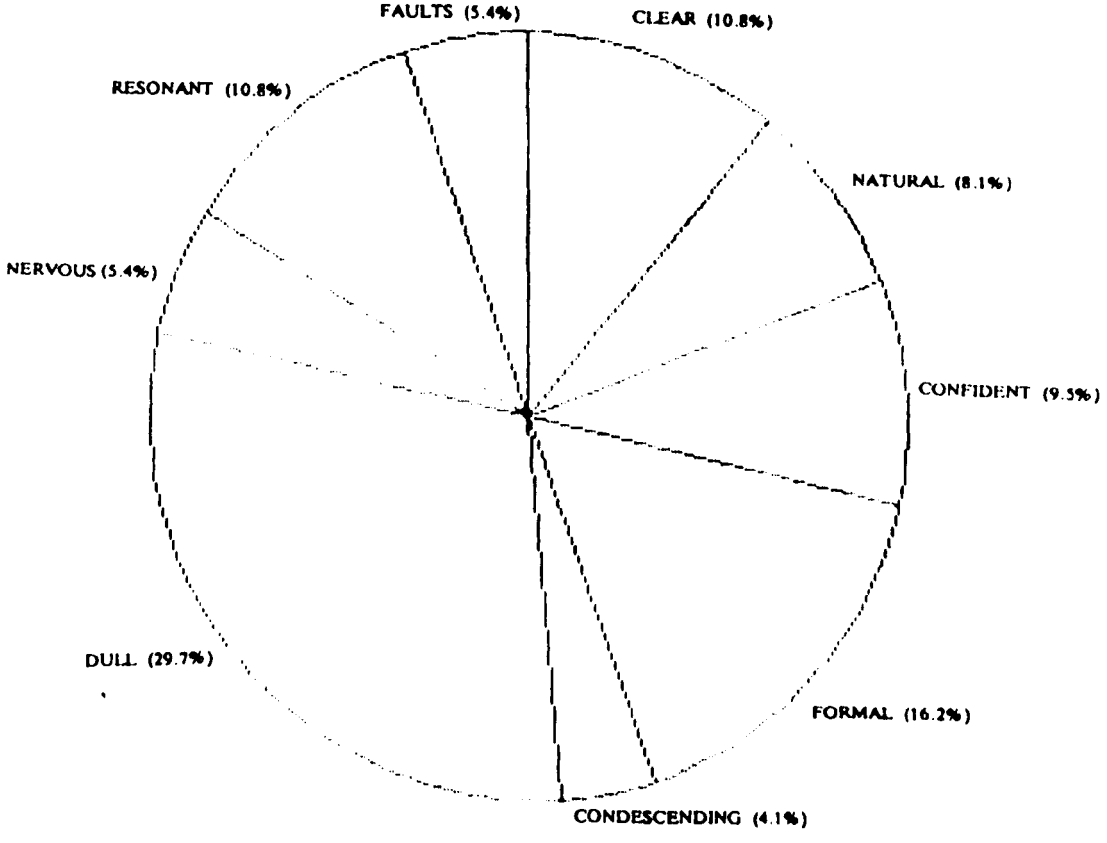
In the following graphs 1-4 individual voice patterns are given.

In order to compare voices the frequency polygons for the four voices are superimposed in Graph 5.

