THE MALE FALSETTO

THESIS

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By

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PREFACE

Developing the upper voice is one of the most difficult problems facing the male singers. A most controversial approach to solving this problem is the use of the falsetto.

The falsetto has been a subject of mystery among singers and vocal teachers for centuries. Some authorities have ignored it; some have denounced; others have greatly extolled this vocal enigma.

Many myths and misconceptions surround the subject of falsetto. Even in the present age of scientific research and knowledge, there is little understanding of the falsetto—of its value and its use. The material dealing with falsetto is very brief and inconclusive in most pedagogy books. Therefore, there seemed to be a need for a systematic collection of pedagogical ideas concerning the male falsetto. This report will attempt to present all sides of the controversy.
TABLE OF CONTENTS

LIST OF TABLES .................................................. vi
LIST OF ILLUSTRATIONS ......................................... viii

Chapter

I. STATEMENT OF THE PROBLEM ...................................... 1
   The Purpose
   Sub-Problems
   Definition of Terms
   Delimitations
   Basic Hypothesis
   Basic Assumptions
   Methodology
   Plan of this Report

II. HISTORICAL BACKGROUND ......................................... 7
   Early Developments in Singing
      Technique
   Developments from 1300 to Bel Canto
   Bel Canto Principles Regarding Falsetto
   Influences of the Castrati
   The Rise of Scientific Study
   Twentieth Century Trends
   Summaries

III. ACOUSTICAL CHARACTERISTICS OF THE
     MALE FALSETTO ............................................... 26
     Falsetto: Physical Nature of Vocal Cords
            and Characteristics of Sound
     Falsetto with Damping
     Falsetto with a Mutational Chink
     Summaries

IV. USES AND VALUES OF FALSETTO IN TRAINING THE
    MALE VOICE ................................................... 41
    Number of Vocal Registers and How They
    are Labeled
TABLE OF CONTENTS--Continued

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>One-Register Approach</td>
<td></td>
</tr>
<tr>
<td>Three-Register Approach</td>
<td></td>
</tr>
<tr>
<td>Two-Register Approach</td>
<td></td>
</tr>
<tr>
<td>Defining the Falsetto Register</td>
<td></td>
</tr>
<tr>
<td>The Register Break</td>
<td></td>
</tr>
<tr>
<td>Blending the Registers</td>
<td></td>
</tr>
<tr>
<td>Mixed Registration</td>
<td></td>
</tr>
<tr>
<td>Coordinated Registration:</td>
<td></td>
</tr>
<tr>
<td>Explanation and Exercises</td>
<td></td>
</tr>
<tr>
<td>Uses of Falsetto in Developing Head Voice</td>
<td></td>
</tr>
<tr>
<td>The Quality of the Falsetto Sound</td>
<td></td>
</tr>
<tr>
<td>Use of Falsetto in Messa di Voce</td>
<td></td>
</tr>
<tr>
<td>Uses and Values of Falsetto in Developing the Male Speaking Voice</td>
<td></td>
</tr>
<tr>
<td>Summaries</td>
<td></td>
</tr>
</tbody>
</table>

V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS ... 99

Summary and Conclusions
Recommendations

APPENDICES ...................................................... 106

Appendix A: List of Authorities Contacted by Questionnaire
Appendix B: Questionnaire
Appendix C: Letter of Transmittal

BIBLIOGRAPHY ..................................................... 115
### LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td>Terminology of the 14th Century and 15th to 19th Centuries Concerning Registration</td>
<td>20</td>
</tr>
<tr>
<td>II.</td>
<td>Twentieth Century Terminology Pertaining to Registration</td>
<td>21</td>
</tr>
<tr>
<td>III.</td>
<td>Opinions of 33 Vocal Authorities Concerning the Number of Registers in the Singing Voice</td>
<td>43</td>
</tr>
<tr>
<td>IV.</td>
<td>Opinions of 33 Vocal Authorities Concerning the Labeling of the Registers</td>
<td>44</td>
</tr>
<tr>
<td>V.</td>
<td>Opinions of 33 Vocal Authorities Concerning the Definition of Falsetto</td>
<td>51</td>
</tr>
<tr>
<td>VI.</td>
<td>Opinions of 33 Vocal Authorities Concerning the Practical Definition of Falsetto</td>
<td>52</td>
</tr>
<tr>
<td>VII.</td>
<td>Opinions of 33 Vocal Authorities Concerning the Blending of the Falsetto into the Lower Register(s)</td>
<td>66</td>
</tr>
<tr>
<td>VIII.</td>
<td>Opinions of 33 Vocal Authorities Concerning the Effectiveness of Various Sounds in Falsetto Exercises</td>
<td>74</td>
</tr>
<tr>
<td>IX.</td>
<td>Opinions of 33 Vocal Authorities Concerning the Use of Falsetto Exercises</td>
<td>75</td>
</tr>
<tr>
<td>X.</td>
<td>Ratings of 33 Vocal Authorities of Their Successes with Falsetto Exercises with Various Voice Types</td>
<td>76</td>
</tr>
<tr>
<td>XI.</td>
<td>Opinions of 33 Vocal Authorities Concerning the Importance of Falsetto Exercises in Vocal Pedagogy</td>
<td>77</td>
</tr>
<tr>
<td>XII.</td>
<td>Opinions of 33 Vocal Authorities Concerning the Correction of an Unnaturally Low Range of a Speaking Voice</td>
<td>89</td>
</tr>
<tr>
<td>Table</td>
<td>Description</td>
<td>Page</td>
</tr>
<tr>
<td>--------</td>
<td>-----------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>XIII.</td>
<td>Opinions of 33 Vocal Authorities Concerning the Importance of Developing Proper Speaking Range in Speaking Voices in the Various Voice Types</td>
<td>90</td>
</tr>
<tr>
<td>XIV.</td>
<td>Opinions of 33 Vocal Authorities Concerning the Importance of Proper Speech Habits to Good Singing</td>
<td>90</td>
</tr>
</tbody>
</table>
## LIST OF ILLUSTRATIONS

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Falsetto Without Damping but With a Mutational Chink</td>
<td>35</td>
</tr>
<tr>
<td>2.</td>
<td>Falsetto With Damping</td>
<td>36</td>
</tr>
<tr>
<td>3.</td>
<td>A Hypothetically Pure Registration</td>
<td>55</td>
</tr>
<tr>
<td>4.</td>
<td>Mixed Registration in Lyric Tenor and Soprano</td>
<td>60</td>
</tr>
<tr>
<td>5.</td>
<td>Vocal Cords at the Moment of the Register Break</td>
<td>64</td>
</tr>
<tr>
<td>6.</td>
<td>Vocal Cords in Which There is a Smooth Register Transition</td>
<td>65</td>
</tr>
<tr>
<td>7.</td>
<td>Falsetto Exercises, Single Tone</td>
<td>70</td>
</tr>
<tr>
<td>8.</td>
<td>Falsetto Exercises, Small Three-tone Scales</td>
<td>71</td>
</tr>
<tr>
<td>9.</td>
<td>Falsetto Exercises, Five-tone and Octave Scales</td>
<td>71</td>
</tr>
<tr>
<td>10.</td>
<td>Swell and Diminish Exercise, Single Sustained Tone</td>
<td>73</td>
</tr>
<tr>
<td>11.</td>
<td>A Comparison of the Quality of Falsetto Tone in Beginning Students and Advanced Students</td>
<td>84</td>
</tr>
</tbody>
</table>
CHAPTER I

STATEMENT OF THE PROBLEM

The Purpose

The purpose of this study was to investigate the uses of the falsetto voice in training the male singer.

Sub-Problems

Analysis of the problem statement led to subordinate questions, or sub-problems, which may be stated as follows:

1. What are the acoustical characteristics of the male falsetto?
2. How have the authorities used the falsetto in training the male singing and speaking voice?
3. What do the authorities consider to be the value of falsetto in training the male singing and speaking voice?

Definition of Terms

1. The word "falsetto" refers to the high pitched metallic voice produced in the top register with artificial effect: the voice of a man which lies above his normal speaking range (1, p. 22).
2. The term "acoustical characteristics" refers to (a) the nature of the musical sound; and (b) the physical properties of the sound producing media.
3. The word "authorities" refers to voice teachers, performers, and qualified persons who have written about vocal instruction.

4. The term "male voice" refers to the speaking and singing sounds produced by men.

Delimitations

1. This study was limited to the study of the male voice. It does not deal with woman's voices but specifically with bass, baritone, and tenor.

2. This study was not limited to printed or published materials. Additional information was obtained from a questionnaire.

Basic Hypothesis

The basic hypothesis of this study was that the male falsetto voice might be of value in correcting certain vocal problems.

Basic Assumptions

The following assumptions seemed basic to this study:

1. It was assumed that a representative group of the leading vocal authorities could be contacted and that these authorities would provide information which could not be found in published materials.
2. It was assumed that these authorities would have used falsetto exercises enough in their teaching to have an opinion about its effectiveness in training the male voice.

3. It was assumed that authorities who had found the falsetto of little or no value in training the male voice would respond to the questionnaire providing negative information.

Methodology

The material for Chapters Two, Three, and Four was collected from all available books, periodicals, and music reference books. Other key sources of evidence used in Chapter Four were eighty-five authorities (see Appendix A, this report) whose names were selected from various convention programs of the National Association of Teachers of Singing. The majority of the authorities were chosen from a list of names and addresses of all those attending the 1964 national convention. These authorities were sent a questionnaire (Appendix B). The questionnaire was accompanied by a letter of transmittal (see Appendix C) which explained the survey and the purpose of the thesis. A total of thirty-seven questionnaires were received from the authorities, providing a forty-four per cent return.
Plan of This Report

Chapter Two, the Historical Background, is divided into six sections: early developments in singing technique, developments from 1300 to bel canto, bel canto principles regarding falsetto, influences of the castrati, the rise of the scientific, and twentieth century trends. This material is arranged in chronological order beginning with the early Egyptian and Jewish singing and the influence of these cultures on the singing in early Christian music.

Chapter Three, Acoustical Characteristics of the Male Falsetto, contains explanations of the physical nature of the vocal cords when producing falsetto and the characteristics of the sound produced. Explanations of the phenomena of damping and the mutational chink are also included.

Chapter Four is divided into the following sections: number of vocal registers and how they are labeled, one-register approach, three-register approach, two-register approach, defining the falsetto register, the register break, blending the registers, coordinated registration, use of falsetto in developing head voice, use of falsetto in *messa di voce*, and uses and values of falsetto in developing the male speaking voice. The uses and values of falsetto regarding all aspects of registration will be the key subject of this chapter.
Chapter Five will be divided into two sections. The first will be the summaries and conclusions. These will be based on Chapters Two, Three, and Four. The second section of Chapter Four will be recommendations to researchers, teachers, and singers. These recommendations will be made from an analysis of the material which was available for this report.
CHAPTER BIBLIOGRAPHY

Singing, as a natural human expression, probably goes back beyond all records of man. According to Thompson, singing, as an art, had its beginnings and development in the Roman Catholic Church, which taught the correct manner of delivering the liturgical chants. The early Christian music reflected in some measure the Jewish tradition, which in turn showed Egyptian influences. The florid element in singing was present in ritual music long before singing began to develop as an art. Though "methods" may have existed as a part of the training for priesthood, there remains no evidence of such early study (8, p. 1728).

Thompson writes that the early Christian Church used two basic elements of modern vocal art: the plain and florid chant. The chant, demanding a strict legato and clear enunciation, was of primary importance in the establishment of the earliest schools of singing by the church. However, the florid style tended more towards the development of a purely musical form of expression. Technical demands of the music of the church gave rise to a need for vocal training (8, p. 1728).
Early Developments in Singing Technique

When Gregory became Pope in 590 A.D., he founded the Schola Cantorum, a school of singers that, according to Henderson, established the authoritative delivery of the musical liturgy for Europe. Schola Cantorum received selected voices from the various schools directed by the Church, to whom a nine year program of theoretical and practical instruction was offered. The principal aim of their vocal teaching seems to have been the development of command of long flowing phrases. Therefore, the study of breath control became necessary. Perfect legato was of primary concern through the eighteenth century. The florid style of this period was not brilliant or sparkling as was later music. Elegance and poise were sought. Ornaments, sung in a light voice without words, not only were accepted but became quite extravagant. These embroideries, sometimes longer than the chant itself, took the semblance of a vocal fantasia (3, pp. 32-41).

This state of highly ornamented sacred music continued until the fourteenth century. At that time, states Thompson, Pope John XXII ordered the discontinuation of all ornaments.

An insight into the state of singing in these centuries is given by the words of Saint Bernard (1090-1150) in his regulations of the chant at Citeaux: "It is necessary that men sing in a virile manner and not with voices shrill and artificial like the voices of women, or in a manner lascivious..."
and nimble like actors" (3, p. 42). In addition, he cautions that singers should "manage their respiration" and not sing through the nose (3, pp. 42-43). His contemporary, Saint Raynard, Abbot of Citeaux, (1133-1151) says similarly: "It becomes men to sing with a masculine voice and not in a feminine manner, with tinkling, or as is popularly said, with false voices to imitate theatrical wantonness" (1, p. 41).

It is evident that the male soprano was already in use in the church choir. From the above quotations, it is reasonable to assume that these singers were not castrati but falsettists. Historical research indicates that in western Europe the falsettist preceded the castrato (3, p. 43).

In summary, after the Roman school had reached its prime, further advance was made in France, where musicians developed a larger and more flexible style than that of the Italians (3, p. 46). However, there can be little doubt that the Schola Cantorum was a powerful influence. It was, Henderson says, "the most potent agency in forwarding the development of singing in the Middle Ages" (3, p. 30).

Developments from 1300 to the Bel Canto

The division of the vocal compass into registers was established by 1300. That there was little attempt to blend or equalize these divisions may be gathered from writings of the day, explains Thompson. "Marchetto, about 1300, refers
to an ornament, which to sing necessitated passing from a chest tone to falsetto, as in a yodel" (8, p. 1728).

There would appear, continues Thompson, to be a clear line of vocal technique extending from the medieval church to the fantastic and perhaps unparalleled operatic virtuosi of the days of Handel and Bononcini. The medieval descanters who varied a melody while the tenor sang the cantus firmus were the ancestors of these virtuosi (8, p. 1729).

Burney believes that the alto falsetto was known long before the Restoration (1660-1702). Hough writes:

Du Cange (1610-1688) . . . derives the word 'falset' from 'Fausetum,' a term used during the middle ages, in the same sense; and this he supposes, from 'faucibus,' whence the high tones of voice proceed . . . . Singing in 'falset' had very early admission in the Church, during times of 'Discant' (5, pp. 2-3).

Similarly, Thompson believes that the falsetto was in common use in the Middle Ages, as would be likely in an era that had not evolved a system of tone production. He cites an early commentator, Jerome of Moravia, who observed that "different kinds of voices ought not to be mingled in the chant, whether it be chest with head or throat with head" (8, p. 1728).

As music flourished and the supply of choir boys fell far short of the demand, the falsetto voice increased in importance and mention. Ornithoparcus refers to descant as harmony which must be sung with a voice like that of a girl's (1, p. 41). Hermann Fink says, "Let the descant be
sung with a light and penetrating voice" (1, p. 41). Zacconi advises not to force the voice in the high register; it is better, he continues, to either omit the notes or sing them falsetto (1, p. 41).

