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The Application of Bel Canto Concepts and Principles to Trumpet Pedagogy and Performance.

Malcolm Eugene Beauchamp

Louisiana State University and Agricultural & Mechanical College

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THE APPLICATION OF BEL CANTO CONCEPTS AND PRINCIPLES TO TRUMPET PEDAGOGY AND PERFORMANCE

The Louisiana State University and Agricultural and Mechanical Col. Ph.D. 1980

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THE APPLICATION OF BEL CANTO CONCEPTS AND PRINCIPLES TO TRUMPET PEDAGOGY AND PERFORMANCE

A Dissertation

Submitted to the Graduate Faculty of the Louisiana State University and Agricultural and Mechanical College in partial fulfillment of the requirements for the degree of Doctor of Philosophy

in

The School of Music

by

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TABLE OF CONTENTS

ACKNOWLEDGEMENTS ........................................ ii

ABSTRACT ................................................. vi

Chapter
I. INTRODUCTION ...................................... 1
   Statement of the Problem ......................... 1
   Significance of the Problem .................... 2
   Delimitations ...................................... 3
   Definition of Terms ................................ 5
   Method of Investigation .......................... 5

II. A REVIEW OF SELECTED BEL CANTO LITERATURE. . 8
   Definition of Bel Canto ........................... 8
   A Review of Selected Bel Canto Primary Sources . . . . 16
   A Review of Selected Bel Canto Secondary Sources. .... 53
   Summary ............................................. 99
   Notes .................................................. 108

III. A REVIEW OF SELECTED BRASS AND TRUMPET LITERATURE . . . . . 120
    Periodicals ........................................ 121
    Texts Designed for Brass Techniques Classes. .... 147
    Brass Texts ........................................ 150
    Trumpet Texts ..................................... 167
    Dissertations and Theses .......................... 178
    Conclusions ........................................ 191
    Notes ................................................ 198

IV. THE APPLICATION OF BEL CANTO PEDAGOGICAL PRINCIPLES TO TRUMPET PEDAGOGY AND PERFORMANCE THROUGH PRACTICAL EXERCISES. . . . . . . 210
    Authentication and Substantiation to Current Practices in Brass Pedagogy. . . . . . 257
    Conclusions ........................................ 261
    Notes ................................................ 263

iii
V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS. . . . 264
SELECTED BIBLIOGRAPHY. . . . . . . . . . . . . . . . 268
APPENDIX . . . . . . . . . . . . . . . . . . . . . . . . . 277
VITA . . . . . . . . . . . . . . . . . . . . . . . . . . . . 279
LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Corri's Lesson I</td>
<td>33</td>
</tr>
<tr>
<td>2.</td>
<td>Corri's Lesson II</td>
<td>33</td>
</tr>
<tr>
<td>3.</td>
<td>Corri's Lesson II</td>
<td>34</td>
</tr>
<tr>
<td>4.</td>
<td>Corri's Lesson II</td>
<td>34</td>
</tr>
<tr>
<td>5.</td>
<td>Corri's Lesson III</td>
<td>34</td>
</tr>
<tr>
<td>6.</td>
<td>Corri's Lesson VI</td>
<td>35</td>
</tr>
<tr>
<td>7.</td>
<td>Corri's Lesson XII</td>
<td>36</td>
</tr>
<tr>
<td>8.</td>
<td>Corri's Lesson XVII</td>
<td>37</td>
</tr>
</tbody>
</table>
ABSTRACT

Bel canto is a term of nebulous meaning and inconsistent usage. Probably the most comprehensive interpretation of bel canto is an ideal of vocal excellence, a vocal technique, and a style of performance identified with the seventeenth and eighteenth centuries. Recent publications concerning vocal pedagogy and performance practices illustrate an efflorescence of interest in bel canto. The significance of bel canto to contemporary vocal pedagogy has become a topic for theses and dissertations. In view of the revived interest in bel canto and its significance to contemporary vocal pedagogy, it is apparent that the teachings of the old bel canto masters were based on sound pedagogical principles. It is conceivable that these pedagogical principles would have significance for other disciplines as well.