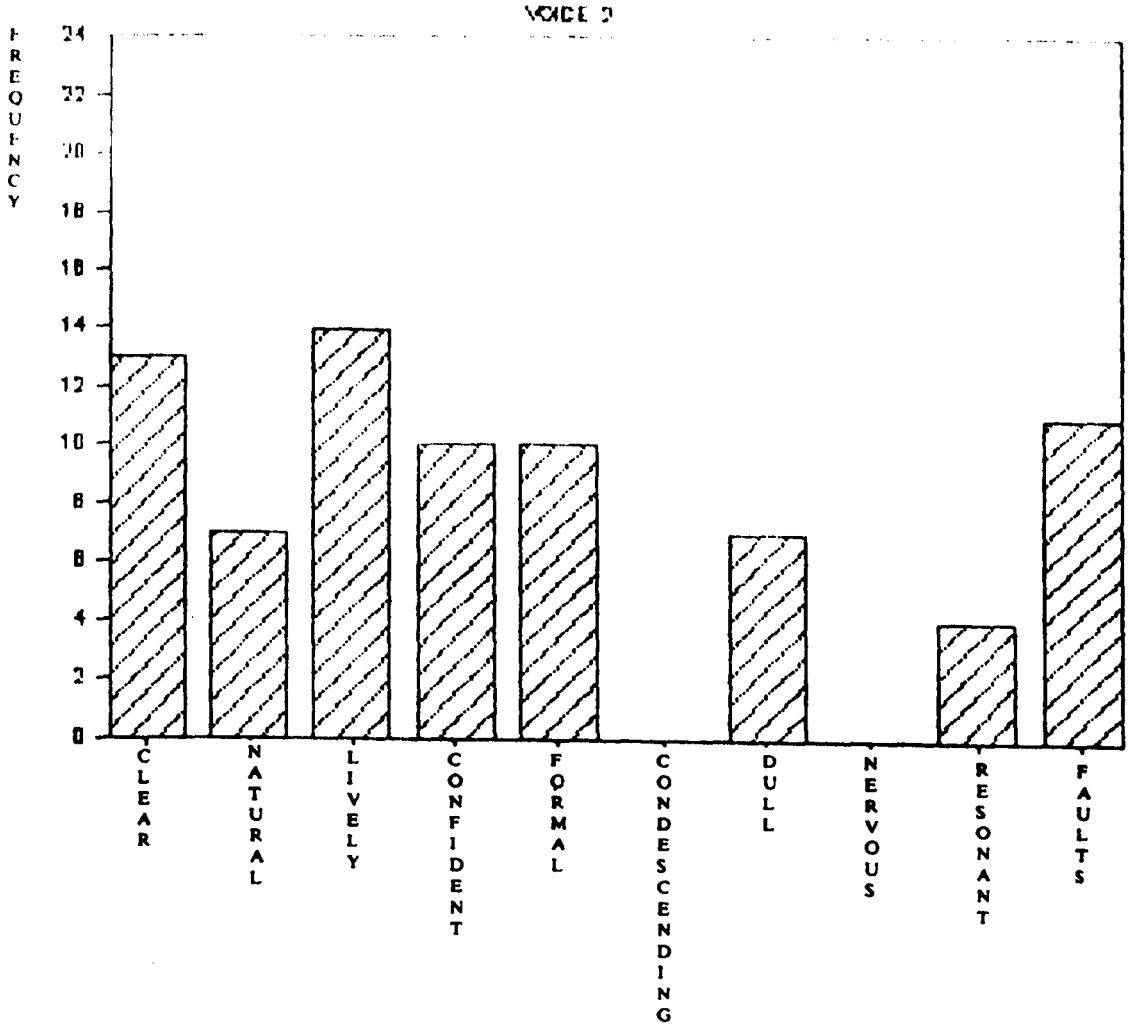
ANALYSIS OF VOICE CHARACTERISTICS



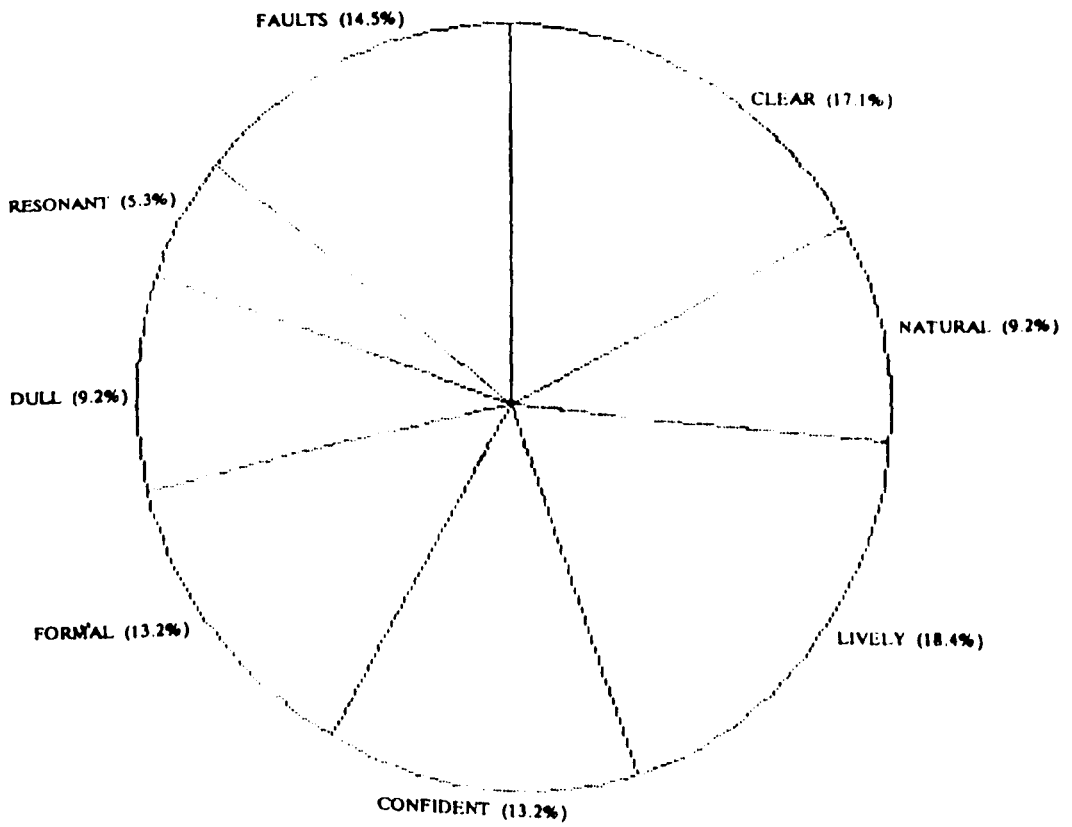
VOICE 1



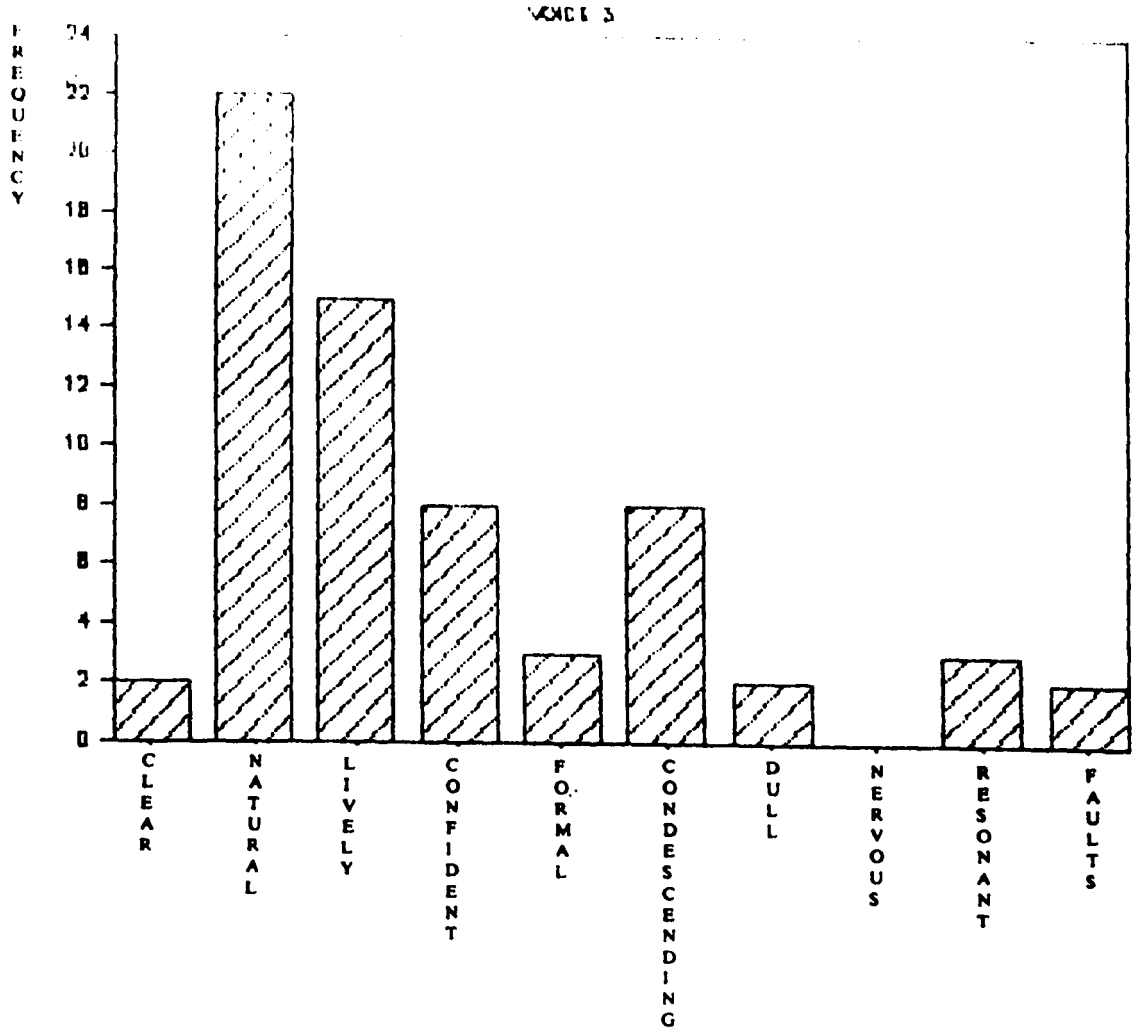
ANALYSIS OF VOICE CHARACTERISTICS



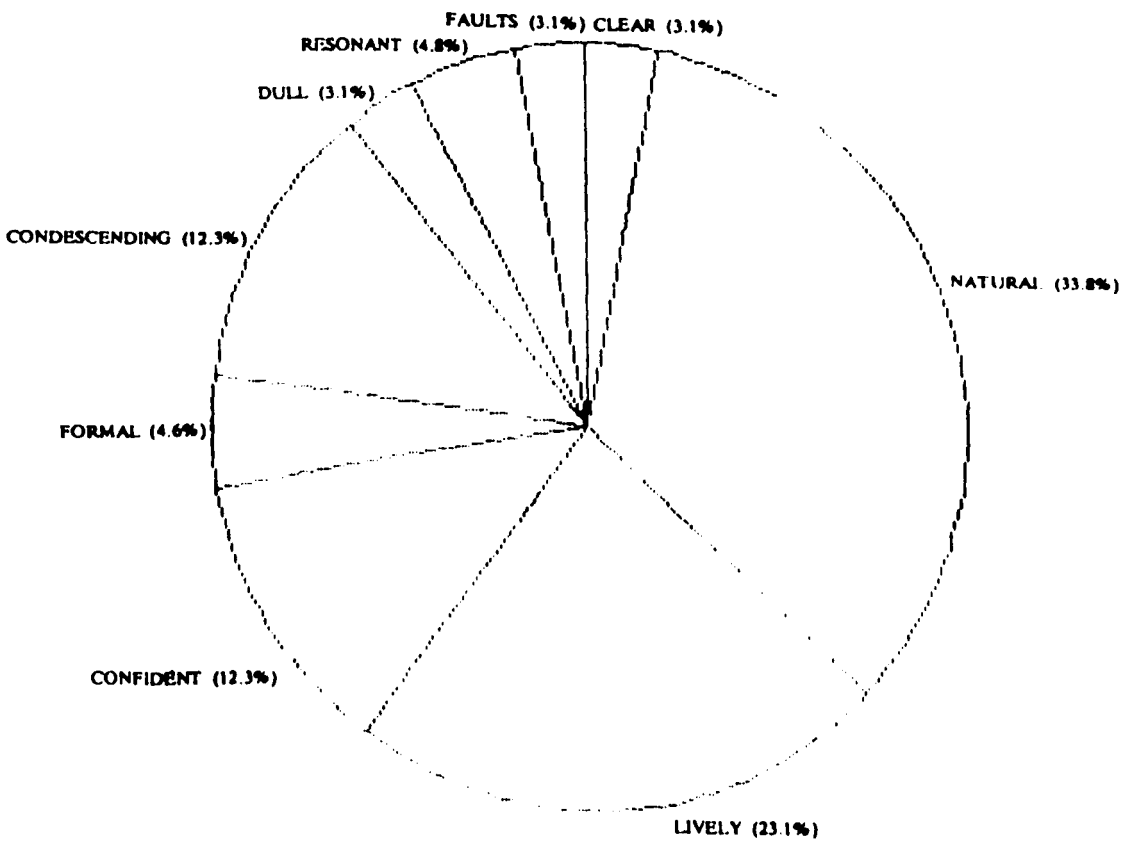
VOICE 2



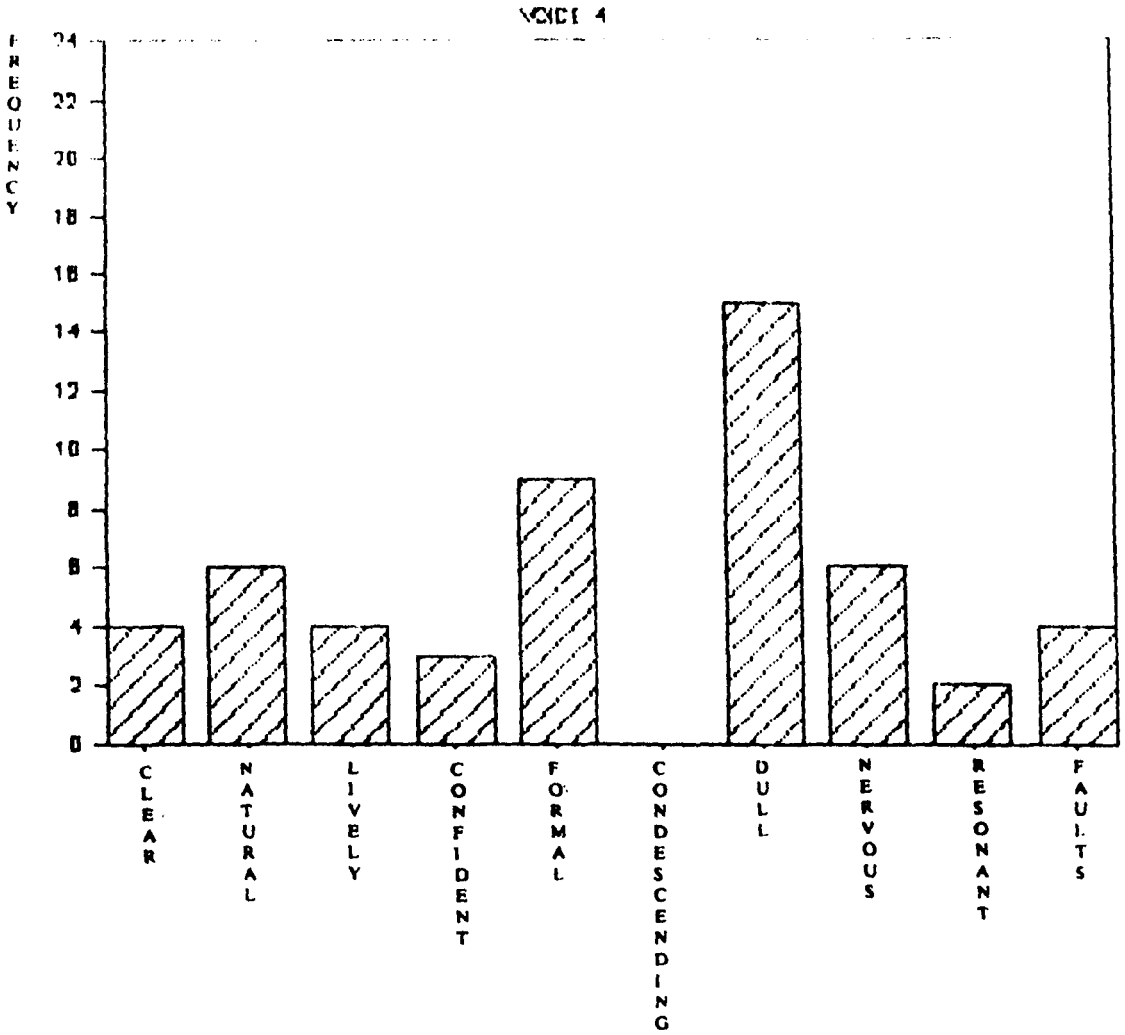
ANALYSIS OF VOICE CHARACTERISTICS



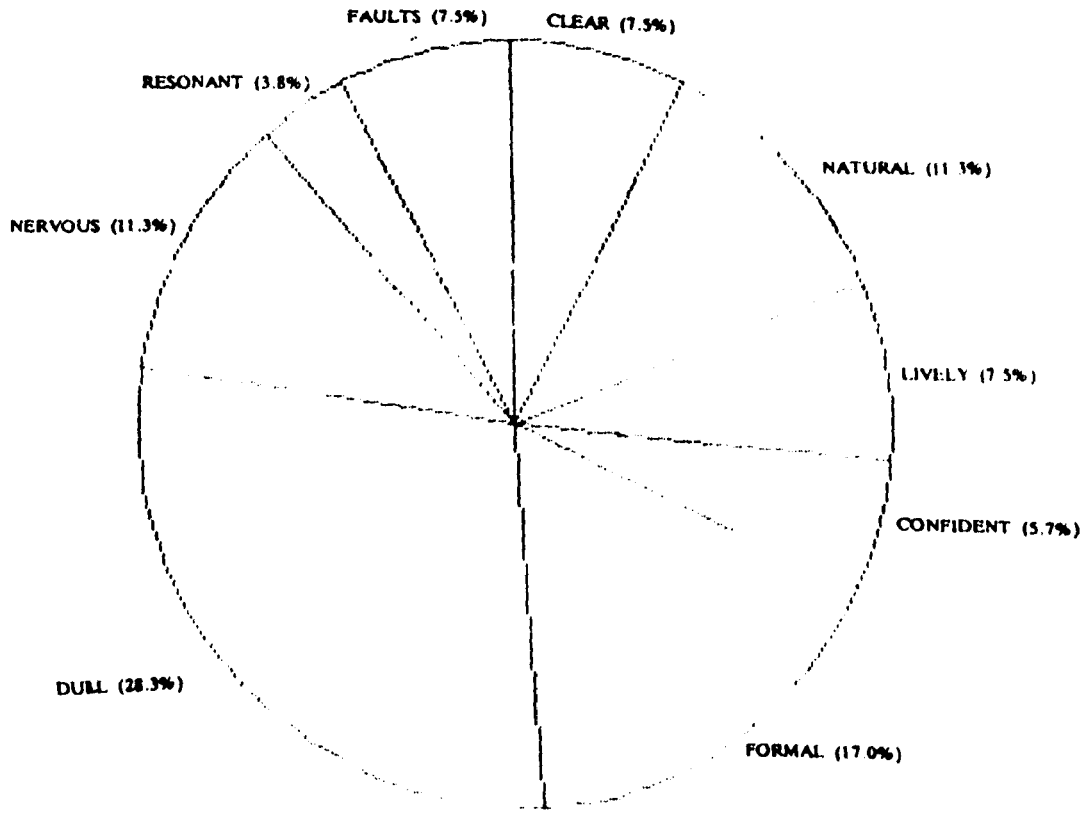
VOICE 3



ANALYSIS OF VOICE CHARACTERISTICS

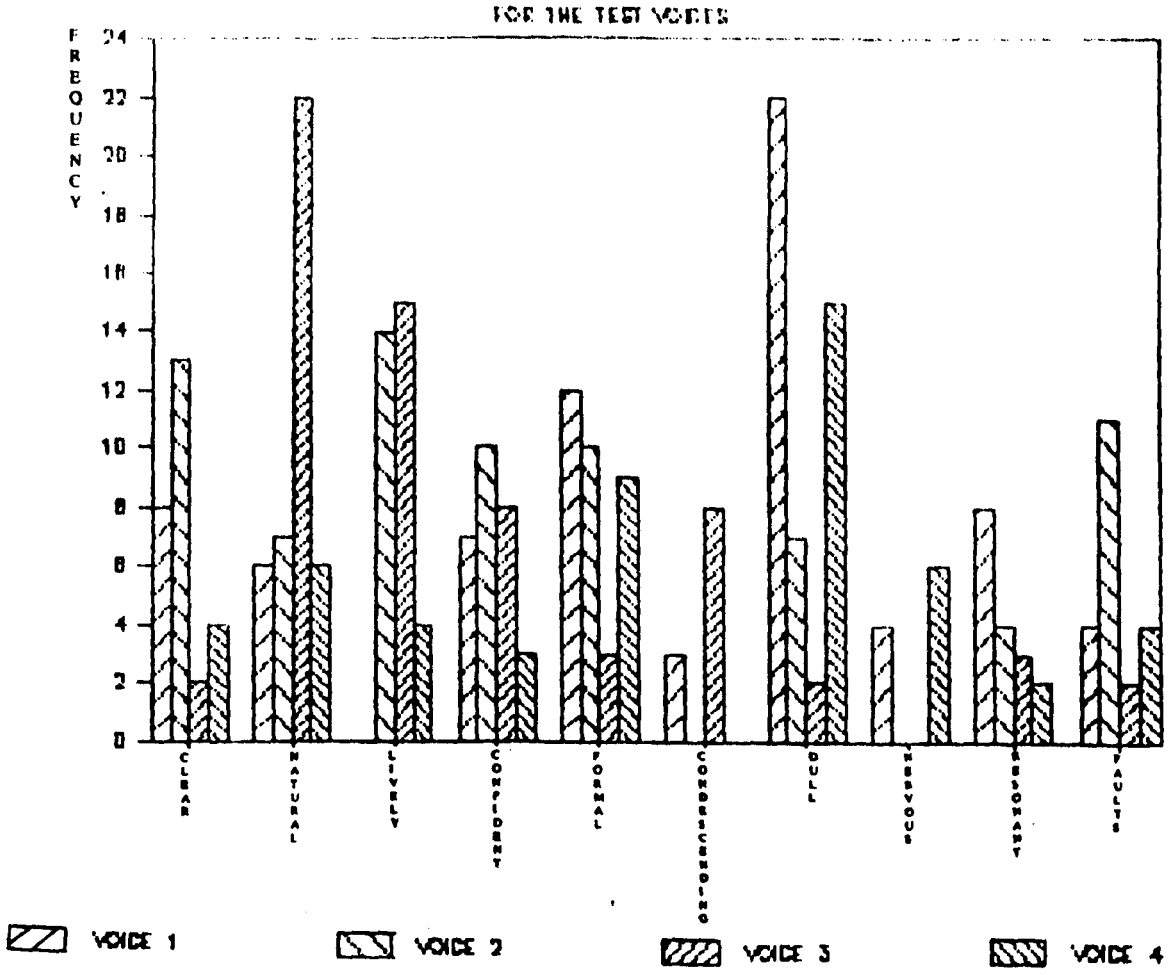


VOICE 4

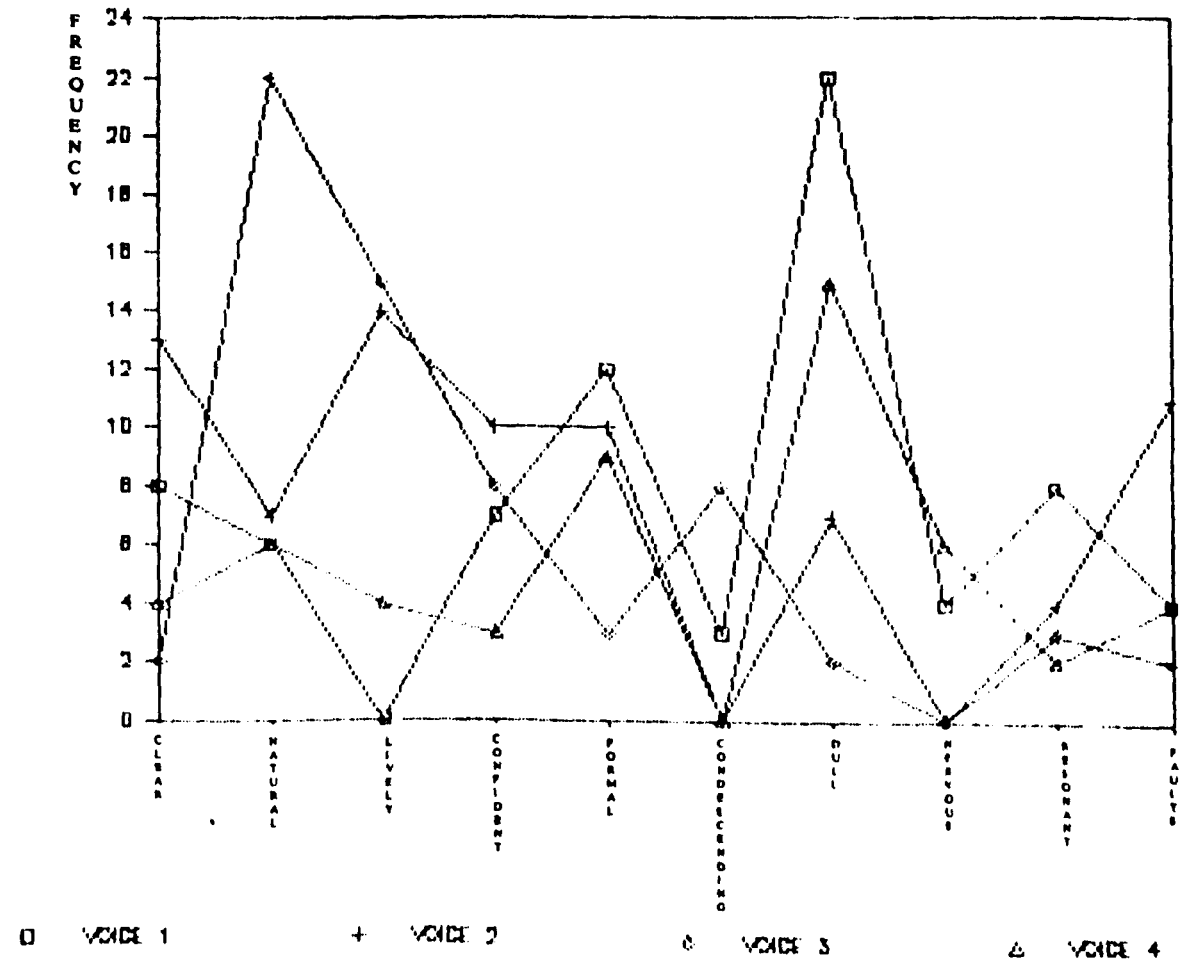


COMPARISON OF CHARACTERISTICS

FOR THE TEST VOICES



FREQUENCY POLYGONS



Conclusion

It is clear that there are definite vocal characteristics that create either a positive or negative reaction to the listener. Identification of these characteristics mean employers can have specific voices for specific tasks, knowing that they will either cause positive or negative listener reaction. The radio voices which create the most positive listener reaction are those which listeners judge to be lively, clear, and resonant. These are the qualities which employers should look for in the modern broadcaster - the voice print for radio listener acceptability.

Numerical Acceptability Scale

0	→	10
UNCLEAR		CLEAR
FORMAL		RELAXED
COLD		WARM
DULL		ENTHUSIASTIC
WEAK		AUTHORITATIVE
THIN		RESONANT

Using this scale employers can relate the negative and positive vocal characteristics of potential broadcasters to the maximum acceptability score of 60. A score of less than 30 would make listener acceptability doubtful. This set of voice acceptability characteristics are devised from the acceptability judgements of listeners and from the experience I have gained as a broadcaster and recruiter. The scale can also be used by aspiring broadcasters who can see from it those characteristics

required by employers. Would-be broadcasters who have a voice that is clear, warm and resonant and who use it in a presentational style that is relaxed, enthusiastic and authoritative now know that they are likely to provide what is wanted by employers; and what will be found to be acceptable by the listener.