Doni, an Italian theorist, contemptuously regards the male contralto as "unnatural and too feminine" (2, p. 209). Caccini states that the singer should "sing his clear and natural voice, avoiding feigned tunes of notes . . . . From a feigned voice can come no noble manner of singing, which proceeds from a natural voice, serving aptly for all the notes which a man can manage according to his ability" (2, p. 209).

According to Rookstro, in the sixteenth century the soprano falsetto was extensively cultivated in Spain. The method by which these Spanish falsettists were trained has never publicly exposed. Near the end of that century Spanish soprani were favored among all others (5, p. 3).

Briefly, developments from 1300 to the bel canto period included the establishment of the division of the vocal compass into registers, the growth of the use of falsettists in the Church, and the continuing disagreement among writers of the day concerning the use of the falsetto voice.

Bel Canto Principles Regarding Falsetto

As mentioned before, the recognition of voice registers long preceded the bel canto period. However, increasing
attention was given the registers during the seventeenth and eighteenth centuries (1, p. 112).

In his directions to choir masters, Andrea di Modena wrote:

... the song must be suited to the voices of the singers. If they have head voices, high and piercing, the choir master must begin with a very spirited voice (voce amai spiritosa). If they have chest voices, throaty (gutturali) and low (basse), in order to avoid shrillness the song should be begun at a lower pitch. If the voices are mixed, it is advisable to begin with medium tone suited to all (1, p. 112).

One of the most important sources of the bel canto period is Pietro Francisco Tosi (c. 1650-c. 1731), famous both as a singer and a teacher, wrote these instructions.

A diligent master, knowing that a Soprano without the Falsetto, is constrained to sing within the narrow Compass of a few notes, ought not only to endeavor to help him to it, but also to leave no Means untried, so to unite the feigned and the natural Voice, that they may not be distinguished; for if they do not perfectly unite, the Voice will be of divers Registers, and consequently lose its beauty (9, pp. 23-24).

Giovanni Mancini (1716-1800) believed that the voice consisted of two registers—chest and falsetto. His ideal was a perfect, even scale throughout the entire range. He states: "The great art of the singer consists in acquiring the ability to render imperceptible to the ear, the passing from one register to the other" (1, p. 114).

The important German source is Johann Friedrich Agricola. Like Tosi and Mancini he discussed the difficulty of changing from the natural voice to the falsetto and recommended
diligent practice to strengthen those tones where the change occurs (1, pp. 118-119). He added that women are not often bothered with a break but with tenors and basses the break is usually noticeable and sometimes very difficult to hide (1, p. 119).

According to Petri, "Any singer should learn to use the falsetto which some call the 'fistula voice.' ... The falsetto, which is called 'head-voice' by the Mannheim school, should be equalized with the chest voice so that the transition from one to the other is unnoticeable" (1, p. 120). Petri believed the falsetto to be a necessity and offered explicit directions as to its acquisition (1, p. 121). Duey explains these directions:

The singer is advised to find out very carefully how high the natural voice will go without forcing and how low the falsetto can be used. The overlapping tones must be practiced slowly over and over again within the range or compass of a fifth, until all tones are strengthened in either voice, and until the change-over is unnoticeable. This change-over should not always occur at the same place but should be used sometimes higher and sometimes lower. It is preferable to change too high than too low since the chest voice can be retained in the higher tones whereas the falsetto voice gets too weak on the lowest tones and the transition is therefore evident (1, p. 121).

The important French source is the Italian born B. Mengozzi (1748-1800). According to Mengozzi, "male singers have two registers, the one, chest, and the other, head, improperly called falsetto (1, p. 123). He continues, the extreme difficulty in uniting head or falsetto voice
with the chest tones in the bass voice make such a union so very rare "that this author [Mengozi] does not consider it necessary to discuss the problem" (1, p. 123). He recommends the blending of the chest and head registers to produce an even scale in the baritone and tenor voices (1, p. 123).

There is little to be found among the English writers concerning vocal registers. Bayly repeats the opinions of Tosi in saying that the di petto (chest) and di testa (head) registers must be perfectly united so that they "may not be distinguished, both in going up to the highest artificial notes and in returning to the real" (1, p. 124). If they (the registers) do not perfectly unite, the voice will be of "diverse" registers (1, p. 124).

From the statements of Bel Canto writers it is apparent that the subject of vocal registers had become increasingly important and blending of the registers had become a significant pedagogical problem.

Influences of the Castrati

The change of orchestral balance occurring gradually during the eighteenth century was paralleled by a change of vocal balance. The seventeenth century counter-tenor was superseded by the more powerful of the Italian castrati. Sands points out that an interesting graph could be plotted of the decline of the counter-tenor coinciding with the rise of the castrato at the beginning of the eighteenth
century; and the decline of the castrato soon after the middle of the century, coinciding with the rise of the newly fashionable tenor (7, p. 116).

As stated before, the florid, embellished Church music of the fifteenth century demanded a wider range of voices and a higher degree of virtuosity than was necessary previously, and the supply of existing choirboys and falsettists became inadequate. The answer to the problem first appeared in the shape of Spanish falsettists (see page 11, this report). Heriot states, "Some Italian writers, among them Fantoni and Monaldi, have argued that these falsettists actually were castrati, presumably in an attempt to blame the introduction of castration onto the Spaniards" (4, p. 11). However, Della Valle indicates in his famous discourse on singing that this is not the case (4, p. 11). Heriot continues to explain that the answer is not so clear-cut; there is no doubt that some castrati pretended to be falsettists for the benefit of public opinion, and it is most probable that the appearance of considerable numbers of castrati around 1600 was more an indication of their previous existence than a completely new introduction. However, the practice, if it ever did exist, must have died out in Spain very rapidly. Although there is one reference to a Spanish eunuch singer in the eighteenth century, he claimed to have been mutilated in a childhood accident, and his account seems to have been genuine. All other castrati who performed in Spain had to be imported from Italy (4, p. 11).
The first admitted castrati at Rome were Pietro Paolo Folignato and Girolamo Rossini in 1499. Heriot writes:

Pope Clement VIII was much impressed with the sweetness and flexibility of their voices, and compared them very favourably with the shrill acidulous tones of the soprano falsettists, who labored under an additional disadvantage: their forced and unnatural manner of singing tended to wear out the vocal cords at an early age. The castrati, once sanctioned by the highest authority in Christendom, rapidly became more numerous (4, p. 12).

The last of the Spanish soprano falsettists at Rome died in 1625, but falsettists were still obtainable for some time. It was not until 1687 that authorities were inclined to use one of the castrati. Thereafter, as the falsettists died out, they were replaced by castrati and "the eunuchs' triumph was complete" (4, p. 12).

Sands writes:

The age of the castrati lasted only some sixty or seventy years in England, but their decline did not bring about a revival of virtuoso counter-tenor singing. The public had apparently lost its desire to hear a femininesounding voice coming from a masculine form, and soon the 'first man' would be sung by a tenor (7, p. 120).

The Rise of Scientific Study

Scientific study of the voice, according to Thompson, is considered to have started in 1741 with the publication by a French physician, Ferrein, of a treatise on the vocal organs (8, p. 1732).
Early in the nineteenth century a number of scientists took up the acoustical aspects of singing, among them Lickovius, Malgaine, Bannati, Bell and Stewart, "but it was Manuel Garcia, the baritone-son of the celebrated tenor of the same name who came to be regarded as the father of vocal science" (8, p. 1732). For more than thirty years he was engaged in the preparatory study of vocal action that led to his invention of the laryngoscope in 1855 (8, p. 1732).

One day in 1855 it occurred to him [Garcia] that if he stood with his back to the sun, with a large mirror in one hand and a small mirror in his throat, the light of sun would be reflected into his larynx and back to his eye (10, p. 21).

After his success medical men stopped writing articles proving it impossible and some of them (particularly Turck and Czermak) continued to experiment and to perfect the technique of laryngoscopy (10, p. 21).

The Garcia influence played a notable and continuing part, as Garcia's pupils, among them Mathilde Marchesi and Stockhausen, became leading teachers (8, p. 1732). Vennard adds the observation that "he [Garcia] was clearly and objectively articulate, so that his findings did not die with him or his pupils" (10, p. 21).

"Garcia's realistic description of three registers may still be accepted as far as it goes" (12, p. 21). He first spoke of "chest," "falsetto" and "head," in that order in both men's and women's voices. In his last book, Hints On Singing, he called the women's middle register
"medium" while still calling it "falsetto" in men (10, p. 21). This creates a problem in understanding the "head" voice of a man, and "we can only assume that Garcia's views were somewhat less developed than those which are current today" (10, p. 21).

Twentieth Century Trends

Thompson writes that the study of the physiology of the voice initiated largely by Garcia's invention of the laryngoscope has, strangely enough, widened the gaps between the various vocal methods. Students of vocal physiology disagree on many points. Some contend that there is no such thing as a head tone or head resonance, "placing" a tone, "forward," "back," "open," or "covered" tones, and even natural "registers;" "correct" breathing is a subject of great controversy (8, p. 1732).

Today the desired end result of singing is not so simple as it once was. Contemporary music does not always call for a "beautiful" tone. The "heroic coloratura" of Mozart's day no longer exists. Thompson continues:

What has happened is that singing, by and large, has become very much less "instrumental" than it once was—and this, curiously enough, has been increasingly true in an era when diligent study of the physiological would seem to tend to bring about a better understanding of the human instrument (8, p. 1733).

Specialization, a product of the twentieth century, has become a part of the vocal art. Music of various
composers of any one former period made similar demands on singers; whereas vocal music of today is so widely varied in style and demand that rare is the artist who can handle all of it (8, p. 1733).

People do not even prefer the same type of tone. Vibrato, favored in one part of the world, is taboo in another. "Artistic" phrasing and clarity of diction have become extremely important (8, p. 1733).

Twentieth century advocates of the falsetto adhere closely to the early bel canto principles. The main differences are those of terminology. Reid points out these differences and others regarding registration in his book, The Free Voice. His Table I shows the changes in terminology regarding registration from the fourteenth to the nineteenth century (6, p. 32). Reid prefaces this table with the following explanation:

In general authorities agreed that the voice ordinarily divides into two distinct parts, one true, the other false. While prior to the Renaissance the first of these was called the vox integra, and the second the vox ficta, they subsequently became known as the voce di petto, or voice of the chest, and the voce di testa, or voice of the head.

Before very long the teachers of this period realized that there was a direct functional relationship between these two mechanisms, and that by uniting them new combinations of tonal texture put in an appearance. To make allowance for obvious differences, special terms were invented to acknowledge and define special qualities. Thus, derivative groups were named the mezzo falso, or half falsetto, and the voce di finte, or 'feigned' voice (6, p. 31).
TABLE I
TERMINOLOGY OF THE FOURTEENTH CENTURY AND FIFTEENTH TO NINETEENTH CENTURIES PERTAINING TO REGISTRATION

(Reproduced from The Free Voice)

<table>
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<tr>
<th>14th Century</th>
<th>15th to 19th Centuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>*1. Vox Ficta</td>
<td><em>1. Voce di Testa or Combined Mezzo Falsetto</em>**</td>
</tr>
<tr>
<td></td>
<td>Falsetto to 'Head' Voice</td>
</tr>
<tr>
<td>*2. Vox Integra</td>
<td><em>2. Voice di Petto Become or 'Chest' Voice Voix Mixte Chest Voice</em>**</td>
</tr>
</tbody>
</table>

*Each of these two mechanisms divided by the 'break.'

**Falsetto derived tones cultivated for the purpose of obscuring the 'break' between the two register mechanisms. In reality, they represent a combined, or coordinated, registration in which both mechanisms form participating elements. The preponderance of balance, however, was always made to lean toward the upper of the two registers. With the passing of time, these conditions of blended registration came to be looked upon as being initiated by resonance—a tragic misconception.

***By the close of the nineteenth century the 'chest' voice and the falsetto gradually came to be regarded as isolated and unrelated entities whose functional importance was destructive rather than constructive (6, p. 32).

Reid's Table II shows twentieth century terminology regarding registration. Group One does not recognize falsetto and chest voice as presenting an opportunity for combined action to account for the 'head' voice or voix mixte (6, p. 33).
Group Two denies all forms of registration, with the falsetto considered an "oddity" and the chest register an "abomination" (6, p. 33).

**TABLE II**

TWENTIETH CENTURY TERMINOLOGY PERTAINING TO REGISTRATION

(Reproduced from The Free Voice)

<table>
<thead>
<tr>
<th>Group 1</th>
<th><strong>Group 2</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>*1. Falsetto</td>
<td>1. Falsetto</td>
</tr>
<tr>
<td>2. 'Head' Voice</td>
<td>2. Concepts of 'Placement'</td>
</tr>
<tr>
<td>Upper Voice</td>
<td>a. 'high'</td>
</tr>
<tr>
<td>Voix Mixte</td>
<td>b. 'low'</td>
</tr>
<tr>
<td>3. Middle Voice</td>
<td>c. 'forward'</td>
</tr>
<tr>
<td>4. Lower Voice</td>
<td>d. 'back'</td>
</tr>
<tr>
<td>5. 'Chest' Voice</td>
<td>e. 'up and over'</td>
</tr>
<tr>
<td></td>
<td>f. 'in the Masque'</td>
</tr>
<tr>
<td></td>
<td>g. 'focus'</td>
</tr>
<tr>
<td>*5. 'Chest' Voice</td>
<td>4. Tonal 'covering'</td>
</tr>
</tbody>
</table>

*These two mechanisms no longer recognized as presenting an opportunity for combined action to account for the 'head' voice or the voix mixte. Terms 'upper,' 'middle,' and 'lower' refer to a tonal range, not a register. Falsetto neglected and left unused. 'Chest' voice rarely employed, if ever.

**Registration in all forms denied, with the falsetto considered an oddity and the 'chest' register an abomination. Because this error led, inevitably, to 'pushing,' tone qualities began to sound 'too open' and 'shouty' in the upper range. Thus there developed an obvious need to 'refine' the technique, a need which was met by 'covering.' A 'covered' technique always distorts the vowel and promotes tonal impurity (6, p. 33).
Twentieth century findings regarding the acoustical characteristics of the male falsetto, and the uses of falsetto in present day teaching techniques are the subjects of Chapters Three and Four respectively.

Summaries

There is no record of the beginning of singing as a natural expression. Egyptian and Jewish influences were reflected in the early Christian music. Vocal demands of the plain chant and the florid style in the early Christian Church produced a need for vocal training.

Aims of the vocal teaching of the Schola Cantorum, founded in 590 A.D. by Pope Gregory, were the command of long flowing phrases and perfect legato. Ornaments became quite important and even extravagant during the Middle Ages.

Little change in sacred music occurred until the fourteenth century when Pope John XXII ordered the suspension of all ornaments. It is apparent from the words of Saint Bernard and Saint Raynard that the falsetto was in use during the latter part of the Middle Ages, although these writers disapproved of its use.

The division of the vocal compass into registers was established by 1300. References on the subject from writers of the day indicate that little attempt was made to blend the registers.
As music flourished and the supply of choir boys fell short of the demand, the falsetto voice increased in importance. Spanish soprano falsettists became sought after.

Important sources of the bel canto period—Tosi, Mancini, Agricola, Petri, Mengozzi, and Bayly—all stressed the importance of blending the falsetto voice with the remainder of the voice.