The first purpose of this study was to establish the significant pedagogical concepts and principles of bel canto. In order to establish these concepts and principles, a review of selected primary and secondary sources of bel canto was implemented. As a result of this review, the following ideal performance concepts and objectives of bel canto were derived:
1. Demonstrates a beautiful tone quality at all times.

2. Demonstrates agility and virtuosity in performance.

3. Demonstrates a smooth, pure legato and sustained unbroken phrase.

4. Demonstrates perfect intonation as a result of proper tone production.

5. Demonstrates an unhindered deliverance of musical expression.

These five bel canto concepts of performance provided motivation for the formulation of the following bel canto pedagogical principles:

1. The Bel Canto Principle of Ear Training

2. A Graded Progression of Exercises and Techniques

3. The Absolute Perfection of Each Level Before Progression to the Next

4. Problem Isolation

5. The Comprehension of the Method and Its Application

The second purpose of this study was to establish the feasibility of a comparison of bel canto pedagogical concepts and principles to corresponding pedagogical concepts and principles derived from brass and trumpet literature. In order to accomplish this purpose, a review of selected books, dissertations, theses, and periodicals concerning brass pedagogy was implemented. The result of this review of selected brass and trumpet pedagogical literature demonstrated that the derived...
concepts and principles of bel canto were also fundamental to effective brass pedagogy. Therefore, it was determined that there is indeed the feasibility of a comparison of bel canto pedagogical concepts and principles to brass and trumpet pedagogy.

The final purpose of the study was the application of bel canto pedagogical concepts and principles to trumpet pedagogy and performance. This purpose was accomplished through a series of practical musical exercises for the trumpet. These practical exercises for trumpet were designed in order to benefit serious trumpet students and instructors in solving various performance problems. The practicality of the exercises was demonstrated through their application to selected existing trumpet studies. The exercises were accompanied by a text which indicated the proper utilization of the exercises within a total program of trumpet study. In order to authenticate and substantiate the application of bel canto pedagogical concepts and principles to current brass pedagogical practices, a number of brass authorities were asked to evaluate the study. The result of this evaluation determined that the study was in accord with current brass pedagogical practices.

The application of bel canto pedagogical concepts and principles to trumpet pedagogy through practical exercises does not purport to establish either a new
or a complete method for trumpet. On the contrary, the purpose of this study was to provide insight into pedagogical techniques and a philosophy that facilitates the solution of certain facets of trumpet performance through solution of musical problems.
CHAPTER I

INTRODUCTION

Bel canto is a term of nebulous meaning and inconsistent usage. Probably the most comprehensive interpretation of bel canto is an ideal of vocal excellence, a vocal technique, and a style of performance identified with the seventeenth and eighteenth centuries. Recent publications concerning vocal pedagogy and performance practices illustrate an efflorescence of interest in bel canto. The significance of bel canto to contemporary vocal pedagogy has become a topic for theses and dissertations. In view of the revived interest in bel canto and its significance to contemporary vocal pedagogy, it is apparent that the teachings of the old bel canto masters were based on sound pedagogical principles. It is conceivable that these pedagogical principles would have significance for other disciplines as well.

Statement of the Problem

The first purpose of this study was to establish the significant pedagogical principles of the bel canto masters. In order to establish these principles, a review of selected literature by bel canto masters and their more
recent proponents was implemented. The ensuing results of this research not only established a number of significant bel canto pedagogical principles, but a better understanding of these principles and their significance was effectuated.

The second purpose of the study was to establish the feasibility of a comparison of bel canto pedagogical principles with corresponding pedagogical principles derived from selected brass and trumpet literature.

The final purpose of the study was to apply the bel canto pedagogical principles to trumpet pedagogy and performance through a series of practical exercises for trumpet. These practical exercises for trumpet were derived in order to benefit serious trumpet students and instructors in solving various performance problems. The practicality of the exercises is demonstrated through their application to a selected number of existing trumpet etudes. In addition, an accompanying text indicates the proper utilization of the exercises within a total program of trumpet study.