BIBLIOGRAPHY

ABERCROMBIE D (1953): English Accents, English Language Teaching 7, 113-123

ABERCROMBIE D (1967): Elements of General Phonetics, Edin U P

ABBERTON E (1976): A Laryngographic Study of Voice Quality, PhD Thesis, University of London

ABBOT, WALDO and RIDER, Richard (1957): Handbook of Broadcasting, McGraw-Hill, New York

ADDINGTON DW (1968): The Relationships of Selected Vocal Characteristics to Personality Perceptions, Speech Monographs, 35 pp492-503

ADDINGTON David W (1971): The Effect of Vocal Variations on Ratings of Source Credibility, Speech Monographs, 38 pp242-47

ADRIAN ED (1946): The Physical Background of Perception, The Waynflete Lectures, Clarendon Press, Oxford

AHMED A, A-H A (1979): A Phonetic Study of Mens and Womens Speech with Reference to Emphasis in Cairene Arabic, MPhil Thesis, University of Leeds

AIKIN WA (1910): The Voice: An Introduction to Practical Phonology, Longmans, London (2nd Edition 1951, Rumsey H ST J)

AINSWORTH WA (1975): Intrinsic and Extrinsic Factors in Vowel Judgements, in Fant G and MAA Tatham (Eds) (1975) Auditory Analysis and Perception of Speech, London

AITCHISON Jean (1982): The Articulate Mammal, Hutchinsons, London

AKIN Johnnye (1958): And So We Speak, Prentice-Hall, Englewood Cliffs, New Jersey

ALKIRE AA, COLLUM ME, KASWAN, J and LOVE LR (1968): Information Exchange and Accuracy of Verbal Communication Under Social Power Conditions, Journal of Personality and Social Psychology, 9, pp301-308

ALLPORT GW and CANTRIL H (1934): Judging Personality From Voice, Journal of Social Psychology 5, 37-55

ANDERSON, Virgil (1942): Training the Speaking Voice, OUP, New York

ANISFIELD, MOSHE, BOGO, NORMAN and LAMBERT WALLACE (1962): Evaluational Reactions to Accented English Speech, Journal of Abnormal and Social Psychology 65, pp223-31

ARANGUREN JL (1967): Human Communication, Weidenfeld and Nicholson, London

ARGYLE M, SALTER V, NICHOLSON H (1970): The Communication of Inferior and Superior Attitudes by Verbal and Non-Verbal Signals, British Journal of Social and Clinical Psychology 9, pp222-31

ARNOLD, GE (1942): Vocal Nodules and Polyps : Laryngeal Tissue Reaction to Habitual Hyperkinetic Dysphonia, Journal of Speech and Hearing Disorders, XXVII pp205-17

ARNOLD L (1978): The Archers, NA dissertation, University of Sheffield

ARONOVITCH CD (1976): The Voice of Personality: Stereotyped Judgements and their Relation to Voice Quality and Sex of Speaker, Journal of Social Psychology 99, pp207-20

AUSTIN JL (1962): How to do things with Words, OUP, London

BALLENGER WL, BALLENGER HC and HALLENGER JJ (1947): Diseases of the Nose, Throat and Ear, LEA and Febiger, Philad

BARBER Charles (1964): Linguistic Changes in Present Day English, Oliver and Boyd, London

BARNHART, LYLE (1953): Radio and TV Announcing, Prentice-Hall Inc, Englewood Cliffe, NJ

BAYLY A (1758): An Introduction to Languages, Literary and Philosophical, Especially to the English, Latin and Greek, Rivington, London

BELL AM (1890, 3rd Edition): The Elocutionary Manual, Hamilton Adams, London

BELL AM (1867): Visible Speech : The Science of Universal Alphabetics, Simpkin, Marshall & Co, London

BELL AG (1914): Mechanisms of Speech, Funk and Wagnalls, New York

BLACK JW (1942): Effects of Voice Communication Training, Speech Monographs 13 No 2 pp64-68

BLACK JW and MASON HM (1946): Training for Voice Communication, J Acoust Soc America 18, 441-45

BLACK JW (1949): Loudness of Speaking : The Effects of Heard Stimuli on Spoken Responses, Joint Project 2, US Naval School of Aviation, Medicine and Research, Pensacola, Ohio

BLACK JW (1949): Natural Frequency, Duration and Intensity of Vowels in Reading, Journal of Speech and Hearing Disorders, 14 pp216-21

BLACK JW (1955): The Relative Intelligibility of Language Groups, Quarterly Journal of Speech, 41, 57-60.

BOBROW SA and BOWER GH (1969): Comprehension and Recall of Sentences, Journal of Experimental Psychology, 80, 455-461

BODINE A (1975): Sex Differentiation in Language, in B Thorne and N Henby (Eds) "Language and Sex: Difference and Dominance", pp130-52, Newbury House, Rowley, Mass

BOLINGER Dwight (1980): Language: The Loaded Weapon, Longman, London

BOLT RH et al (1969): Identification of a Speaker by Speech Spectrograms, Science 166, 338-343

BOLT RH (1974): Speaker Identification by Speech Spectrograms: Some Further Observations, Journal of the Acoustical Society of America 54(2), 531-34

BOONE Daniel (1971): The Voice and Voice Therapy, Prentice Hall, New Jersey

BORCHERS Gladys (1936): An Approach to the Problem of Oral Style, QJS pp114-116

BORDONE-SACERDOTE C and SACERDOTE GC (1969): Some Spectral Properties of Individual Voices, Acustica, 21, 199-210

BOWNASS S (1977): Consistency in Phonetic Analysis, unpublished BA Dissertation, U Sheffield

BRADLEY H (1913): On the Relations Between Spoken and Written Language with Special Reference to English, Proceedings of the British Academy (1913)

BRANSFORD JD and BARCLAY JR and FRANKS JJ (1972): Sentence Memory: A Constructive Versus Interpretive Approach, Cognitive Psychology, 3, 193-209

BRIGGS A (1961-5): The History of Broadcasting in the United Kingdom, Vols 1-3, OUP, London.

BRODNITZ FS (1954): Voice Problems of the Actor and Singer, JSHD 19, 322-324

BROOK GL (1958): A History of the English Language, Deutsch, London

BROOK GL (1979): Varieties of English, Macmillan, London

BROWN Gillian (1977): Listening to Spoken English, Longmans, London

BRUCE DJ (1956): Effects of Context Upon Intelligibility of Heard Speech in 'Information Theory, Third London Symposium', C Cherry (Ed), 245-252, Butterworths, London

BURCHFIELD Robert (1985): The English Language, OUP, Oxford

BURGOON Michael (1974): Approaching Speech Communication, Holt, Rinehart and Winston, 1974, 27-37, New York

BURLING R (1970): Mans Many Voices, Language in its Cultural Context, Holt, Rinehart and Winston, New York

BUSH Clara (1964): Phonetic Variation and Acoustic Distinctive Features, Mouton, The Hague

BRACKETT IP (1946): Intelligibility Related to Pitch, Speech Monographs XIII, 24-31

CAMPBELL George (1910): Telephonic Intelligibility, Philosophy Magazine 19 Series 6, 152-159

CANTRIL H and ALLPORT G (1935): The Psychology of Radio, Harper & Brothers, New York

CATFORD JC (1964): Phonation Types : The Classification of Some Laryngeal Components of Speech Production, Longmans, London

CHERRY C (1966): On Human Communication: A Review, A Survey and A Criticism, 2nd Edition, MIT Cambridge, Mass

CHESTER, GIRAUD and GARNET GARRISON (1956): Television and Radio: An Introduction, Appleton-Century-Crofts, New York

CHEYNE W (1970): Stereotyped Reactions to Speakers With Scottish and Regional Accents, British Journal of Social and Clinical Psychology 9, 77-79

CHOMSKY N and HALLE M (1968): The Sound Pattern of English, Harper and Row, New York

CLARK Herbert and CLARK Eve (1977): Psychology and Language: An Introduction to Psycholinguistics, Harcourt Brace Jovanovich, New York

CLARKE FR and BECKER RW (1969): Comparison of Techniques For Discriminating Among Talkers, Journal of Speech and Hearing Research 12, 747-761

COHEN A (1961): Estimating the Degree of Schizophrenic Pathology from Recorded Interview Samples, Journal of Clinical Psychology 4, 403-406