The castrati singers, Folignato and Girolamo, first admitted in Rome in 1499, impressed Pope Clement VIII with the sweetness and flexibility of their voices. However, it was not until 1687 that the supply of falsettists became so short that authorities were forced to order a castrato.

Although some Italian writers accused the sixteenth century Spanish falsettists of being castrati, existing records do not sufficiently support their claim. The period of castrati singers lasted only from the beginning of the eighteenth century to soon after the middle, after which the modern tenor became fashionable.

Publication of the treatise on the vocal organs by Ferrein in 1741 is credited with initiating the scientific study of the voice. Manuel Garcia, inventor of the Laryngoscope in 1855, is regarded as the father of vocal science. Garcia recognized three vocal registers: "chest," "falsetto," and "head," in that order in both men's and women's voices.
Though scientific knowledge of the vocal action has increased greatly from the time of Garcia, present day vocal authorities disagree widely on many points. In addition, contemporary music places new and complex demands upon the singer and has forced a high degree of specialization. The concept of the desired tone varies among persons, with vibrato being a controversial aspect.

Twentieth century advocates of the falsetto adhere closely to the early bel canto principles, the main differences being those of terminology.

Chapter Three will deal with the acoustical characteristics of the falsetto voice and Chapter Four will present a discussion of the uses and values of the male falsetto in present-day teaching techniques.
CHAPTER BIBLIOGRAPHY


CHAPTER III

ACOUSTICAL CHARACTERISTICS

OF THE MALE FALSETTO

Falsetto: Physical Nature of Vocal Cords and Characteristics of Sound

There is little doubt that the male falsetto is produced by the thyro-arytenoid muscles (outer edges of the vocal folds) and not the false vocal cords. Clippinger states:

It is held by some that it [falsetto] is produced by the false vocal cords. This position is untenable for the reason that I have known singers who could go from the falsetto to a full ringing tone and return with no perceptible break. Now since it will hardly be argued that a ringing, resonant tone could be produced by the false vocal cords, it is evident that the singer must change from the false to the true vocal cords somewhere in the process—a thing which is unthinkable.

It is held by others that the falsetto is a relic of the boy's voice, which has deteriorated from lack of use. . . . We may safely assume however that it is produced by the vocal cords and the lightest register in the male voice (2, p. 25).

In confirming Clippinger's beliefs Reid states, "If the laryngoscope proves nothing else, it shows that the true vocal cords do participate actively in falsetto" (9, p. 184).

Reid found the most "fantastic" opinion advanced to explain the falsetto to be that of Guilmette (Vocal
Physiology, 1878) "who is of the opinion that neither the true nor the false vocal cords have anything whatever to do with the production of vocal tone. He ascribes the tones produced by the human voice to a function of the mucous membrane lining the trachea, larynx, pharynx and mouth" (9, p. 184).

While present day authorities will agree how the falsetto is produced, there is still disagreement on the exact quality of falsetto. Some schools are opposed to the vocal quality which they term falsetto with the conviction that this voice is unusable and harmful; that it is, as the word falsetto suggests, a "false voice"--whereas others lay great value on a so-called falsetto, as one of the "main factors in singing" (7, p. 59). "These opinions contradict each other so radically that it is obvious that two utterly different types of falsetto are involved" (7, p. 59).

Husler and Rodd-Marling describe the first type of falsetto as "extremely thin, breathy tone quality," which "... cannot be modified, nor is any transition possible from it into the full voice" (7, p. 59). This type of falsetto comes from "a collapsed organ, from a disintegrated mechanism; it is what we propose to call a 'collapsed' falsetto" (7, p. 59). This falsetto is sometimes called the 'cracked' tone, and probably the one meant by
those physiologists who have observed that production of
the falsetto voice requires a greater expenditure of
breath" (7, p. 59).

The second type of falsetto represents a positive
approach and is described as "a tone quality of greater
tension, strength and carrying power, one which is modi-
fiable to a certain extent and out of which the full
voice can be developed" (7, p. 59). In contrast to the
'collapsed' falsetto this second type of quality is re-
ferred to as the 'supported' falsetto (7, p. 59).

Husler and Rodd-Marling summarize their findings in
this statement:

It is apparent that there must be two
fundamentally different kinds of falsetto, be-
cause objective science radically contradicts
itself on one essential point regarding its
formation. According to some authors (with
clear stroboscopic-photographic evidence), the
vocal folds are considerably shortened during
the production of a falsetto, while others as-
sert they are considerably lengthened (7, p. 60).

Similar to Husler and Rodd-Marling's description of
"supported" falsetto is Freemantel's description of head
voice. He states:

Almost all male voices have soft upper
tones, usually referred to as 'falsetto.'
There is a difference between this falsetto
and head voice. . . . The falsetto is produced
with a high position of the larynx, while the
head voice is the result of a lowered position
of the larynx brought about by and maintained
with breath support (5, p. 741).

Schmauk makes the following distinction between head
voice and falsetto: "The falsetto voice is peculiar to
men while the head voice may exist, and commonly does, in both men, women, and children" (10, p. 67). He defines falsetto as "that artificial method of delivery, by which the limited short reed [head] register in men is forced upward beyond its natural compass" (10, p. 67).

Browne defines the falsetto register as "a series of tones in the tenor voice just above the upper thick register," (1, p. 185) but adds to this the statement that these tones may be sung two ways (1, p. 185). The first of these he describes as the mechanism of the "upper thin" carried below its proper limit. "The vocal chink has here an elliptical shape, the lid is completely raised, the larynx widely opened, and all parts are in a lax condition" (1, p. 185). He describes the quality of these tones as "feeble and unsatisfactory; no crescendo of any consequence can be executed upon them, and no amount of cultivation will render them more powerful" (1, p. 185).

The second way of producing falsetto according to Browne is with the mechanism of the "lower thin." "The vocal chink is here linear; and . . . the voice-box is still more widely opened and therefore more easily inspected than in the thick . . ." (1, p. 186). He adds that the tones so produced are naturally stronger than the one spoken of in the first instance. "They may be swelled out to a considerable extent, they are capable of being made
more powerful by practice, and they may . . . be converted into the mixed voice [middle register]" (1, p. 186).

Gescheidt states:

The great difference between falsetto and a true mezza voce or a pure tone, is that with the former it is not possible to increase the power of tone, or to diminish it into softness without decided change in quality and production. With normal, natural production, however,—singing with the balanced pure tone—the true mezza voce may be increased and diminished merely by the musical thought, crescendo and diminuendo (6, p. 25).

The term mezza voce (half voice) would seem to indicate head voice. Falsetto is described by Gescheidt as "wholly artificial, and can never be amplified into the full forte voice, or even a degree of it" (6, p. 25). She describes the falsetto sound as "pleasing, sweet and floating" (6, p. 25) but quickly adds "in no sense of voice production is it practical or worthwhile" (6, p. 25).

Curry writes that "the more or less acceptable form of falsetto in the male voice corresponds in mechanism to that of the head voice in the female" (3, p. 75), but went on to say that "there exists in the male voice an extreme form of falsetto which is not desirable as a singing form and is more equivalent to a high-pitched whistle" (3, p. 75).

Vennard's discussion of the falsetto or "light mechanism" as he labels it, is thorough and scientific.
He states

In the light voice the thyroarytenoids are not entirely passive, but comparatively so. . . . With the vocalis muscle relaxed it is possible for the cricoarytenoids to place great longitudinal tension upon the vocal ligaments. The tension can be increased in order to raise the pitch even after the maximum length of the cords has been reached. This makes the folds thin so that there is negligible vertical phase difference, no such thing as the glottis opening at the bottom first and then at the top. The vocalis muscles fall to the sides of the larynx and the vibration takes place almost entirely in the ligaments (12, p. 67).

Negus, a recognized authority on vocal physiology, agrees with Vennard's findings in explaining falsetto as a particular form of sound production at the larynx which employs a different mechanism for notes above the ordinary range of the individual (male) voice (4, p. 151). In falsetto voice, "the vocal cords, when viewed through a stroboscope, are seen to be blown apart, whereby a permanent oval orifice is left between the edges. . . . In falsetto, the extreme membranous edges of the vocal cords appear to be the only parts in vibration" (8, p. 14).

Scholes refers to the falsetto as a peculiar type of tone which is thin and colorless. "It is usually said to be produced by the vibration of the mere edges of the vocal cords, and with a high larynx position" (11, p. 993).

Because the edges of the vocal folds are so thin in falsetto or "light mechanism" each puff of air is comparatively simple (12, p. 67). The closure of the glottis is
brief at best, and often is not complete. "Because of the great longitudinal tension, great medial compression is also needed to make the closure complete, and often this is lacking" (12, p. 67). This medial compression leads to a "mysterious" phenomenon called "damping."

**Falsetto with Damping**

Vennard writes that until the vibrations in falsetto were studied by stroboscope and Fastax camera it was assumed that the vocal lips puckered like the lips of a whistler for high tones. This is explained by the fact that when the larynx is vibrating at high frequencies it may not have time to open fully in each vibration. It may also not close completely at any time. The result appears to the unaided eye as a puckered opening through which whistling might be taking place (12, p. 67).

Vennard continues his explanation:

In each vibration cycle (chest or falsetto) the air bubbles through first at the point which is weakest or most flexible. This is always in ligamentous portion, never between the arytenoids. In most cases it is midway between the vocal processes and the angle of the thyroid, but in some larynxes it is at the forward end of the glottis, right at the angle. Even in chest voice the opening appears there first and then undulates to the back ends and separates the arytenoids. At low frequencies it will be apparent that the entire glottis is in vibration, but as the frequency rises there is less and less time for the glottis to open. So for low falsetto the entire glottis will open as a tiny slit, but in middle falsetto range only the forward half of the glottis has time to open, and for the highest tones
there will only be a brief opening at the forward end which will close again before there has been time for any more of the glottis to open (12, pp. 67-68).

This phenomenon has been compared to the violinist moving his finger along the string in order to raise the pitch. It was assumed that somehow the glottis was pressed together at the back end, and that as the pitch rose the damping was increased until finally only a small part of the "strings" was allowed to vibrate (12, p. 68). "This was regarded as a pitch mechanism by which the 'cords' were shortened to raise the pitch. We now know that damping is an effect of longitudinal tension, rather than a cause. We also know that damping occurs only in some singers, not all" (12, p. 68).

Falsetto with Mutational Chink

As the longitudinal tension increases, medial compression becomes more and more necessary. "The young singer, who sings largely falsetto and who has a mutational chink, has it because the laterals are holding the vocal processes together, but the interarytenoids are not holding the rest of the arytenoids together" (12, p. 68). Such a falsetto can be seen in the Rubin sequence in Figure One. Notice that the ligamentous glottis is opening and closing completely, but the triangular space between the arytenoids never closes (12, p. 68). This
voice will sound clear but weak," because compression waves instead of passing out of the mouth are simply sucked through the chink by the rarefaction below" (12, p. 68).

If the singer does not increase medial compression but learns to use his interarytenoids enough to close the chink his voice will sound clear and strong (12, p. 69). If in tightening his interarytenoids the singer also increases medial compression he will hold his arytenoids together so tightly that they will not open at all, and all of the vibration will take place between the vocal ligaments. This will produce the damping effect referred to earlier (12, p. 69). Rubin also shows Fastax pictures of this which are included here in Figure Two. "It has been thought that damping always characterized falsetto production, but this is not correct" (12, p. 69).

Vennard summarizes:

We know that falsetto with a mutational chink is inefficient, but we are not able to make any further correlations. Some trained singers exhibit damping and some do not, and both phenomena also appear with untrained singers. It is still one of the mysteries, though perhaps not quite as puzzling as it once was (12, p. 69).

Summaries

Present-day authorities agree that the male falsetto is produced by the thyro-arytenoid muscles and not the false vocal cords. However, there is still disagreement
Fig. 34. Falsetto Without Damping

A little more than three vibrations. The great longitudinal tension (ecriothyroid muscles) in falsetto is accompanied by great medial compression (lateral ecrioarytenoid muscles). The vocalis muscles are comparatively relaxed, and the interarytenoids in this case are also relaxed so that the back part of the arytenoid cartilages (bottom of picture) never closes, even in D, K, and S. The triangular opening in E, L, and T, is a typical "mutational chink." Medial compression is enough to achieve efficient closure of the muscular (or ligamentous) glottis in each vibration, but it can be seen that the entire glottis is vibrating in this variety of falsetto. Compare with "damping" (Fig. 35) in which only the anterior (front) part of the glottis vibrates. Fastax camera sequence by Henry Rubin, from The Laryngoscope, Sept. 1969.

(Complete figure reproduced from 12, p. 70).

Fig. 1--Falsetto without damping but with mutational chink
Fig. 35. Falsetto With Damping

Roughly two and one half vibrations while the singer is making a descending portamento from high falsetto. Note that the opening appears at the forward part of the glottis (top of picture) and increases toward the back (toward the arytenoids). Since pitch is descending, the maximum opening in each vibration is increasing; A, K, L. Interarytenoid and lateral cricoarytenoid muscles are contracting so strongly that the arytenoid cartilages do not separate during the vibrating sequence from A to O. However, the descent in pitch is accompanied by progressive relaxation, and from O to X the relaxation of the interarytenoid muscles can be seen in an increasing opening between the arytenoid cartilages. This could increase to resemble Fig. 34, E, L, T. Damping thus appears to be an extreme adduction, particularly extreme medial compression. Fastax camera sequence by Henry Rubin, from The Laryngoscope, Sept. 1960.

(Complete figure reproduced from 12, p. 71).
on the exact quality of the falsetto. The opinions concerning the value of falsetto are so completely opposed that it is evident that two entirely different types of falsetto are involved.

The first type is described as a thin, breathy, "cracked" tone which cannot be altered, or developed into full voice. The second type is described as strong, powerful, capable of modification and development into full voice.

Husler and Rodd-Marling point out that some authors show the vocal chords shortened during falsetto while others assert that they are lengthened, thus pointing out that there are different types of falsetto.

Browne notes two types of vocal action in the falsetto--one in which the vocal chink is elliptical in shape, the other in which the vocal chink is linear, the latter producing a stronger tone than the former.

Gescheidt states that the difference between falsetto and mezza voce (half voice) is that the former cannot be diminished or swelled as can be the latter.

Other authorities write of the falsetto: Curry speaks of acceptable and unacceptable forms of falsetto; Vennard and Negus agree that most of the vibration during falsetto occurs in the ligaments; Scholes refers to the falsetto as a thin, colorless tone produced by vibration of only the edges of the vocal cords.
In reference to the phenomenon called "damping", Vennard says that for low falsetto the entire glottis is open as a tiny slit, but in middle falsetto only the forward half of the glottis has time to open, and for the highest tones there is only a brief opening at the forward end which closes again before there is time for any more of the glottis to open.

The "mutational chink" is the result of the failure of the interarytenoids to hold the rest of the arytenoids together as the laterals are holding the vocal processes together. The ligamentous glottis opens and closes completely but the triangular space between the arytenoids never closes. This type falsetto produces a clear but weak falsetto tone. If medial compression is not increased and the interarytenoids are used to close the chink, the tone will be clear and strong. Increasing medial compression closes the arytenoids and allows vibration only of the vocal ligaments, thus producing the damping effect.