COOK M and LALLJEE MG (1967): The Effects of Lack of Vision on Conversation, Unpublished, University of Oxford

COLEMAN RD (1971): Male and Female Voice Quality and its Relationship to Vowel Formant Frequencies, Journal of Speech and Hearing Research V14, 565-577

COLEMAN RD (1972): The Perception of Maleness and Femaleness in the Voice and its Relationship to Vowel Formant Frequencies, in Proceedings of the Seventh International Congress of Phonetic Sciences, Montreal, Mouton, The Hague, 471-478

COSTANZO FS, MARKEL NN, COSTANZO PR (1969): Voice Quality Profile and Perceived Emotion, Journal of Counselling Psychology 16, 267-270

COWAN M (1936): The Pitch and Intensity Characteristics of Stage Speech, Archives of Speech, Supplement

CRANDALL IB (1917): The Composition of Speech, Physical Review, Series 2, 74-76

CRYSTAL D (1966c): Studies in the Prosodic Features of Educated Spoken British English with Special Reference to Intonation, PhD Thesis, University of London

CRYSTAL D (1969): Prosodic Systems and Intonation in English, Cambridge University Press, Cambridge

CRYSTAL D and DAVY D (1969): Investigating English Style, Longmans, London

CRYSTAL D (1971): Linguistics, Penguin, London

CRYSTAL D (1980): Introduction to Language Pathology, Arnold, London

CUNNINGHAM DJ (1972): Cunningham's Textbook of Anatomy, 11th Edition (Ed GJ Romanes), OUP, London

CURRY ROL (1940): The Mechanism of The Human Voice, Longmans, London

CURRY ET (1949): Hoarseness and Voice Change in Male Adolescents, Journal of Speech and Hearing Research XVI, 23-24

DAVID EE and DENES PB (Ed) (1972): Human Communication: A Unified View, New York

DAVY D (1968): A Study of Intonation and Analogous Features as Exponents of Stylistic Variation with Special Reference to a Comparison of Conversation with Written English Read Aloud, MA Thesis, U of London

DAVY D and QUIRK R (1969): An Acceptability Experiment with Spoken Output, Journal of Linguistics 5, 109-20

DENES Peter and PINSON Elliot (1972): The Speech Chain, Anchor, London

DES FOSSES Beatrice (1946): Your Voice and Your Speech, Castell and Co, New York

DEVINE KD (1960): Pathologic Effects of Smoking in the Larynx and Oral Cavity, Mayo Clinic 235, 349-352

DE VITO Joseph (1970): The Psychology of Speech and Language, Random House, New York

DIEHL CF, WHITE R and BURLE K (1959): Effects of Voice Quality on Communication, Journal of Speech and Hearing Disorders, 21, 233-237

DIEHL CF, WHITE R and BURLE K (1959): Voice Quality and Anxiety, Journal of Speech and Hearing Research 2, 282-285

DIETRICH John E (1946): The Relative Effectiveness of Two Modes of Radio Delivery in Influencing Attitudes, Speech Monograph XIII, 58-65

DRAKE OJ (1937): Towards an Improved Voice Quality, Quarterly Journal of Speech, XXIII, 620-26

DRAPER MH, LADEFOGED P and WHITTERIDGE D (1960): Respiratory Muscles in Speech, Journal of Speech & Hearing Research, 2, 16-27

EISENBERG P and ZALOWITZ E (1938): Judgement of Dominance Feelings from Phonograph Records of Voice, Journal of Applied Psychology XXII, pp620-31

EISENSON Jon (1958): The Improvement of Voice and Diction, Macmillan, New York

ENDRES W et al (1971): Voice Spectrograms as a Function of Age, Voice Disguise and Voice Imitation, Journal of Acoustical Society of America, 49, 1842-1848

ERVIN-TRIPP SM (1964): An Analysis of the Interaction of Language, Topic and Listener, American Anthropologist (Supplement), 66, 86-102

EWBANK Henry and LAWTON Sherman (1952): Broadcasting: Radio and TV, Harper and Brothers, New York

FAIRBANKS G (1960): Voice and Articulation Drillbook, Harper, New York

FAIRBANKS G (1958): Test of Phonemic Differentiation: The Rhyme Test, Journal of Acoustical Society of America, Vol 30, 596-600

FANT G (1960): Acoustic Theory of Speech Production, Mouton, The Hague

FANT G (1973): Speech Sounds and Features, MIT Press, Cambridge, Mass

FANT G and TATHAM MAA (1975): Auditory Analysis and Perception of Speech, Academic Press, New York

FANG Irvine (1966): A Computer-based Analysis of Television Newswriting Style for Listening Comprehension, PhD Thesis, University of California, Los Angeles

FAY PJ and MIDDLETON WG (1939): Judgement of Occupation from the Voice as Transmitter over a Public Address System and over a Radio, Journal of Applied Psychology 23, 586-601

FISCHER JL (1958): Social Influences on the Choice of a Lingustic Variant, World 14

FISKE John (1982): Introduction to Communication Studies, Methuen, London

FLANAGAN JL (1958): Some Properties of the Glottal Sound Source: Journal of Speech and Hearing Research, Vol 1, 99-111

FLETCHER H and STEINBERG JC (1929): Articulation Testing Methods, Bell System Technical Journal 8, 806-854

FLETCHER H and GALT RH (1950): The Perception of Speech and its Relation to Telephony, Journal of Acoustical Society of America, Vol 22, 89-151

FLETCHER H (1953): Speech and Hearing in Communication, Van Nostrand, NY

FOSS Donald and HAKES David (1978): Psycholinguistics: An Introduction to the Psychology of Language, Prentice-Hall, New Jersey

FROMKIN Victoria (1978): Tone : A Linguistic Survey, Academic Press, New York

FRY D (1958): Experiments in the Perception of Stress, Language and Speech VI, 126-52

FRY DB (1956): Perception and Recognition in Speech, in "For Roman Jakobson", edited by M Halle, Mouton, The Hague, pp169-173

FRY DB (1957): Speech and Language, Journal of Laryngology and Otology, 71, 434-452

FRY Dennis (1978): Homo Loquens, Cambridge University Press, Cambridge

FRY Dennis (1980): The Physics of Speech, Cambridge University Press, Cambridge

FUJIMURA O (1962): Analysis of Nasal Consonants, Journal of Acoustical Society of America 34, 1865-75

GARVIN P and LADEFOGED (1963): Speaker Identification and Message Identification in Speech Recognition, Phonetica 9, 193-199

GILES H (1972a): Evaluation of Personality Content from Accented Speech as a Function of Listerns Social Attitudes, Perceptual and Motor Skills, 34, 168-170

GILES H (1973): Accent Mobility : A Model and some Data, Anthropological Linguistics Vol 15, no 2

GILES Howard and POWESLAND Peter (1975): Speech Style and Social Evaluation, Academic Press, London

GILMORE Art and MIDDLETON Glenn Y (1949): Television and Radio Announcing, Radio Publishers, Hollywood

GIMSON AC (1962): Phonetics: An Introduction to the Pronunciation of English, Arnold, London

GLASGOW GM (1944): The Effects of Nasality on Oral Communication, Quarterly Journal of Speech, 30, 337-340

GOLDFARB W, BRAUNSTEIN P and LORGE I (1956): A study of Speech Patterns in a Group of Schizophrenic Children, American Journal of Orthopsychiatry, 26, 544-555

GRAY GW (1943): The 'Voice Qualities' in the History of Elocution, Quarterly Journal of Speech, 29, 254-259

GREEN MCL (1957): The Voice and Its Disorders, Macmillan, New York

GOFFMAN Erving (1981): Forms of Talk, Blackwell, Oxford

GOULD Samuel (1950): Training the Local Announcer, Longmans, Green & Co, New York

GURNEY Roger (1973): Language, Brian and Interactive Processes, Arnold, New York

HAAS, MR: Interlingual Word Taboos, American Anthropologist, 53, 338-344

HAHN EF, LOMAS CW, HARGIS DE, VAN DRAEGEN D (1952): Basic Voice Training for Speech, McGraw-Hill, New York

HALLE M (1973): Why and How do we Study the Sounds of Speech, Monograph Series on Languages and Linguistics, 7, 73-83