In summary, Vennard states that the falsetto with a mutational chink is inefficient but makes no further correlations. Some trained singers exhibit damping and some do not, and both phenomena also appear with untrained singers. He concludes that though not quite so puzzling as they once were, the mutational chink and the damping
effects occurring in the production of falsetto remain mysteries of the vocal art.

There is no available material concerning the over-tones of the falsetto voice and, therefore, this aspect has not been treated.
CHAPTER BIBLIOGRAPHY


CHAPTER IV

USES AND VALUES OF FALSETTO IN TRAINING THE MALE VOICE

Number of Vocal Registers and How They Are Labeled

The expression "vocal register" is derived from the term "organ register" and was originally employed by organists to describe the changes of quality caused by setting up different "stop" combinations (18, p. 37). When the vocal organs were discovered to be capable of producing sounds of diverse qualities, it seemed natural to refer to each group as a vocal register (18, p. 37).

"With many of the problems involved in developing a correct vocal technique centering on registration, the importance of this phase of training is inestimable" (18, p. 36).

Several factors combine to account for these "radical" changes in tone quality, among which are those of "temperament, the size, shape and functional condition of the vocal organs, the combination and proportion of vocal faults, and the mechanical response of the voice parts as they adjust to meet changing patterns of pitch, intensity, and vowel" (18, p. 37). This latter category of "mechanical response" is of greatest interest now.
Reid points out that tone originates in the laryngeal mechanism. "When the breath pressure is directed against the vocal cords the laryngeal muscles contract, holding the cords at a length and tension corresponding to the mental picture of pitch and intensity" (18, p. 37). He adds that "in a state of perfect equilibrium, each new pitch and intensity requires a special alignment of the coordinative process" (18, p. 37). As this state of "perfect equilibrium" is seldom found in a beginning student, the problem of combining the various voice qualities, or registers into a coordinated whole arises.

Vennard states: "There are three pedagogical approaches to registration, each espoused by respectable authorities, and in such a case . . . one should try to have an appreciation of all three approaches" (24, p. 69). (These three approaches are presented later in the chapter.) Wagner found that out of fifty-four books on voice published from the seventeenth century to the present, "twenty-three authors recognize two registers--chest and head or falsetto; eighteen find that there are three registers--chest, middle, and head or falsetto; six claim but one register--the chest; while five so-called authorities recognize four or more registers" (25, p. 344).

Fields writes that of the thirty-four opinions on the number of registers in the singing voice, eleven
believe that the singing voice has but one register throughout its range, sixteen claim that there are two vocal registers, and seven believe that three vocal registers exist (7, p. 153).

The questionnaire results show that of the thirty-three authorities who responded, ten believe that there are two registers in the singing voice, fourteen indicated the existence of three registers, and six hold that there are four registers. Three gave no opinion. None of these advocated the one register approach. Table III shows the per cent of the total that each of these numbers represents.

**TABLE III**

**OPINIONS OF THIRTY-THREE VOCAL AUTHORITIES CONCERNING THE NUMBER OF REGISTERS IN THE SINGING VOICE**

<table>
<thead>
<tr>
<th>Number of Registers</th>
<th>Per Cent in Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Four</td>
<td>18</td>
</tr>
<tr>
<td>Three</td>
<td>43</td>
</tr>
<tr>
<td>Two</td>
<td>30</td>
</tr>
<tr>
<td>One</td>
<td>0</td>
</tr>
<tr>
<td>None</td>
<td>9</td>
</tr>
</tbody>
</table>

The largest per cent of authorities divided the voice into three registers. However, it should be noted that almost one-third of the authorities divided the voice into two registers. Nearly one-tenth of the authorities preferred not to divide the voice into registers, and none of the specialists considered the voice to be a one register instrument.
Much more divergent than their opinions concerning the number of registers in the voice are the opinions of authorities concerning the labeling of these registers. In the thirty-three responses, seventeen different terminologies were given. Table IV gives these terminologies and the percentage of the vocal specialists who use them.

**TABLE IV**

**OPINIONS OF THIRTY-THREE VOCAL AUTHORITIES CONCERNING THE LABELING OF THE VOCAL REGISTERS**

<table>
<thead>
<tr>
<th>Register Terminology</th>
<th>Per Cent in Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>chest-head</td>
<td>15</td>
</tr>
<tr>
<td>chest-middle-head</td>
<td>12</td>
</tr>
<tr>
<td>chest-middle-head-falsetto</td>
<td>9</td>
</tr>
<tr>
<td>lower-upper</td>
<td>6</td>
</tr>
<tr>
<td>heavy-light</td>
<td>6</td>
</tr>
<tr>
<td>lower-middle-head</td>
<td>6</td>
</tr>
<tr>
<td>low-high</td>
<td>3</td>
</tr>
<tr>
<td>normal-head-falsetto</td>
<td>3</td>
</tr>
<tr>
<td>lower-upper-flute</td>
<td>3</td>
</tr>
<tr>
<td>chest-mixed-falsetto</td>
<td>3</td>
</tr>
<tr>
<td>chest-head-falsetto</td>
<td>3</td>
</tr>
<tr>
<td>chest-mixed-head</td>
<td>3</td>
</tr>
<tr>
<td>chest-middle-upper</td>
<td>3</td>
</tr>
<tr>
<td>low-middle-high</td>
<td>3</td>
</tr>
<tr>
<td>chest and throat-mouth and throat-pharyngeal and head</td>
<td>3</td>
</tr>
<tr>
<td>rattle-heavy-light-whistle</td>
<td>3</td>
</tr>
<tr>
<td>low-middle-high-coloratura soprano</td>
<td>3</td>
</tr>
</tbody>
</table>

The largest single percentage of vocal specialists, (15 per cent), used the terminology, "chest-head." The terminologies "heavy-light," "lower-upper," and "lower-middle-head," received 6 per cent agreement. Nine per cent
labeled the registers "chest-middle-head-falsetto." Four authorities, representing 12 per cent, did not name the registers. All other terminologies received 3 per cent agreement each.

One Register Approach

Vennard considers the one-register approach as idealistic (23, p. 45). Those who subscribe to this approach claim that each pitch-intensity pattern in the musical scale has a balance of registration unique to itself and argue that there is no such thing as a vocal register (18, p. 38).

Witherspoon states that "there is one register of the human voice, and only one, but there are three distinct qualities, the chest quality, the mouth quality, the head quality . . ." (29, p. 23). He adds: "If . . . we accept the fact that every tone possesses resonances of all three resonators, we must deny the existence of registers in the voice, unless we allow each interval of a semitone to constitute a new register (29, p. 23).

Advocates of this approach hold,

. . . as a principle of pedagogical psychology, that one should never suggest to a student the possibility that he might have a register problem, but that one should begin in the middle of his potential range with the best technic possible, and expand this area until it includes all the tones that can be expected (24, p. 69).
Three Register Approach

Opposed to the "idealistic" one register approach, Vennard refers to the three register approach as "realistic" (24, p. 69). "The more sensitive one becomes register-wise, the more registers one is likely to isolate, but we may generalize and say there are three" (23, p. 45). He continues by saying that these registers are most frequently called "normal, or chest," "head," and "falsetto" (23, p. 45).

Shakespeare, in applying the Italian definition of the word register, which is "organ stop," to the voice, says that the voice might be considered to possess a grand stop, a brilliant stop, and a flute stop (19, p. 36).

Vennard explains the uses of these three qualities in the male voice by stating:

Most authorities agree that basses sing largely in "chest," with some use of "head" for very high tones, but that falsetto is acceptable only for comic effects and that there is probably no transition to it without yodeling. Tenors sing in "chest" up to F4 or F4 sharp, passing into "head" which they carry to at least A4, above which theorists dispute. Some call the quality from there on up a "reinforced falsetto," others deny the use of falsetto. The baritone of course is midway between, but more like a bass in quality (24, p. 73).

Two Register Approach

Between the "idealistic" approach of one register and the "realistic" theory of three registers there is a "hypothesis" of two registers (24, p. 73). Basically, this
hypothesis states that "every voice has a potential of roughly two octaves of 'light mechanism' and two octaves of 'heavy.' These two compasses overlap by one octave; that is one octave can be sung in either laryngeal adjustment" (24, p. 73). In this octave (voix mixte) it is possible to combine the best qualities of both (35, p. 73). The most radical proponents of the philosophy argue that at the bottom of this middle octave the light mechanism can taper off and the heavy take over, providing a transition to the bottom; or conversely, the light mechanism can take over at the top. Thus every singer should have a three octave range (20, pp. 68-69).

Wagner asserts that there are two vocal register, if by register we mean "a series of consecutive homogeneous tones produced by one mechanism" (25, p. 347). The head or falsetto and the chest tones "are produced by two mutually exclusive mechanisms" (25, p. 347). Weer likewise claims that there are two registers and that "they cannot be blended" (27, p. 62). Rather, "they must be made to cooperate" because two different organic mechanisms are involved (27, p. 62).

According to the questionnaire the three-register approach is favored slightly over the two-register approach. The three registers are labeled chest, middle, and head by a large per cent of authorities. The two registers are
labeled chest and head by many specialists. Vennard describes the one-register approach as idealistic, the three-register approach as realistic, and the two-register approach as hypothetical.

The "two-register" philosophy yields certain practical concepts. The one which is of greatest concern now is that of the "unused register" (24, p. 73). In the male voice the "unused register" is falsetto (24, p. 76).

Defining the Falsetto Register

Vennard explains his reference to the male falsetto as the "unused register" (24, p. 76):

Ever since their voices changed, most men (with the exception of some tenors) have been so afraid they might sound effeminate that they have cultivated a tense, heavy production. Take them up the scale and they will lighten their production only in the abrupt misfortune of "cracking" into falsetto (35, p. 76).

Frisell's explanation is similar. "In its undeveloped state the upper register is often referred to as the falsetto. Many think of it as a carryover from the child's voice, and unrelated to the matured male voice. Nothing could be further from the truth" (9, pp. 18-19). He adds: "Qualities associated with it [falsetto] are: soprano-like, flutey, lyric, soft, and sweet. These terms only describe the register's undeveloped condition and fail to indicate the power that is acquired with advanced development" (9, p. 19).
In speaking of a "supported" falsetto as opposed to a "collapsed" falsetto (see Chapter Three, this report), Husler and Rodd-Marling assert: "A voice without falsetto is not a singing voice. A voice from which the falsetto has disappeared is a ruined voice. There has never been a good singer not gifted with a highly developed falsetto function, though he himself may not have been aware of it" (14, p. 61).

Wagner in proposing a possible difference in head voice and falsetto says: "Falsetto, when developed to the stage where it no longer sounds false, is called by most artists 'head voice.' But 'head voice,' sung with a closed throat and insufficient breath pressure, would probably be termed by the same artist 'falsetto' (25, p. 347).

Douty, when faced with the same question stated: "Theoretically at least, the falsetto voice is produced with much less firmly approximated vocal cords, which accounts for both the breathiness and lack of carrying power of this falsetto voice" (4, p. 65).

Fuchs describes falsetto as "a register in men's voices, and occurs when a male singer tries to sing soft notes above his natural range" (10, p. 95). He adds: "Falsetto implies something which is false, not true, not natural" (10, p. 95). In concluding he states: "Even when used with great finesse, falsetto singing is always unnatural" (10, p. 95).
Bollew directly opposes Fuch's contention in his article, "Is the Falsetto False?" He states: "Since falsetto exists in all voices and is never suppressed but only rendered quiescent, it is difficult to understand how it can be considered anything than a perfectly natural part of the voice" (2, p. 14).

He adds:

In most voices, the uncultivated falsetto is weak and not always of a pleasant sound. But when it is developed and balanced with the lower part of the voice, integrated and merged with it, and vice versa, the result enriches and frees the whole voice to an incredible degree, emphasizes and improves its individual quality, liberates its power and volume, extends its compass and renders it unbelievably flexible and agile (2, p. 14).

In response to Bollew's article Fuchs writes that "a tone which can be developed without an audible break to a well sounded chest tone should never be called falsetto, since very reinforced falsetto tone sounds more or less unnatural and possesses a feminine quality, besides which it also has the quality of a yodel" (11, p. 3). In summarizing his views on falsetto he states: "It is a consummation devoutly to be wished that the word falsetto be used to describe that which it really is--the false, or exceptional use of the male vocal chords" (11, p. 3).

Klein, also in response to Bollew's article says: ". . . the term falsetto is best used in a description of male voices only" (11, p. 3). He adds: "The falsetto is
not false but it must not have a more important place in vocal training than any other valuable exercise, and certainly not be the keystone in building a male voice" (11, p. 4).

Thirty-three vocal authorities responded to this question: "Falsetto--which of these definitions would you be more inclined to agree with?" Table V shows these definitions and the way the authorities responded.

TABLE V
OPINIONS OF THIRTY-THREE VOCAL AUTHORITIES CONCERNING THE DEFINITION OF FALSETTO

<table>
<thead>
<tr>
<th>Definition</th>
<th>Per Cent in Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>According to Negus, in ordinary phonation the vocal cords vibrate as a whole; in falsetto, the extreme outer edges appear to be the only parts in vibration (1, p. 255)</td>
<td>44</td>
</tr>
<tr>
<td>A high pitched metallic voice produced in the top register with artificial effect. That voice of a man which lies above his normal speaking range; also, the human voice of the upper or head register whether male or female (6, p. 22)</td>
<td>33</td>
</tr>
<tr>
<td>An artificial method of singing used by male singers, particularly tenors, to obtain notes above the ordinary range of their voice (26, p. 524)</td>
<td>10</td>
</tr>
</tbody>
</table>

The largest single percentage of the vocal pedagogues responding chose the Negus definition of falsetto. Thirteen per cent supplied their own definitions. Among these
were: "The 'falsetto' voice should merely be an extension of the high voice, blending into it" (H. Taylor). "A voice of false quality produced with a marked lack of freedom and lack of an acutely directed sense of clear tone" (Richmond). "Falsetto voice is the remnants of the child voice" (Davis). "The term 'falsetto' is usually applied to a tone quality produced by the male voice. It is often called the third register in the male voice. Its range usually overlaps from the upper part of the chest register through the head register and beyond" (Jennings). "It [falsetto] is the upper, undeveloped part of the male voice" (Whitlock). Silberg defines falsetto as "high tones produced in head without any of the blend of 'normal production' influence." Thus it is evident that authorities differ greatly on the formal definition of "falsetto."

Similarly, authorities do not agree on a practical definition of falsetto. Table VI shows the questionnaire results concerning this subject.

**TABLE VI**

<table>
<thead>
<tr>
<th>Practical Definition</th>
<th>Per Cent in Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>a means to an end</td>
<td>62</td>
</tr>
<tr>
<td>an end in itself</td>
<td>10</td>
</tr>
<tr>
<td>of little or no value in cultivating the male singing voice</td>
<td>18</td>
</tr>
<tr>
<td>non-existent</td>
<td>0</td>
</tr>
</tbody>
</table>
The definition of falsetto most often chosen was "a means to an end." Seven authorities, giving about one-sixth of the definitions, felt that the falsetto voice was "of little or no value in cultivating the male singing voice." One-tenth of the responses indicated that the falsetto was "an end in itself," and one-tenth of the answers were definitions supplied by the authorities. No one thought that the falsetto voice was "non-existent." Among the practical definitions which were supplied were: "can be a useful part of the male range" (Weldy), "not necessary to mention, or use in production" (Silberg), "one does not gain an end by a devious and misleading means" (Richmond), and "false as the word suggests, and useful for yodeling or other artificial effects" (Deacon).

The Register "Break"

The "segmentation" of the registers is an occurrence with which almost every singer and teacher of singing has had experience. Some refer to them as transition tones or "breaks" (18, p. 64). An acoustic definition of a segment would describe it as "that portion of a vibrating member lying between two nodes, or that point at which a curved line passes through itself, as a loop" (18, p. 64). A broader definition is implied here, however; one which recognizes a segment as being "one of the parts into which
an object is divided. A vocal segment, therefore, is a division of the tonal range into two or more parts" (18, p. 65).

Stanley believes this "break" to be an essential element in the training of the voice. He writes: "... the pupil who starts with a definite break between the registers is far easier to train than is the one who uses one register only or worse still, mixed registration" (22, pp. 64-65). ("Mixed registration" will be discussed later in this chapter.) He explains:

The first process in training a voice is to find and isolate both registers, and before this is done no vocal development is possible. Thus, the pupil who starts with two definite, uncoordinated registers is in the same condition, or stage of development, as is the one who started with one register and has found and developed the other; or the one who, having started with mixed registration, was forced to go through the long and tedious process of separating the voice into two parts. In other words, the pupil with a definite break starts in a fairly advanced stage of technical development.

The man who uses the uncoordinated falsetto for his soft tones will indeed be making illegitimate, foolish and effeminate sounds, but he is not straining his voice in anything like the same degree as is the one who produces his high, soft tones with an extreme constriction of the laryngeal pharynx and mixed falsetto registration. Neither high nor soft tones should ever be sung by a man, in performance, before some degree of coordination has been attained (22, p. 65).

Similar to Stanley's views on this subject are those of Reid. He states:

Until final coordination of the two mechanisms becomes practical the area of the 'break' must be kept flexible. Being able to manipulate the registers
demands this flexibility, for unless the 'chest' register can be moved higher or lower, strengthened or held back, all manipulative controls are lost. The same is true of the 'head' register. If this mechanism cannot be exercised independently the teacher has lost control over the functional situation. He will no longer be able to hold back the vitality of one while the other is strengthened, nor will he be able to extend the range of the 'head' register downward if the chest mechanism has been pushed up to high. To strengthen one mechanism, the development of the other must always be held in abeyance. This is impossible without the presence of the 'break' (18, p. 47).

Reid points out that the position of the 'break' will shift in accordance with the functional condition of the registers and the intensity of the tone being sung (18, p. 36). However, to promote a better understanding of registration he proposes a hypothetical condition of absolute "purity." This hypothesis is illustrated in the figure below. In this figure the area of the "break" will be seen to be about an octave. Reid states that this accounts for what some theorists refer to as the "middle register" (18, p. 47).

![Figure 1](image_url)

**Figure 1.** Illustrating a hypothetically 'pure' registration. Notice the full octave 'gap' between the falsetto and 'chest' registers.

**Fig. 3--A hypothetically pure registration.**
Douty's views on this vocal phenomenon are interesting. He states:

It is seldom possible to start a scale on a very high tone in falsetto and sing down to D just above middle C, without a clearly defined break into what is called the lower register. A voice trained in this fashion may do very well in a chorus or even in a male quartet. The solo singer must have a smooth scale, from bottom to top, and, inversely, from top to bottom. A perceptible break will make him have two distinct qualities of tone, which is very inartistic, to say the least. Learn ease and freedom of throat from your falsetto, but use it with the greatest discretion (4, p. 609).

He adds that it is difficult to blend the head and falsetto registers so that there is no break between them, and the accomplishment requires a great deal of skill and practice (4, p. 65). Concluding he states: "If you are successful [in blending the registers], there is no reason why the scale from the top to the bottom should not be sung without any break and in consequence be quite smooth" (4, p. 65).

In an article entitled "Quiz Cove" an anonymous writer states: "The definite 'break' between registers is accentuated by heavy singing and minimized by light vocalizing" (17, p. 34). He adds:

When light exercises have produced a nearly equal scale, one can begin to strengthen the middle area by imagining that he is singing an octave higher and an octave lower at the same time. This kind of imagery helps to activate both parts of the voice into the area known as the 'mixed' or 'middle' register and should eventually eliminate the break" (17, p. 34).
Another answer appearing in the same article states that the general practice in blending the registers "... is to exercise the voice softly from high downward in its earlier stages of growth, both to activate that part which has had little exercise as well as to help bridge the so-called 'break'" (17, p. 34).

Hipsher says that: "Almost every voice, until it has been carefully trained, has a rather noticeable 'break' just as it goes over into what, for want of a better name, we call the head register" (13, p. 740). He attributes this break to a change of direction of resonance in the voice and adds that it will vary with the different types of voices (13, p. 740).

Now, until this 'break' is eliminated by being absorbed into a change so elastic and gradual as to render it unnoticeable to both the singer and the listener, there is sure to be for the singer an uncertainty and lack of spontaneity of tone production at this point which will detract from the art of his song; and, for the auditor with a sensitive ear, a certain feeling of uneasiness which he will realize even though he may not be able to diagnose the cause (13, p. 740).

Henley writes that the falsetto can be legitimately employed in artistic singing provided it is joined to the true tone so no perceptible break can be detected (12, p. 46). He states that one way of overcoming this break is:

... by means of so practiced and skillful a balance of the breathing apparatus, for tone support, that exactly sufficient pressure--at every delicately precarious step of the way--may be lent to the tone as it approaches and returns
from the break, to enable it to prevent the larynx from slipping away from the gradual passage of the voice from falsetto to true tone, or from true tone to falsetto (12, p. 46).

Most authorities will agree that "segmentation" of the registers occurs in all but the best vocal instruments. This segmentation is referred to by most authorities as transition tones or "breaks."

Just as authorities will agree on the existence of "breaks" in the beginning student they agree that no form of artistic singing can occur as long as there is a "break" in the voice. The fact that these registers must be blended and coordinated is offered little argument from the authorities.

Blending the Registers

One of the primary goals of vocal training is to combine the action of the registers so that they perform as a functional unit (18, p. 52). The ideal coordination obliterates the "break" and provides the singer with an "... absolute evenness of scale throughout a wide tonal compass without obvious transitions" (18, p. 52). Such a technique is "... without flaw, and this almost never happens. What makes the subject of register juncture somewhat confusing is that a smooth coordinate relationship can also be made without the registers being either fully developed or proportionately balanced" (18, p. 52).
Such a condition of the vocal registers is referred to as "mixed registration."

"Mixed" Registration

"Mixed registration" is defined as "... a poor coordinate relationship between the registers" (18, p. 52) and is one of the chief causes of muscular interference in singing (18, p. 52). Reid states:

Whenever the registers are working out of phase and conflicting with one another they are said to be 'mixed,' improperly coordinated. Some form of 'mixed' registration lies at the bottom of almost every technical difficulty, and while the imbalances may be of many kinds, in principle they are the same. The only exceptions to this rule are long-ranged voices, as a wide range automatically implies a reasonably well balanced registration. Without exception, long-ranged voices having technical difficulties will find their problems centered in the resonance adjustment, not in registration (18, p. 52).

Reid illustrates this wrong positioning of the registers and the consequent disruption of normal pitch-intensity relationships, its effect on the tonal range, and the physical outlines of a 'mixed' registration in the figure which is reproduced on the following page.
Fig. 3. Illustrating a 'mixed' registration as it commonly occurs with the lyric tenor and soprano. There is too much 'head' register participation in the lower tonal range and not enough at the top. With the other mechanism there is too much chest register action at the top, with too little at the bottom. The sound of the tenor voice is, of course, an octave lower when the treble self is used.

Stanley explains "mixed registration" as: "... the worst of all faults in singing or speaking. The individual who uses a pronounced form of mixed registration is designated as one with 'no natural voice'" (22, p. 65). He adds that there are two forms of mixed registration: "Mixed falsetto and mixed lower register. In either case the break in the voice may be absent and quite a wide range may be covered, despite the extremely unpleasant quality which results from this technic" (22, p. 65).

Fields writes that when the muscles of one register are weaker than surrounding muscles, a condition of "mixed registration" is produced. "An overlapping of the registers then results and the stronger low register muscles of the male voice tend to dominate weaker falsetto-producing muscles" (7, p. 152).
Correction of "mixed registration" will be discussed later in this chapter. Included in this discussion will be falsetto exercises which aid in correcting "mixed registration."

Coordinated Registration: Explanation and Exercises

Blending registers is defined as "... the process of fusing or merging two overlapping but dissimilar sections of the vocal range into a continuous whole, so that these two sections shade insensibly into each other with no perceptible line of demarcation between them" (6, p. 48). This single blended register in a singer's voice is considered the hallmark of artistic performance (6, p. 48).

Stanley explains the difference in "mixed" and "coordinated" registration as follows.

... The one and only point of similarity lies in the fact that there is no break in the voice. With coordinated registration the balance between the two groups of muscles which actuate the vocal cords is correct at the inception of the tone and, as it is swelled, the added tension is taken up first by the arytenoid group, until the point is reached at which they are fully loaded. At this point the added tension is taken up by the cricothyroids, but the tension on the arytenoids is maintained.

In the case of mixed registration the coordination of muscles is incorrect at the start, and the added tension is taken up by both groups of muscles uniformly and simultaneously (22, p. 69).

Briefly, Stanley states that "mixed" and "coordinated" registration are similar only in the voice. With
"coordinated registration" balance between the two groups of muscles controlling the action of the vocal cords is correct as the tone is begun and is maintained as the tone is swelled. With "mixed registration" the coordination of muscles is incorrect at the start and balance between the muscles is not correct.

Reid describes his views on a coordinated or blended registration in stating:

As the blending of the registers is so important an event in the training program it might be well to stress again the inherent danger of this process. A coordinate action of the registers has been achieved when the performer can swell smoothly from the 'head' register to the 'chest' register without an obvious quality transition or 'break,' and vice versa. Premature mutation of the registers must be guarded against, as elimination of the 'break' makes it impossible to develop the registration further. Whatever strength and development the two registers possess at the moment of juncture is permanent, and neither the strength nor the balance shared between them can be improved or changed unless the registers are again separated. No exercise for promoting a full coordinate response in terms of unitary function should be attempted until every assurance has been made that no other logical alternative exists. This will in no way impede the singer's progress, nor will it limit his technical freedom to any great extent (18, p. 62).

To summarize, Reid states that "coordinated registration" has been achieved when the singer can swell smoothly from 'head' to 'chest' registers without a break and vice versa. Whatever strength and development the two registers possess at the time they are coordinated is permanent, and neither the strength nor the balance between
them can be improved or changed unless the registers are again separated. Therefore premature alteration of the registers must be guarded against.

Figure five which follows demonstrates the vocal cords at the moment of transition from heavy to light registration with a break. Figure six demonstrates the vocal cords at the moment of transition but with a smooth change from heavy to light registration.
Roughly five vibrations at the moment of abrupt transition from heavy to light registration. The vocal folds are not under control and vibrate without any definite pattern. The duration of the different vibrations is irregular and the amplitude of maximum opening also varies: A, G, L, P, S, X. The folds almost close at D, I, N, and Q, but they do not achieve complete closure till V.

Fastax camera sequence by Henry Rubin, from “The Falsetto, a high speed cinematographic study,” The Laryngoscope, Sept., 1950. The motion picture is available from the author upon request.

(Complete figure reproduced from 24, p. 75).

Fig. 5--Vocal cords at the moment of the register break.
Fig. 38. Smooth Register Transition.

Roughly four vibrations while singer is making a portamento from heavy to light registration without a "break." Mode of vibration is gradually changing. Note progressively decreasing amplitude of maximum opening in each cycle: C, I, O, U. Compare with the irregularity of the vibrations shown in Fig. 37. Fastax camera sequence by Henry Rubin, from "The Falsetto, a high speed cinematographic study," The Laryngoscope, Sept. 1960.

(Complete figure reproduced from 24, p. 74).

Fig. 6--Vocal cords in which there is a smooth register transition.
The figure on page sixty-four illustrates an abrupt transition from heavy to light registration with a "break." The figure on page sixty-five shows a portamento from heavy to light registration without a "break." In this smooth transition the registers are said to be coordinated.

In the questionnaire the authorities were asked their opinions concerning the possibility of blending the "light" or falsetto register into the "heavy" or lower register. These opinions are shown in the following table.

<table>
<thead>
<tr>
<th>Possible Choices</th>
<th>Per Cent in Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>can be accomplished without a noticeable break</td>
<td>40</td>
</tr>
<tr>
<td>can be accomplished with or without a break in some voices</td>
<td>33</td>
</tr>
<tr>
<td>can be accomplished but with a break</td>
<td>7</td>
</tr>
<tr>
<td>cannot be accomplished under any circumstances</td>
<td>7</td>
</tr>
</tbody>
</table>

Eighteen authorities, or a majority, felt that the blending of the falsetto voice into the lower register(s) could be accomplished without a noticeable break. Representing 9 per cent, four persons expressed other opinions concerning the blending of falsetto and two persons, 4 per cent, gave no opinion. Opinions which were added include:
Falsetto "can be used to induce feeling of lightness of tone" (Silberg), blending falsetto into lower register is "usually to the detriment of legitimate tone" (Miller), "it should first blend into the head voice" (H. Taylor), and "can be accomplished in all voices--male and female" (Coffin).

Reid states that technical development in the male voice begins with work in the falsetto, or upper register. In developing falsetto the vowel 'oo' and a very narrow pitch range should be employed, "... the safe range starting on E, above middle C, and extending no further than B natural five tones above" (18, p. 140). He adds: "Preliminary work in the development of the falsetto is not time consuming, and no more than five minutes should be spent on this mechanism at first" (18, p. 140). He states that once the falsetto has been exercised in its separated form "... it is imperative to return to the chest register and observe what changes, if any, have taken place. If the falsetto has been exercised properly, the 'chest' register should benefit and display greater clarity, resonance and overall freedom" (18, p. 140).

Reid recommends returning to the 'oo' falsetto exercises after the 'chest' register has been thoroughly exercised to give this register more work, and also to check for improvement (18, p. 140). "If over a period of time greater purity and freedom have been achieved, then
it is important to think of range extension. This is done by using the 'ee' vowel, first on major thirds, later on major triads" (18, p. 140).

The moment range extension is indicated stronger coordinate action with the 'chest' register must take place. This will occur naturally. One of the indications will be tones of greater clarity and less 'breathiness.' With the emergence of greater clarity the falsetto will be more willingly responsive and is now ready to play a more aggressive role in the unitary function of the mechanism. The increased tonal vitality needed to transform the falsetto and bring it into a stronger coordinate relationship with the chest register is encouraged by using larger musical figures on the vowel 'ah' (18, pp.140-141).

In summary Reid adds that "... if strong coordinate action is present, and the voice is obviously being well used, exercises for separating the registers should not be employed at all. Division of the registers is only advisable when there is a patent need for correcting muscular imbalances" (18, p. 142).