HANSON MI (1964): A study of velopharyngeal competence in children, Cleft Palate Journal, 217-31

HARDCASTLE WJ (1976): The Physiology of Speech Production, Academic Press, New York

HARMS LA (1961): Listener Judgements of Status Cues in Speech, Quarterly Journal of Speech, 47, 164-168

HARRELL RS (1960): A Linguistic Analysis of Egyptian Radio Arabic, in Ferguson C (Ed), Contributions to Arabic Linguistics, Harvard Middle Eastern Monograph Series

HAWLEY, MONES (Ed) (1977): Speech Intelligibility and Speaker Recognition, Benchmark Papers in Acoustics VII, Dowden, Hutchinson and Ross

HEFFNER RS (1949): General Phonetics, Madison, University of Wisconsin

HEINZ J (1974): Subjects and Predicates, Janua Linguarum, series minor 79

HENNEKE Ben Graf (1949): The Radio Announcers Handbook, Renehart & Co, New York

HENNESSEE Judith: Some News is Good News, Ms July 1974, 25-29

HERBERT J (1977): The Techniques of Radio Journalism, A & C Black, London

HERBERT J (1983): The Radio News Journalist, Focal Press, London

HERRIES R (1773): Elements of Speech

HIXON EH (1949): An X-Ray Study Comparing Oral and Pharyngeal Structures of Individuals with Nasal Voices and Individuals with Superior Voices, MA Thesis, State University of Iowa

HOLMES FLD (1932): The Qualities of the Voice, Quarterly Journal of Speech, 17, 249-255

HUNT Albert (1981): The Language of Television, Methuen, London

HYDE Stuart W (1979): Television and Radio Announcing, Houghton Mifflin Co, Boston

ISSHIKI N (1959): Regulatory Mechanism of the Pitch and Volume of Voice, Oto-Rhino-Laryna Clinic Koyoto 52, 1065-1094

JACKSON CJ and JACKSON CL (1945): Diseases of the Nose, Throat and Ear, Saunders, Philadelphia

JACOBSON H (1951): Information and The Human Ear, Journal of American Speech Association 23, July 1951, 463-471

JAKOBSON, FANT and HALLE (1952): Preliminaries to Speech Analysis, MIT, Cambridge, Mass

KALKAN F (1973): The Development of Local Broadcasting in the UK, MA Thesis, U of Keele

KANTER CE (1947): The Rationale of Blowing Exercises for Patients with Repaired Cleft Palates, Journal of Speech Disorders, XII, pp281-86

KAPLAN HM (1971): Anatomy and Physiology of Speech, 2nd Ed, McGraw-Hill, New York

KEMP JA (1972) Ed: Grammar of the English Language with an Introductory Treatise on Speech, by John Wallis, Longmans, London

KERSTA LG (1962): Voiceprint Identification, Nature 196 4861, 1253-1257

KEY MR (1972): Linguistic Behaviour of Male and Female, Linguistics V88, 15-31

KEY MR (1975): Male/Female Language, Methuen, New Jersey

KIRCHNER JA (1970): Physiology of the Larynx, American Academy Opthalmology and Otolaryngology

KLINE SC (1977): Audio and Visual Characteristics of Television News Broadcasting: Their Effects on Opinion, PhD Thesis, London School of Economics

KOENIG W, DUNN HK and LACY LY (1946): The Sound Spectrograph, Journal of Acoustical Society of America, Vol 18, 21-32

KRAMER C (1976): Womens Speech, Quarterly Journal of Speech, 60, 14-21

KRUISINGA E (1914): The Phonetic Structure of English Words, Bern

KRAUS M (1968): Sound Production in Man, Academy of Sciences, New York

LADEFOGED P (1962): Elements of Acoustic Phonetics, Chicago

LADEFOGED P (1973): The Features of the Larynx, Journal of Phonetics 1, 73-83

LADEFOGED P (1960): Spectrographic Determination of Vowel Quality, Journal of Acoustical Society of America, Vol 32, 9.8-9.9

LAGUNA Grace (1963): Speech: Its Function and Development, Indiana UP

LAMBERT WE, HODGSON RC, GARDNER RC, FILLENBAUM S (1960): Evaluation Reactions to Spoken Languages, Journal of Abnormal and Social Psychology Vol 60, 44-57

LANGER E (1970): The Women of the Telephone Company, New York Review of Books 14 (March 12) 16-24; (March 26) 14-22

LAVER JDM (1964): The Synthesis of Voice Quality, Edinburgh University, Dept of Phonetics, PAT Report

LAVER JDM (1967): The Synthesis of Components in Voice Quality, Proceedings of 6th International Congress of Phonetic Sciences, Prague

LAVER JDM (1968): Voice Quality and Indexical Information, British Journal of Disorders of Communication 3, 43-54

LAVER JDM (1975): Individual Features in Voice Quality, PhD Thesis, University of Edinburgh

LAVER John (1981): The Phonetic Descriptions of Voice Quality, Cambridge UP, London

LEHISTE I and PETERSON GE (1959): Lingustic Considerations in the Study of Speech Intelligibility, Journal of American Speech Association, Vol 31, 280-86

LEWIS D (1936): Vocal Resonance, Journal of Acoustical Society of America, Vol 8, 91-9

LIBERMAN AM (1957): Some Results of Research on Speech Perception, Journal of Acoustical Society of America, 29, 117-123

LIBERMAN AM (1963): A Motor Theory of Speech Perception, Paper D3, Speech Seminar, Stockholm Vol 2

LIBERMAN AM (1970): The Grammars of Speech and Language, Cognitive Psychology, 1, 301-23

LIBERMAN Alvin, HARRIS Katherine, HOFFMAN Howard, GRIFFITH Belver (1957): The Discrimination of Speech Sounds Within and Across Phoneme Boundaries, Journal of Experimental Psychology, Vol 54, 358-68

LIBERMAN Philip (1960): Some Acoustic Correlates of Word Stress in American English, Journal of Acoustical Society of America V 32, 451-4

LINDSEY CF (1934): The Psycho-Physical Determinants of Voice Quality, Speech Monographs 1, 79-116

LINDQUIST J (1969): Laryngeal Mechanisms in Speech, STL-QPSR 2-3, 26-31

LINKE CE (1953): A Study of the Influence of Certain Vowel Types on Human Voice Quality, Speech Monographs 20, 163

LLOYD-JAMES A: Broadcast English, Vols 1-7, BBC, 1928-39

LLOYD-JAMES A (1935): The Broadcast Word, Kegan Paul, London

LLOYD-JAMES A (1938): Our Spoken Language, Nelson, London

LUCHSINGER R and ARNOLD GE (1965): Voice - Speech - Language Clinical Communicology : Its Physiology and Pathology, Belmont, California

LUCK Gordon (1975): A Guide to Practical Speech Training, Barrie and Jenkins, London

LYONS John (Ed) (1970): New Horizons in Linguistics, Pelican, London

LYONS John (1981): Language and Linguistics, CUP, Cambridge

McCRUM Robert (1986): The Story of English, BBC/Faber, London

MacNEILAGE PF (1972): Speech Physiology, Academic Press, New York

MALMSTROM J (1967): Dialects, Florida Foreign Language Reporter, 5

MANNES, Marya (1969): Women are Equal But -, Current Thinking and Writing, Appleton, New York

MARCKWARDT AH and QUIRK R (1964): British and American English, VOA/BBC, London

MARKEL Norman and ROBIN Gloria (1965): The Effect of Content and Sex-Of-Judge on Judgements of Personality From Voice, International Journal of Social Psychiatry, 11, 295-300

MARKEL NN, MEISELS M, HOUCK JE (1964): Judging Personality From Voice Quality, Journal of Abnormal and Social Psychology, 69, 458-463

MARTENSSON A (1964): Contraction Properties of Intrinsic Lanryngeal Muscles, ACTA Physio, 60, 318-36

MATHESON H (1933): Broadcasting, Thornton Butterworth, Home University Library, London

MATTINGLY IG (1966): Speaker Variation and Vocal Tract Size, Journal of Accoustical Society of America, V39, 1219

MILLER JE (1964): Decapitation and Recapitation: A Study of Voice Quality, Paper J8 at 68th Meeting of Acoustical Society of America