Frisell explains the unification of the registers in much the same way as Reid. In addition to the explanations specific exercises and specific directions as to how to sing them are given. He states: "All beginning exercises must be performed in a downward direction. These descending scales preserve the purity of the upper register by guarding against the upward force of the lower register. Because studied control is desired the downward scale pattern must be used for quite some time" (9, p. 35).
Unlike Reid, however, Frisell recommends the bright 'ah' vowel for the first exercises "... because it reveals completely the deficiencies of production within the vocal range" (9, p. 36). He does recommend using the 'ee' and the 'oo' vowels when the student has difficulty in producing a good 'ah' vowel, but the 'ah' should be used as soon as possible. "For those who find the 'ah' vowel extremely difficult the persistent use of the descending falsetto scale will solve the problem" (9, p. 36).

The first exercises are given to purify the action of the falsetto and unify the mechanical action of both registers (9, pp. 36-37). He states:

> Overlapping the falsetto downward is the only reliable method of achieving this [unity of registers]. At first, moving in the downward direction is accompanied by a weighty downward pull, especially when crossing the register break. The smooth continuity of the scale is generally interrupted by a break; both break and weighty pull must be eliminated if the registers are to be blended (9, p. 37).

Frisell recommends the single tone sustained softly as the first exercise. "Descending the scale slowly, tone by tone, allows a complete awareness of the vowel clarity and physical sensations of passing over the register break" (9, p. 37). The following single tone exercise should be started softly in falsetto and sustained at that volume until a new breath is needed (9, p. 37).
Three sets of single tone exercises descending to be sustained on the bright vowel "ah" softly with a new breath for each.

Fig. 7--Falsetto exercises, single tone.

In these exercises which are specifically for the tenor voice: "The singer must produce the vowel clearly and wait until the tone steadies before proceeding to the next one. He may descend the scale as low as possible as long as he maintains the soft intensity and falsetto quality" (9, pp.37-38).

After some skill is accomplished with the single sustained tone exercise, small scales serve to combine the tones with movement. "The same rules of intensity and vowel clarity still apply, but above all slow movement is necessary. Rapid movement must be withheld for some time" (9, p. 38).
Small three-tone scales to be exercised softly and slowly while maintaining a bright ah vowel.

Fig. 8--Falsetto exercises, small three-tone scales.

"Once the small scales have become easy their range must be extended. The five-tone exercise and the octave are good, and a bit more demanding" (9, p. 39).

Fig. 1. Five-tone scales to be performed throughout the complete range descending by half-tones. The top tone must be taken softly and the same intensity maintained on the remaining four tones. A new breath is used for each. Keep the vowel ah bright.

Fig. 2. Octave scales to be performed throughout the complete range descending by half-tones. The top tone is to be started softly and the same intensity maintained for the remainder of the scale. The bright ah vowel is employed and a new breath for each scale.

Fig. 9--Falsetto exercises, five-tone and octave scales.
Remember these exercises are written for tenors and would be transposed down if used for basses or baritones.

The exercise which introduces the action of the lower register is the swell and diminish. "Adding the quality of the lower register to the voice, after the falsetto has been established throughout the entire range, assures the singer that its action will never be used separately, but always in conjunction with the falsetto" (9, p. 41).

The swelling of the tone adds the "bite" of the lower register to the smooth quality of the falsetto (9, p. 41). The diminishing of the tone serves to release their joined action and to return the quality to a predominance of upper register action (9, p. 41).

Frisell's directions for performing the following exercise are as follows:

... the tone is started softly in the falsetto upon a given pitch. The bright Ah is the best vowel. While holding the tone softly, gradually increase the intensity until a quality change is sensed, then slowly, and on the same breath, decrease the intensity to a pianissimo. After a period of time the singer should be able to increase the intensity of the swelling greatly. However, he must never proceed further in volume than will allow for him to diminish back to a pianissimo. If at any point in the process any irregularity is encountered, immediately return to the pianissimo and start again (9, pp. 41-42).
Ah Ah Ah Ah
The swell and diminish exercise on a single sustained tone with
the bright Ah vowel. This exercise must be done on every tone
in the complete range, but always in a downward direction
matching the quality to the tone above. The singer must always
return to the pianissimo no matter what quality and volume is
achieved, otherwise the exercise is not being correctly executed.

Fig. 10—Swell and Diminish exercise, single sustained
tone.

Frisell's concluding remarks concerning the blending
of the falsetto are as follows:

It will take the singer anywhere from six to
eighteen months to purify the upper register with
the descending falsetto scales, and strengthen each
tone in the scale by swelling and diminishing the
falsetto. This suggested amount of time will
naturally depend upon the initial condition of
the vocal registers with which each individual
starts. With the heavier voices, and those which
have been forced, it may take longer. If the
singer has correctly achieved the desired results
from these exercises, the break between the
registers should be minimized, and there should
be no weighty downward pull when descending the
scale. Each attack in the falsetto should be
precise and the vowel Ah clear and exact through-
out his entire range (9, pp. 43-44).

The exercises shown above are not means to achieving
complete exchange of action which employs the full voice.
"They are meant as a preparation leading up to the point of
development where the middle falsetto permits this complete
exchange of action" (9, p. 43). The meaning of the phrase
"middle falsetto" and its use in developing the male voice
will be discussed later in this chapter.
As observed earlier Reid and Frisell do not agree on the best vowel for singing falsetto exercises. Reid believes the 'oo' to be best and Frisell states that the 'oo' should be used only as a means to achieving a good 'ah.'

In the questionnaire thirty-three authorities responded to the question, "How would you rate the following sounds in degree of effectiveness in falsetto exercises: ah, ee, oh, oo, and humming? (1 equals best)." Table VIII shows these results.

**TABLE VIII**

**OPINIONS OF THIRTY-THREE VOCAL AUTHORITIES CONCERNING THE EFFECTIVENESS OF VARIOUS SOUNDS IN FALSETTO EXERCISES**

<table>
<thead>
<tr>
<th>Sounds</th>
<th>Total No. Times Rated</th>
<th>Times Rated Best (1)</th>
<th>Average Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>oo</td>
<td>22</td>
<td>10</td>
<td>2.09</td>
</tr>
<tr>
<td>ee</td>
<td>17</td>
<td>8</td>
<td>2.18</td>
</tr>
<tr>
<td>ah</td>
<td>20</td>
<td>9</td>
<td>2.35</td>
</tr>
<tr>
<td>humming</td>
<td>14</td>
<td>4</td>
<td>2.64</td>
</tr>
<tr>
<td>oh</td>
<td>14</td>
<td>2</td>
<td>2.71</td>
</tr>
<tr>
<td>eh</td>
<td>13</td>
<td>0</td>
<td>3.08</td>
</tr>
</tbody>
</table>

Receiving ten and nine "best" ratings respectively, the "oo" and "ah" sounds were preferred. The comparison of number of times each vowel was rated "best" was felt to be slightly more valid than the "average rating" as many authorities did not rate all the sounds. Averaging all the rankings for each vowel sound separately produced figures...
which when compared, changed the order of effectiveness to the following beginning with the most effective: oo, ee, ah, humming, oh, and eh. Eight persons gave no opinion.

Also concerned with falsetto exercises with regard to blending the registers was the question, "Have you ever used exercises involving the falsetto voice in developing head voice, developing middle voice, or blending the registers?" Table IX shows these results.

### TABLE IX

**OPINIONS OF THIRTY-THREE VOCAL AUTHORITIES CONCERNING THE USE OF FALSETTO EXERCISES**

<table>
<thead>
<tr>
<th>Use</th>
<th>Per Cent Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>developing head voice</td>
<td>35</td>
</tr>
<tr>
<td>developing middle voice</td>
<td>10</td>
</tr>
<tr>
<td>blending the registers</td>
<td>25</td>
</tr>
</tbody>
</table>

As the authorities were instructed to check one or more uses, there were a total number of forty-eight answers. Percentages were figured on the forty-eight responses. Thirty-five per cent of the responses indicated use of falsetto exercises in developing head voice. Twenty-one per cent indicated no previous use of falsetto exercises, and four per cent gave no opinion.

Success with falsetto exercises varies between lyric and dramatic voices. Table X shows the ratings authorities gave concerning their success with falsetto exercises with lyric voices, dramatic voices, and, generally, all voices.
TABLE X

RATINGS OF THIRTY-THREE VOCAL AUTHORITIES
OF THEIR SUCCESS WITH FALSETTO
EXERCISES WITH VARIOUS
VOICE TYPES

<table>
<thead>
<tr>
<th>Voice Type</th>
<th>Very Unsuccessful</th>
<th>Moderately Successful</th>
<th>Successful</th>
<th>Very Successful</th>
</tr>
</thead>
<tbody>
<tr>
<td>lyric</td>
<td>6</td>
<td>18</td>
<td>18</td>
<td>24</td>
</tr>
<tr>
<td>dramatic</td>
<td>6</td>
<td>24</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>all voices</td>
<td>3</td>
<td>21</td>
<td>9</td>
<td>12</td>
</tr>
</tbody>
</table>

Authorities consider their success in using falsetto exercises to be greatest with lyric voices with one-fourth rating their use "very successful." Thirty-three per cent did not rate lyric voices. Use of falsetto exercises with dramatic voices was rated "moderately successful" by one-fourth of the authorities. In rating all voices one-fifth of the vocal specialists indicated their use of falsetto exercises to be "moderately successful." Nearly one-half of the authorities did not rate their success with dramatic voices or "all voices."

Vocal pedagogues differ greatly in their views concerning the importance of falsetto exercises in an overall vocal pedagogy. Table XI shows the questionnaire results on this subject.
TABLE XI
OPINIONS OF THIRTY-THREE VOCAL AUTHORITIES REGARDING THE IMPORTANCE OF FALSETTO EXERCISES IN VOCAL PEDAGOGY

<table>
<thead>
<tr>
<th>Choices</th>
<th>Per Cent Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>not important</td>
<td>36</td>
</tr>
<tr>
<td>moderately important</td>
<td>15</td>
</tr>
<tr>
<td>important</td>
<td>24</td>
</tr>
<tr>
<td>very important</td>
<td>18</td>
</tr>
</tbody>
</table>

In their overall vocal pedagogy 36 per cent of the authorities considered falsetto exercises unimportant, 15 per cent considered them moderately important, 24 per cent believed them to be important, and 18 per cent regarded them as very important. Seven per cent gave no opinion.

Douty's statements concerning falsetto exercises in the dramatic tenor voice reinforce the questionnaire results. He writes:

> Between the strong, firm sound of the dramatic tenor, and the soft, breathy tone of the falsetto register, there is a tremendous difference of power and quality. It is seldom practicable for the dramatic tenor to blend these tone qualities, and it is usually very dangerous for him to attempt to use the falsetto. The result, is often quite inartistic and often ludicrous (4, p. 837).

In the discussion of coordinating the registers it has been necessary to produce related data concerning the uses of falsetto exercises. Other important factors discussed were the most effective vowels in falsetto exercises and the voice types which respond best to falsetto exercises.
As illustrated in Table VII, authorities do not agree that the falsetto can be blended into the lower register. Some feel that it is the natural second register of the voice and, as Bollew says: "All efforts at building the voice which do not recognize this and fail to utilize it by developing it and blending it with the other part of the voice, leave a great deal to be desired no matter how well the result may sound" (2, p. 50).

Bollew makes the following analogy: "... to say that a voice is well produced in which the so called falsetto has not been developed, balanced, co-ordinated and completely blended and mixed with the remainder of the voice, is equivalent to saying that a child born without a head, or legs or arms is a well-formed infant" (2, p. 50).

In response to Bollew's statements Fuchs states that a tone which can be developed without a break to a well rounded chest tone should never be called falsetto (11, p. 3). Also in response to Bollew's article Klein states that the falsetto is not false but it should not have a more important place in vocal training than any other valuable exercise (11, p. 4).

Evett-Worthington state that since there are two distinct forms of vocal "reed" employed in the two registers and that since there is a difference in timbre:
"... it is obviously unallowable in beautiful singing for both mechanisms to be used by the same singer" (5, p. 26). They add:

The blending of these registers so as to conceal the change in timbre is physically impossible and has never been accomplished by any system of training. The cry known as "yodelling" illustrates the comical effect of passing rapidly from the thick to the thin cords and back again. Many singers in whom these registers are supposed to be "blended" are to be heard today "yodelling" in opera or at concerts (5, pp. 26-27).

Since these authors feel that blending the registers is impossible they naturally feel that such an attempt should not be made. They describe the mechanism of the falsetto or "thin cords" as "anomalous and ugly in its effect on the ear" (5, p. 123) and claim that "a man can be trained to use his voice in the thick register through a compass of at least two octaves" (5, p. 27).

Weer, on the other hand, states that men should recognize the falsetto as a legitimate and necessary part of the male voice, but "... the so-called falsetto voice of the male must be developed and strengthened until it is no longer false, but strong and resonant and capable of co-operating with the lower process" (27, p. 67).

The subject of blending the falsetto into the lower register(s) is a controversial one. There are authorities who state emphatically that coordinating the falsetto with the lower voice is the only means to a sound vocal technique.
Others feel that the falsetto is a good vocal exercise but should not be the "keystone" in building the male voice while other specialists feel the falsetto to be, as the word implies, false and incapable of being blended into the "normal" voice.

A possible explanation for this wide range of opinion could be variance in terminology. What one authority considers to be falsetto, another might regard as head voice and vice versa. This is only a possible solution and cannot be proved without further research.

Uses of Falsetto in Developing Head Voice

Authorities who advocate the coordination of the falsetto into the lower register to blend the register(s) usually believe that when this is done the falsetto will no longer be "false" or possess the quality associated with it but will have disappeared leaving the so-called "head voice."

Clippinger writes of falsetto:

... Unless its quality can be changed it has little or no musical value. There are some teachers who claim that the falsetto mechanism is the correct one for the tenor voice and should be used throughout the entire compass. I am not prepared to subscribe to this. There are others who believe that the falsetto should be developed, resonated, so that it loses its flute quality, and is blended with the head voice. This seems in the light of my experience to be reasonable. When this can be done it gives the singer the most perfect mechanism known. But it cannot always
be done. . . . I have found many voices where the falsetto was so completely detached from the head voice that it would be a waste of time to attempt to blend them (3, pp. 25-26).

Douty in agreeing with Clippinger's statements writes:
"To blend these two registers [head and falsetto] so that there is no break between them requires a great deal of skill and practice" (4, p. 65).

Clippinger adds that there is one place in voice training where falsetto exercises have a distinct value. He explains:

. . . I have seen many tenors and baritones who forced the heavy chest voice up until they developed an automatic clutch, and could sing the upper tones only with extreme effort. . . . In such a condition half voice is impossible. It must be one thing or the other, either the thick chest voice or falsetto. The falsetto they can produce without effort, and herein lies its value. They become accustomed to hearing their high tones without the association of effort, and after a time the real head voice appears (3, p. 26).

He adds that extreme resistance was preventing the head voice from appearing and as soon as this resistance was removed the head voice appeared (3, p. 26). "When the head voice appears the use of falsetto may be discontinued" (3, p. 26). In summary he states: "The plan outlined above for eliminating resistance has been tested with hundreds of voices and has never failed" (3, p. 26).

Freemantel writes that the soft head voice or falsetto can be used as an approach to full rich top tones
if used in the right manner (8, p. 741). His explanation of the "right manner" is as follows.

The best soft upper tones can be made most easily by an 'ee' or 'oo' sound, with the mouth almost closed. Therefore, if the singer will first put a soft 'y' in front of an 'ah', sing 'yee-ah' with the 'yee' very soft, and then run it into the 'ah' without any change in the volume of tone, he will retain the quality of this easy 'ee' when he sings the 'ah' (8, p. 741).

He adds that the fuller tones will come if the singer will use a soft "hee" as an approach to the tone. "The fact that he can sing the high tone softly should give him confidence to know that he has the fuller tones in his voice and needs only the courage to work them out" (8, p. 741).

Westerman says there is no apparent injury from falsetto singing unless it is used so continuously that it becomes a permanent habit. He adds: "It [falsetto] seems to have a very definite use in some voices as a means of developing the true mezza-voce in men, women, and children" (28, p. 133).

Proschowski feels that many men use falsetto as a substitute for true mezza voce (15, p. 439). He feels that pianissimo and mezza voce are the "... pearls of the singing art, the much-sought treasures of every singer, the embodiment of freedom and perfection in singing. And yet how few are the singers who have absolutely legitimate pianissimo and mezza voce" (15, p. 439).
In an article entitled "Quiz Cove" an anonymous author offers some interesting comments regarding the differences in head voice and falsetto. He states that most men give the following useful and working definition. "If the tone can be swelled into full voice without a break, or if the scale can be descended smoothly into chest, the tone is head tone, no matter how much it may sound like falsetto" (16, p. 34). He adds that sometimes the head tone breaks and under certain conditions the pure falsetto can bridge into the full voice successfully. "Falsetto usually sounds weaker and more breathy than head tone but by no means always" (16, p. 34).

The Quality of the Falsetto Sound

Figure eleven illustrates the responses of thirty-three vocal authorities concerning the quality of the falsetto tone in beginners and advanced students. The descriptive choices are listed across the bottom of the graph, and the number of times each description was chosen is indicated by the vertical line of numbers.

In the figure the descriptions are arranged beginning with the least desirable and ending with the most desirable. It should be noted that the direction of the line representing beginning students moves generally downward, rating high in unfavorable descriptions and low in favorable descriptions; whereas the line representing advanced
Fig. 11--A comparison of the quality of falsetto tone in beginning students and advanced students.
students moves generally upward, rating low in unfavorable descriptions and high in favorable descriptions.

Frisell labels this developed falsetto the "middle falsetto," which he defines as "... a muscular vocal coordination which permits a singer to completely unite the quality and action of both registers on any given tone in his range" (9, p. 44). After the singer has achieved some exchange of register action by use of the descending falsetto exercises outlined earlier the development of the "middle falsetto" permits a complete exchange of action (9, p. 43).

... It must first be understood that the singer does not possess the use of the middle falsetto until its presence is obtained from a well developed falsetto. The middle falsetto cannot be forced into action. It is usually the falsetto itself, but so changed in form that it automatically indicates a need to proceed further in the process of intensification until it is united with the full voice (9, p. 46).

He adds: "The function of the middle falsetto permits the singer to start a tone softly, without any weight, and slowly swell the volume until the fullest power of his vocal organ is accomplished, then, on the same breath, to diminish slowly to a pianissimo" (9, p. 46). This vocal exercise is commonly referred to as the messa di voce.

Use of Falsetto in Messa di voce

Reid says that once the basis for a secure vocal technique is well established, ". . . the final stage
concerns itself more and more with practice of the messa
di voce" (18, p. 152). As described by Frisell above, the
messa di voce is worked on a single tone, the object being
to swell and diminish smoothly.

Reid points out that "... the messa di voce does not
begin in the falsetto, or 'head' voice, but in the coordi-
nated falsetto" (18, p. 154). He explains:

If the 'break' is to be eliminated there is only
one way to do it, and that is to engage both reg-
isters at all times regardless of the dynamic
level of the tones being sung. At pianissimo, of
course, there will be very little 'chest' register
involvement, but there must be some. Without both
registers being simultaneously engaged it will be
absolutely impossible to avoid the 'break' that is
bound to occur at the moment tension is transferred
from one register to another (26, pp. 154-155).

Wood, in his explanations regarding the messa di voce
describes two methods of starting a note pianissimo. He
writes:

Firstly, you can start your pianissimo with a very
light heady falsetto; then you increase your breath
pressure as far as it will last comfortably in this
production, then, as you pass to mezzo forte, you
feel a kick in the larynx. There has to be much
patient study before the artist can know he is making
this change while the public is unaware of it...
When you pass back from forte to pianissimo, there
is the reverse process with similar difficulty.
Use your full set tone down to the greatest piano
before you change to heady falsetto (30, p. 87).

Wood states that the second way of performing the
messa di voce is to sing it all in one production (30,
p. 87). "This is the better and certainly the easier
method for the first two or three years" (30, p. 87).
He concludes that the first method described is used too exclusively in *messa di voce* "... for it keeps piano tone from carrying in a hall or theater. With the other method there is no change of production from fortissimo to pianissimo, only variation of breath pressure" (30, p. 87).

Since the *messa di voce* is closely associated with the register break and blending the registers, the reader should refer to the sections dealing with these subjects which appear earlier in this chapter.

Authorities agree that when the *messa di voce* can be sung smoothly without a "break" the beginning pianissimo will not be "false." Some refer to this beginning tone as the "coordinated falsetto," others call it "middle falsetto," and many call it "head tone." Some authorities still call this changed form of the falsetto quality "falsetto" which causes some confusion as to the meaning of the term. From the descriptions given by the various authors it would seem that they all mean the same thing--the falsetto is no longer "false" but has been changed by the addition of a "slender thread of chest voice" (Rogers) so that it can be blended with the lower register(s) without a break.

**Uses and Values of Falsetto in Developing the Male Speaking Voice**

Opinion is brief, both pro and con, concerning the uses of the male falsetto in developing the speaking voice.
Stanley, one of the few writers who expressed an opinion regarding this subject, writes:

The isolation, development and training of weaker group of laryngeal muscles, or, in other words, the unused register, is equally valuable in training both the speaking and singing voice. Thus, when a man's voice, which is too high-pitched, employs mixed lower registration, the isolation and development of the falsetto is often the key to the finding of the pure lower register (21, p. 272).

He adds: "Except for a piercing scream of agony, or for comic effects, no man should ever use the falsetto register in speech any more than he should in singing" (21, p. 272).

The questionnaire results revealed that of the thirty-three specialists responding to the question, "Is there a proper and best speaking range for voices?", three persons, 9.1 per cent, replied "no"; twenty-nine, 87.9 per cent, answered "yes"; and one person gave no opinion.

The responses of the thirty-three authorities concerning the question: "How would you go about correcting the range of a speaking voice if it were too low?" are shown in Table XII. The choice of answers and the response given are both indicated in the table.
TABLE XII

OPINIONS OF THIRTY-THREE VOCAL AUTHORITIES CONCERNING
THE CORRECTION OF AN UNNATURALLY LOW
RANGE OF A SPEAKING VOICE

<table>
<thead>
<tr>
<th>Choices</th>
<th>Per Cent in Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>develop the middle voice</td>
<td>21</td>
</tr>
<tr>
<td>head voice, developed and enforced</td>
<td>16</td>
</tr>
<tr>
<td>through falsetto exercises</td>
<td></td>
</tr>
<tr>
<td>head voice exercises alone</td>
<td>15</td>
</tr>
<tr>
<td>use of falsetto exercises</td>
<td>9</td>
</tr>
<tr>
<td>develop the lower voice</td>
<td>2</td>
</tr>
</tbody>
</table>

Nine specialists, nearly one-third, indicated that they would correct a speaking range which was too low by developing the middle voice. Seven per cent of the responses indicated that a low range was not a problem. One-fourth of the responses added other methods of correction, and five per cent gave no opinion.

Vocal authorities were given the following question in the questionnaire: "How important is developing proper speaking range in speaking voices in the training of lyric voices, dramatic voices, and all voices?" Table XIII shows the results.
TABLE XIII

OPINIONS OF THIRTY-THREE VOCAL AUTHORITIES
CONCERNING THE IMPORTANCE OF DEVELOPING
PROPER SPEAKING RANGE IN SPEAKING
VOICES IN THE TRAINING OF
VARIOUS VOICE TYPES

<table>
<thead>
<tr>
<th>Voice Type</th>
<th>Not Important</th>
<th>Moderately Important</th>
<th>Important</th>
<th>Very Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>lyric</td>
<td>6.1</td>
<td>3.0</td>
<td>27.3</td>
<td>36.3</td>
</tr>
<tr>
<td>dramatic</td>
<td>6.1</td>
<td>6.1</td>
<td>30.3</td>
<td>36.3</td>
</tr>
<tr>
<td>all voices</td>
<td>6.1</td>
<td>6.1</td>
<td>24.2</td>
<td>36.3</td>
</tr>
</tbody>
</table>

The questionnaire reveals that a majority of the vocal pedagogues who responded considered proper speech habits important to good singing. Table XIV shows the results.

TABLE XIV

OPINIONS OF THIRTY-THREE VOCAL AUTHORITIES
REGARDING THE IMPORTANCE OF PROPER SPEECH HABITS TO GOOD SINGING

<table>
<thead>
<tr>
<th>Degree of Importance</th>
<th>Per Cent Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>not important</td>
<td>3.0</td>
</tr>
<tr>
<td>moderately important</td>
<td>15.2</td>
</tr>
<tr>
<td>important</td>
<td>24.2</td>
</tr>
<tr>
<td>very important</td>
<td>54.5</td>
</tr>
</tbody>
</table>

A majority of the authorities, 54.5 per cent, considered proper speech habits to be very important to good singing; only 3 per cent felt that proper speech habits were unimportant to good singing.
The material for this section is almost completely drawn from the questionnaire results. Stanley believes the falsetto to be of help in separating the registers to remedy "mixed registration." He states that "mixed registration" is the cause of a higher pitched speaking voice and that the separation and exercising of the falsetto will strengthen this part of the voice so that the upper register action can combine with that of the lower register. This state of coordinated registration lowers the pitch range and allows the speaking voice to employ its full range (21, p. 272).

Summaries

The term register in reference to the voice is derived from the term organ register. It originally referred to the changes in quality in the organ caused by setting up different "stop" combinations.

Reid explains the differences in tone quality in the vocal registers as follows: Each new pitch and intensity requires a special alignment of the coordinative process in a state of perfect equilibrium. Such a state is seldom found in the beginning student. Thus, the problem of unifying the registers arises.

Authorities differ on the number of registers contained in the singing voice. Research by Wagner and Fields showed that most authorities feel that there are two.
registers. The questionnaire results showed that the largest per cent of authorities responding believed that there are three registers.

Vocal pedagogues differ in their naming of the registers. The questionnaire revealed that the largest per cent of the two-register authorities labeled them "chest-head." The largest per cent of the three-register authorities named them "chest-middle-head." Most of the authorities who divided the voice into four registers named them "chest-middle-head-falsetto."

Advocates of the one-register approach claim that each pitch-intensity pattern in the musical scale has a balance of registration unique to itself and argue that there is no such thing as a vocal register. Vennard calls this approach "idealistic."

Vennard refers to the three-register approach as "realistic" and says that they are most frequently called "normal, or chest," "head," and "falsetto."

The "hypothesis" of two registers, continues Vennard, states that every voice has potentially two octaves of "light mechanism" and two octaves of "heavy." They overlap by one octave.

Vennard calls the falsetto register in the male voice the "unused" register. Some authorities consider the falsetto voice to be a natural and important part of the
male singing voice. Others consider it unnatural and near-worthless.

A large majority of the vocal specialists responding to the questionnaire felt that the falsetto is a means to an end.

Authorities agree on the existence of "breaks" in most beginning students and concur that no form of artistic singing can occur as long as this "break" remains. Most authorities believe that the registers must be blended and coordinated.

According to Reid, the term "mixed registration" refers to improperly coordinated registers. Stanley considers "mixed registration" the worst fault in singing or speaking.

The single blended register in a singer's voice is considered the hallmark of artistic performance. The term "coordinated registration" refers to the correctly blended registration. Questionnaire results showed that the largest per cent of the authorities felt that the falsetto voice could be blended into the lower register without a break.

Reid states that technical development in the male voice begins with work in the falsetto, or upper register and recommends the use of the "oo" vowel to develop the falsetto. Indication that the falsetto voice is ready
to be more strongly coordinated with the chest register is greater clarity and less breathiness in the falsetto tone.

Frisell explains the unification of the registers in much the same way. In addition, he gives specific exercises with specific directions on how to sing them. He states that all beginning exercises must be sung in a downward direction and recommends the single tone sustained softly as the first exercise.

In the questionnaire results the "oo" vowel was rated the most effective vowel in falsetto exercises. The "ah" vowel was second. The majority of the authorities indicated the use of falsetto exercises in developing the head voice and their success in using falsetto exercises to be greatest with lyric voices.

Authorities advocating the coordination of the falsetto with the lower register in blending the registers usually believe that when the falsetto is coordinated it will have disappeared leaving the head voice.

Clippinger feels that use of falsetto exercises has a distinct value in the training of singers who have forced the heavy chest voice up until the upper notes can be sung only with extreme effort. Freemantel writes that the soft head voice of falsetto can be used as an approach to full rich top tones if used in the right manner.
Figure 11 showed questionnaire results indicating a wide difference in the falsetto voice in beginning and advanced students. The quality of the falsetto tone in beginners was generally poor while the falsetto tone in advanced students was considerably better.

As described by Frisell the *mesa divoce* is sung on a single tone, the object being to swell and diminish smoothly. Reid points out that the *mesa divoce* begins in the coordinated falsetto.

Authorities agree that when the *mesa divoce* can be sung smoothly without a "break" the beginning pianissimo will not be "false." Some refer to this beginning tone as the "coordinated falsetto," others call it "middle falsetto," many call it "head tone," and some still refer to it as "falsetto." From the descriptions given by the various authors, it would appear that they all mean the same thing.

A large majority of specialists responding to the questionnaire felt that there was a proper and best speaking range for voices. To correct an unnaturally low range, the largest per cent indicated that they would develop the middle voice. Thirty-six per cent of the authorities responding indicated that developing the proper range in speaking voices was very important in the training of all voice types. Similarly, a majority of the responding
vocal pedagogues felt that proper speech habits were very important to good singing.

Stanley considers the falsetto to be of help in separating the registers to remedy "mixed registration," which, he claims, causes a higher pitched speaking voice than is correct. Exercising the falsetto will help to produce "coordinated registration," thus allowing the speaking voice to employ its full range.

From the questionnaire results and Stanley's statements it can be seen that most authorities consider the singing and speaking voices to be highly related, each a great influence, either negative or positive, on the other.
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CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary and Conclusions

The purpose of this study was to determine the value of the falsetto voice in training the male singer. The word "falsetto" refers to the "high pitched metallic voice produced in the top register with artificial effect" or "that voice of a man which lies above his normal speaking range" (1, p. 22).

It is apparent from writers of the day that falsetto was in use during the latter part of the Middle Ages. Important sources of the bel canto period all stressed the importance of blending the falsetto voice with the lower register. Manuel Garcia, inventor of the laryngoscope in 1855, recognized three vocal registers: "chest," "falsetto," and "head," in that order in both men's and women's voices.