MINER, WORTHINGTON (1950): Training for Television, Quarterly Journal of Speech, XXXVI, 355-59

MOLL KL (1968): Speech Characteristics of Individuals with Cleft Lip and Palate, Academic Press, New York

MOORE GP (1957): Voice Disorders Associated with Organic Abnormalities, Handbook of Speech Pathology, (LE Travis, Ed), Appleton-Century-Crofts, New York

MOORE WE (1939): Personality Traits and Voice Quality Deficiencies, Journal of Speech Disorders, IV, pp33-36

MOSES PJ (1954): The Voice of Neurosis, Grune and Stratton, New York

NEGUS VE (1949): The Comparative Anatomy and Physiology of the Larynx, Grune and Stratton, New York

NIXON G (1979): A Sociolinguistic Measure of Phonetic Similarity, Archivium Linguisticum X (NS) 2

O'CONNOR DJ and ARNOLD GF (1961): The Intonation of Colloquial English, Longmans, London

O'DONNELL W and TODD L (1979): Variety in Contempory English, Allen and Unwin, London

PAGET R (1930): Human Speech, Kegan Paul, London

PARKER Charles (1965): The Spoken Language As We Find It, Some aspects of Oracy Bulletin Vol 11 No 2

PEAR TH (1957): Personality, Appearance and Speech, OUP, London

PETERSON GE (1952): The Information-Bearing Elements of Speech, Journal of the Acoustical Society of America, 24(6), 629-637

PETERSON GE (1954): Acoustical Vowel Relationships in the Spectrographic Analysis of Speech, Monograph Series, Language and Lingustics 7, 62-73

PETYT KM (1980): The Study of Dialect, Deutsch, London

PHILLIPS David and LAMB Jack (1966): Speech As Communication, Allyn and Bacon, Boston

PLATT and PLATT (1975): Social Significance of Speech: An Introduction to a Workbook in Sociolinguistics, p63-74, 113-149

POTTER Simeon (1950): Our Language, Pelican, London

POTTER S and PETERSON GE (1948): The Representation of Vowels and Their Movement, Journal of Acoustical Society of America XX, pp528-535

PRESSMAN, JJ (1954): Sphincters of the Larynx, AMA Archives of Otolaryngology, LIX, pp221-236

PROCTOR DF (1968): The Physiologic Basis of Voice Training, Academy of Sciences, New York, pp208-28

QUIRK R (1962): The Use of English, Longmans, London

ROSENTHAL R, ARCHER D, DiMATTEO R (1974): Body Talk and Tone of Voice: The Language Without Words, Psychology Today (8) Sept, 64-68

ROSSITER AP (1952): Our Living Language, Longmans, London

RUSH T (1827): Philosophy of the Human Voice

RUSSELL GO (1931): Speech and Voice, Macmillan, New York

SACHS Jacqueline, LIEBERMAN Philip and ERICKSON Donna (1973): Anatomical and Cultural Determinants of Male and Female Speech, in Roger W Shug and Ralph Fasold (Eds) Language Attitudes: Current Trends and Prospects, Georgetown UP, Washington DC

SAPIR E (1921): Language, Harcourt Brace, New York

SAUNDERS WH (1964): The Larynx, CIBA Pharmaceutical Co, New Jersey

SCHERMAN DH (1854): Pitch Level and Nasality, Journal of Speech & Hearing Research, xlx no 4, 423-27

SCHROEDER MR (1977): Recent Progress in Speech Coding, in FANT (1960): Acoustic theory of speech production, Mouton, The Hague

SCHWARTZ MF (1968): Identification of Speaker Sex from Isolated, Voiceless Fricatives, Journal of the Acoustical Society of America, 43, 1178-79

SHIPP T and McGLONE RE (1971): Laryngeal Dynamics Associated with Voice Frequency Change, Journal of Speech and Hearing Research 14, 761-768

SHUY Roger and FASOLD Ralph (Eds) (1973): Language Attitudes : Current Trends and Prospects, Georgetown University Press, Washington

Speech Spectrograms (1946): Collection of Papers in Journal of Acoustical Society of America 18 July/October

STARKWEATHER John (1961): Vocal Communication of Personality and Human Feelings, Journal of Communication, 11, 63-72

STEVENS KN and HOUSE AS (1961): Speech Perception in TOBIAS J (ed): Foundations of modern auditory theory, Vol 2, Academic Press, New York

SWEET H (1892): A Primer of Phonetics, Clarendon Press, Oxford

TAYLOR DM and GARDINER RC (1970): Bicultural Communication : A Study of Communicational Efficiency, Canadian Journal of Behavioural Science, 2, 67-81

TERANGO L (1966): Pitch and Duration Characteristics of the Oral Reading of Males on a Masculinity-Feminity Dimension, Journal of Speech and Hearing Research 9, 590-5

THOMPSON Wayne N (1967): Quantitative Research in Public Address and Communication, Random House, New York

TRAGER GL (1958): Paralanguage : A First Approximation, in "Studies in Linguists", 13, p1-12

TRUDGILL PJ (1971): The Social Differentiation of English in Norwich, Unpublished PhD Thesis, Edinburgh University

TRUDGILL P (1972): Sex, Covert Prestige and Linguistic Change in the Urban British English of Norwich, Lin S I 179-197

TRUDGILL P (1974): Sociolinguistics, Pelican, London

TOMORI SHO (1978): A Lexico-Statistical Study of Three Varieties of News Broadcast English, in P Strevens (Ed), in Honour of AS Hornby OUP pp 167-81

TURNER GW (1973): Stylistics, Penguin, London

VAN DEN BERG JW (1955): On the Role of the Laryngeal Ventricle in Voice Production, Folia Phoniatrica VII no 2, pp57-69

VAN DEN BERG JW (1955): Transmission of the Vocal Cavities, Journal of Acoustical Society of America, XXVII, pp161-168

VAN DEN BERG JW (1955b): Transmission of the Vocal Cavities, Journal of the Acoustical Society of America, Vol 27, 161-168

VAN DEN BERG JW (1959): Direct and Indirect Determination of the Mean Subglottic Pressure, Folia Phoniatrica, VIII pp1-24

VAN RIPER Charles and IRWIN John (1958): Voice and Articulation, Pitman Medical, New York

WAKELIN G (1977): English Dialects: An Introduction, Athlone

WARR PB, FAUST J and HARRISON GJ (1967): A British Ethnocentrism Scale, British Journal of Social and Clinical Psychology, 6, 267-77

WEGEL RL (1930): Theory of Vibration of the Larynx, Bell System Technical Journal, IX, 209-227

WEISS H (1946): Implementing the Radio Course, Quarterly Journal of Speech, XXXII, 335-39

WEST R (1957): The Rehabilitation of Speech, Harper, New York

WHITTAKER James and MEADE Robert (1967): Sex of Communicator as a Variable in Source Credibility, Journal of Social Psychology 72, 27-34

WILLIAMSON AB (1945): Diagnosis and Treatment of Seventy-Two Cases of Hoarse Voice, Quarterly Journal of Speech XXXI, 189-202

WALLER Judith (1950): Radio: the Fifth Estate, Houghton Miflin, Boston

WALLWORK JF (1978): Language and Linguistics, Heinemann, London

WHITAKER H (1969): On the Representation of Language in The Human Brain, Working Papers in Phonetics, Dept Linguistics, UCLA 12

WILLIAMS Raymond (1974): Television: Technology and Cultural Form, Fontana, London

WILLIS Edgar (1940): The Relative Effectiveness of Three Forms of Radio Presentation in Influencing Attitudes, Speech Monographs VII, 41-47

WILKINSON A (1965): Spoken English, Educational Review Supplement 6, 17

WYLD HC (1934): The Best English : A Claim for the Superiority of Received Standard English, Society for Pure English, Tract No 39, Clarendon Press, Oxford

WYKE B (1974): Ventilatory and Phonatory Control Systems, OUP, London

ZEMLIN WR (1968): Speech and Hearing Science: Anatomy and Physiology, Prentice-Hall, New Jersey

ZERFFI W (1957): Male and Female Voices, AMA Archive of Otolaryngolosopy 65, 7-10