Present day authorities agree on how the falsetto is produced but do not agree on the exact quality of the falsetto. The wide differences in opinion indicate that two entirely different types of falsetto are involved—one, a thin, breathy, static tone, the other a strong, powerful tone capable of modification and development.
The mutational chink and damping effects occurring in the production of falsetto remain mysteries of the vocal art.

A register is the "series of tones of like quality within the compass of a voice which are produced by a particular adjustment of the vocal cords. In singing up the scale the register changes at the point where the singer readjusts the vocal cords to reach the higher note" (2, p. 524).

Authorities differ in their opinions concerning the number of registers contained in the singing voice. Some research indicates that the two-register approach is most prevalent among authorities while the questionnaire results showed the largest per cent of the specialists felt that the voice contained three registers.

Vennard considers the male falsetto to be the "unused register," explaining that most men, in an attempt not to sound effeminate, have cultivated a tense, heavy production. Other authorities consider the falsetto voice to be a natural and important part of the male singing voice. Others consider it unnatural and without value. A majority of the vocal specialists responding to the questionnaire felt that the falsetto serves as a means to an end. Seven authorities felt that the falsetto voice was of little or no value in cultivating the male singing voice. Of these seven authorities four had never used falsetto exercises.
Authorities agree on the existence of "breaks" in most beginning students and concur that the single blended register is necessary for an artistic performance. "Mixed registration" and "coordinated registration" are similar in that there is no break. However, "mixed registration" refers to improperly coordinated registers, whereas the latter refers to correctly blended registration.

Some authorities believe that the male falsetto is very important in blending the registers and recommend exercises to develop the falsetto. Others feel that the male falsetto cannot be blended into the lower register. Questionnaire results showed that the largest per cent of the vocal pedagogues felt that a blending could be accomplished.

In their overall vocal pedagogy twelve specialists, or thirty-six per cent, felt that falsetto exercises were not important. Forty-two per cent of these twelve had never used falsetto exercises.

Vocal pedagogues responding to the questionnaire indicated that the "oo" and "ah" vowels were most effective in falsetto exercises. Most of these authorities have used falsetto exercises in developing the "head voice" and have had greatest success with lyric voices.

Many authorities consider the male falsetto to be the underdeveloped head voice. Questionnaire results indicated
a wide difference in the falsetto voice in beginning and advanced students. The quality of the falsetto tone in beginners was generally poor while the falsetto tone in advanced students was considerably better.

Authorities agree that when the *messa di voce* can be sung smoothly without a "break" the beginning pianissimo was not falsetto. Some refer to this beginning tone as the "coordinated falsetto," others call it "middle falsetto," many call it "head tone," and some still refer to it as "falsetto." It appears that these terms all apply to the same type of tone.

Most specialists responding to the questionnaire felt that there was a proper and best speaking range, that proper range in speaking voices was very important in the training of all voice types, and that proper speech habits were important to good singing. It is apparent that most authorities consider the singing and speaking voices to be highly related with each greatly influencing, detrimentally and beneficially, the other. Though authorities generally have written little concerning the use of falsetto in correcting speaking range, Stanley states that exercising the falsetto will help to produce "coordinated registration," thus allowing the speaking voice to employ its full range.

On the basis of this study, the following conclusions can be drawn.
1. Authorities agree on how the falsetto is produced but do not agree on the exact quality of the falsetto.

2. Variance in terminology has contributed to the divergent opinions concerning the tonal qualities of the falsetto voice.

3. Authorities agree on the existence of "breaks" in most beginning students and concur that artistic singing is impossible until these "breaks" are eliminated. However, authorities do not agree on the method by which to eliminate the "breaks."

4. Falsetto advocates believe that, once being coordinated with the lower register, the falsetto no longer retains the qualities associated with it.

5. Most authorities agree that the speaking voice and singing voice are produced by the same mechanism and therefore greatly influence one another.

Recommendations

The conclusions for this study imply areas for further study and attention. Therefore, the following recommendations can be made:

1. Further study should be made of the acoustical characteristics of the falsetto sound with special emphasis on the overtones.

2. Further study should be made concerning the difference between falsetto and head voice.
3. Further study should be made of vocal terminology, particularly of that concerning the registers, with the thought of standardization.

4. Teachers should be aware of the acoustical characteristics of the falsetto sound to better determine its use and value.

5. Teachers should be aware of the possibilities of falsetto exercises in correcting some vocal faults in students.

APPENDIX A

VOCAL AUTHORITIES

The questionnaire in Appendix B was sent to the following vocal authorities:

*Abbott, Thomas D., 2718 Kentucky Ave. No., Minneapolis, Minn.
Abelson, Norman, 608 Vernon Street, Decorah, Iowa
Anderson, H. Edison, Prairie View College, Prairie View, Texas
Appelman, D. Ralph, 1325 E. Davis, Bloomington, Indiana
Austin, David, 247 Elm Park Ave., Elmhurst, Illinois
Bailey, Exine A., University of Oregon, Eugene, Oregon
Bowlus, Robert E., Ohio Wesleyan University, Delaware, Ohio
Boyter, Haskell L., 1135 Lanier Blvd., Atlanta, Georgia
Bradburn, Wesley F., 635 Brier Street, Kenilworth, Illinois
*Brown, Oren L., 386A No. Euclid, St. Louis, Missouri
Bumgardner, Arthur, 3500 Columbus Ave., Minneapolis, Minn.
Burton, W. L., 519 North President, Wheaton, Illinois
Carapetyan, Caro, 6423 Dykes Way, Dallas, Texas
Carley, James, 3055 North Delaware, Indianapolis, Indiana
*Cepparo, Mrs. Lois Huff, 6310 Rodgerton, Hollywood, Calif.
*Coffin, Berton, 1240 Holly Place, Boulder, Colorado
*Crawford, Hadley R., 6101 Ward Parkway, Kansas City, Missouri
*Davis, Kenneth, Harding College, Searcy, Arkansas

*Denotes persons who returned the completed questionnaire.

106
Day, Larry J., 335 South 38th, Boulder, Colorado
*Deacon, Stanley, University of Missouri, Kansas City, Mo.
Deen, Hugh G., 162 Griffin Drive, Carrollton, Georgia
Dusey, Philip A., University of Michigan, Ann Arbor, Michigan
*Dunn, James P., 1119 Highland Ave., Mankato, Minnesota
*Eberl, William A., 1428 N. Farwell Ave., Milwaukee, Wisconsin

Ehrhart, Gertrude, 11 Tetlow Street, Boston, Mass.
Emile Anders, 6 Sunrise Terrace, Staten Island, New York

**Engelstad, Paul, McMurry College, Abilene, Texas
Fields, Victor, 2109 Broadway, New York, New York
*Fischer, William, 814 Haid Court, Manhattan, Kansas
Foltz, Donald G., 302 E. 5th Street, Superior, Wisconsin
*Foote, Bruce, University of Illinois, Urbana, Illinois
*Geist, Melvin H., Orchard Heights Road, Salem, Oregon
Gilliland, Dale, 388 Brynhild Road, Columbus, Ohio

**Grooters, Robert, 245 Ogden Ave., Swarthmore, Pa.
Hakola, Melvin, 439 Adrian Drive, Berea, Ohio
Harris, Edison D., 4643 41st N. E., Seattle, Washington
*Harrison, Frank, 9155 William Court, Chicago, Illinois
Hinds, Walter R., Pleasant Valley, Rt. #3, Winona, Minn.
Hirschorn, Rosamond, 934 Oxford Drive, Emporia, Kansas
Hisey, Philip D., 406 State Street, Grand Forks, North Dakota
*Jennings, Robert, University of South Dakota, Vermillion, S.D.

**Denotes persons who returned the completed questionnaire but too late to be included in the tables.
Jewell, Lyle, Union College, Lincoln, Nebraska
Johnson, Violet, 200 West 15th St., New York, New York
Kliwer, Archie, 3032 Radaince Road, Louisville, Kentucky
LeBar, Franklin A., 905 Michael, Lake Charles, La.
Lockery, Glen, University of Idaho, Moscow, Idaho
Lott, Josephine, 184 Myrtle Ave., Allendale, New Jersey
Lunkley, Bruce, Austin College, Sherman, Texas
Martin, Leonard, 943 E. 18th St., Spokane, Washington
Miller, Richard, 221 Forest, Oberlin, Ohio
Nicholas, Louis, 207 Craighead Ave., Nashville, Tennessee
Norville, Hubert, 125 North Edward, Decatur, Illinois
Osborn, Wendell, Southwestern University, Georgetown, Texas
Perry, Frank, Post Office Box 149, Lorman, Mississippi
Peterson, Douglas, Monmouth College, Monmouth, Illinois
Richmond, Edward, Adams State College, Alamosa, Colorado
Rogers, Carl, Box 411, College Station, Murray, Kentucky
Schoep, Arthur, 4824 E. 18th Ave., Denver, Colorado
Silberg, Inez, 2517 Warwick Drive, Oklahoma City, Oklahoma
Simmons, Otis, 1140 Mississippi St., Lawrence, Kansas
Smalley, David, State College of Iowa, Cedar Falls, Iowa
Smith, Orcenith, University of Oklahoma, Norman, Oklahoma
Snyder, Ellis, 95 Eastmoor, Columbus, Ohio
Sollenberger, Arlene, Texas Christian University, Fort Worth, Texas
Stark, Herald, 943 Iowa Ave., Iowa City, Iowa
Stewart, Elizabeth, 360 N. 6th St., Indiana, Pa.
Stults, Walter Allen, Box 3501, Kleberg Sta., Corpus Christi, Texas

Summerside, Frank, 234 2nd Ave., LeMar, Iowa

*Taylor, Bernard, 464 Riverside Drive, New York, New York
*Taylor, Harry F., 606 W. Alameda St., Roswell, New Mexico
*Thompson, C. Paul, 1203 Crawford Drive, Billings, Montana
Thomson, John, University South Dakota, Vermillion, S. D.
Toren, E. Clifford, 5040 N. St. Louis, Chicago, Illinois
*Trump, Karl, 801 N. Bever St., Wooster, Ohio
*Vennard, William D., 5451 Weatherford, Los Angeles, California

Vine, Richard W., 2918 Alphouse Place, Honolulu, Hawaii
Walton, Raymond, Florida State University, Tallahassee, Florida

Waterstripe, Robert, 143 Ringland Road, Hastings, Nebraska
*Weldy, Dwight E., 1725 So. 13th, Goshen, Indiana
*Westerman, Carol F., 715 Granger, Ann Arbor, Michigan
*Whitlock, Weldon, 393 No. Euclid, St. Louis, Missouri
Wood, James H., 1315 S. Mulberry, Sioux City, Iowa
Zambara, Edward, 7035 Stockton Drive, Knoxville, Tennessee
APPENDIX B

QUESTIONNAIRE

I. Questions concerning the singing voice

A. Registers

1. How many registers are there in the singing voice? (circle one) 1 2 3 4

2. How do you label these registers? (chest, middle, head, etc.)

B. Falsetto--which of these definitions would you be more inclined to agree with? (Place a check beside the one or ones you agree with.)

   1. (Websters) An artificial method of singing used by male singers, particularly tenors, to obtain notes above the ordinary range of their voice.

   2. (Harvard) According to Negus, in ordinary phonation the vocal cords vibrate as a whole; in falsetto, the extreme outer edges appear to be the only parts in vibration.

   3. (Victor Fields) A high pitched metallic voice produced in the top register with artificial effect. That voice of a man which lies above his normal speaking range; also, the human voice of the upper or head register whether male or female.

   4. If none of these are agreeable to you please feel free to write your own definition. Use the space provided below and the back of this sheet if necessary.

C. Falsetto (generally)

1. The falsetto voice is: (check one or more)

   a. a means to an end
   b. an end in itself
   c. of little or no value in cultivating the male singing voice
   d. non-existent
   e. ________
2. The blending of the falsetto voice into the lower register(s): (check one or more)
   a. can be accomplished without a noticeable break.
   b. can be accomplished but with a break.
   c. cannot be accomplished under any circumstances.
   d. can be accomplished with or without a break in some voices.
   e. ________

3. Have you ever used exercises involving the falsetto voice in: (check one or more)
   a. developing head voice
   b. developing middle voice
   c. blending the registers
   d. ________
   e. (If you have never used falsetto exercises check here)

4. How would you rate your success with falsetto exercises with: (Place an X along the scale)

<table>
<thead>
<tr>
<th>Lyric voices</th>
<th>Dramatic voices</th>
<th>All voices</th>
<th>__________</th>
</tr>
</thead>
</table>

5. How would you rate the following sounds in degree of effectiveness in falsetto exercises? (1 equals best)
   a. Ah
   b. Eh
   c. EE
   d. Oh
   e. OO
   f. Humming
   g. ________
6. In your overall vocal pedagogy the use of falsetto exercises is: (Place an X along scale)

<table>
<thead>
<tr>
<th>Not Important</th>
<th>Moderately Important</th>
<th>Important</th>
<th>Very Important</th>
</tr>
</thead>
</table>

7. How would you describe the quality of the falsetto tone in . . . . . . . . Beginners Advanced students

a. Breathy
b. Out of tune
c. Weak
d. Flute like
e. Clear
f. Piercing
g. Strong
h. Resonant
i. __________
j. __________

(Check beside each description and under each category that you think is so.)

II. Questions concerning the speaking voice

A. How important is proper speech habits to good singing? (Place an X along the scale.)

<table>
<thead>
<tr>
<th>Not Important</th>
<th>Moderately Important</th>
<th>Important</th>
<th>Very Important</th>
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</thead>
</table>

B. Is there a proper and best speaking range for voices? Yes __ No __

C. How would you go about correcting the range of a speaking voice if it were too low? (check one or more)

1. Use of falsetto exercises
2. Head voice, developed and enforced through falsetto exercises
3. Head voice exercises alone
4. Develop the middle voice
5. Develop the lower voice
6. If you feel this is not a problem check here
7. __________
8. __________
D. How important is developing proper speaking range in speaking voices in the training of: (place X on the scale)

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<thead>
<tr>
<th></th>
<th>Not Important</th>
<th>Moderately Important</th>
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<th>Very Important</th>
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<td>1. Lyric voices</td>
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<td>2. Dramatic voices</td>
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<td></td>
</tr>
<tr>
<td>3. All voices</td>
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<tr>
<td>4. ____</td>
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If you would like a copy of the results of this survey check here.
APPENDIX C

LETTER OF TRANSMITTAL

1113 Collier Street
Denton, Texas, 76201
June 10, 1966

Dear

Since you are a recognized authority in the field of vocal pedagogy, I am seeking your opinions concerning the general characteristics of the falsetto voice and the value of the male falsetto in training the male singing voice.

I feel that there is a definite need for a systematic collection of pedagogical and therapeutical ideas concerning the male falsetto and its general characteristics. Therefore, I have undertaken this study as a Masters degree thesis at North Texas State University.

Brevity and clarity have been keynotes in the construction of the questionnaire. Answering will take a minimum of time on your part. I hope that you will take time to answer promptly. Please return the completed questionnaire in the enclosed envelope as soon as possible.

Upon completion, the thesis will be on file at the North Texas State Library, where it will be available on inter-library loan. If you so desire, I will send you the results of the survey taken from you and other authorities in the field of vocal pedagogy.

Thank you very much.

Sincerely,

Samuel E. Coryell

Samuel E. Coryell
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