Significance of the Problem

Recent publications of the results of scientific experiments involving new and innovative research techniques utilizing, for example, neuro-muscular electromyograms, video-fluorographs, spectrographs, and x-ray, have, no doubt, made important and significant contributions to
brass pedagogy. These new scientific research techniques also illustrate the current trend in brass pedagogy toward concentrated interest in the physical and mechanical aspects of performance. The emphasis of this study involving the application of bel canto principles to trumpet pedagogy and performance is not on the physical or mechanical, but on the study of music through trumpet study and performance. The significance of this study is to provide insight into an approach to trumpet pedagogy which emphasizes the study of musical concepts and music itself.

A primary result of this study was the formulization of a better understanding of the pedagogical principles of bel canto. A second primary result was the application of these pedagogical principles to trumpet pedagogy and performance which provides insight into teaching techniques and concepts that should significantly contribute to brass pedagogy. As a third primary result of this study, the practical exercises for trumpet derived from bel canto pedagogical principles were designed to benefit serious trumpet students in solving various performance problems.

Delimitations

In the establishment of the pedagogical principles of bel canto, all available material related to the subject was researched. These materials included books, dissertations and theses, periodicals, and journals. The review of trumpet and brass literature was limited to selected
books, dissertations and theses, periodicals, and journals that served to correlate and substantiate the application of bel canto pedagogical principles to trumpet pedagogy and performance.

The derivation of practical exercises for trumpet from bel canto pedagogical principles is intended for use by serious students and instructors of the trumpet. These exercises were designed for trumpet students whose musical experience includes a working knowledge of the following fundamentals of music theory: (1) symbols of music, chromatic signs, staff and ledger lines, bar lines, repeat signs, the G clef, key and meter signatures, pitch names and placement on the staff and on ledger lines above and below the staff; (2) those basic rudiments concerning the identification and understanding of melodic and rhythmic performance; and (3) musical terms that delineate tempo, style, and dynamics. Certain procedures and exercises inherent to these practical exercises are appropriate for use by students at the beginning level of study. However, due to the nature of many of the musical concepts permeating this study, the more mature student would probably derive the most benefit from the study of these techniques. Due to the subjective nature of vibrato, this aspect of trumpet performance was not included in this report.

The transference of bel canto pedagogical principles to trumpet pedagogy through practical exercises does not purport to establish either a new or a complete method for trumpet. However, it does provide insight into pedagogical
techniques and a philosophy that should have significant implications for trumpet pedagogy.

Definition of Terms

The inherent problem in relating the nomenclature of one artistic discipline to another did not present any difficulty in this study. However, the usage of terminology with an unusual or otherwise ambiguous connotation is defined and explained in the appropriate section of the report.

Method of Investigation

The procedures used in the preparation of this report include historical, descriptive, and philosophical research, descriptions of pedagogical principles, and the writing of original exercises for trumpet. Therefore, the preeminent research concept governing this study was applied research.

Through a review of related literature in Chapter II, the pedagogical principles of the bel canto masters are presented and discussed. Chapter III is a review of selected brass and trumpet literature which substantiates and correlates the application of bel canto pedagogical principles to trumpet pedagogy and performance. Chapter IV includes a series of practical exercises for trumpet derived from bel canto pedagogical principles and applied to various facets of trumpet study and performance. A text accompanies
each exercise and indicates the proper procedure for study and use within the student's total program of study. Following the practical exercises for trumpet is a demonstration of the application of the exercises to a selected number of existing etudes from the trumpet repertoire.

In an attempt to authenticate and substantiate the application of bel canto pedagogical principles to current brass pedagogical practices, a number of authorities in the field of brass pedagogy were asked to critique Chapter IV of this report. These brass authorities were asked to evaluate the study with the following questions in mind:

1. Is the theoretical basis of these exercises in accord with current brass pedagogical theory?
2. Could these exercises be effective in solving the particular facets of trumpet performance for which they were designed?
3. Could these exercises be beneficial to serious student and instructors of the trumpet?
4. Could these exercises and the procedures by which they are to be studied be supplementary or complementary to current materials used by brass instructors?
5. Could the exercises be applicable to the various stages of student development and at what levels of development could they be applicable?

In addition, each person evaluating the study was encouraged to make additional comments at his own discretion. In an attempt to make the study truly authoritative, all suggestions for improvement or revision resulting from the critiques were incorporated into the final draft. A summarization of these critiques was included in the

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conclusion of Chapter IV. In addition, a sample questionnaire was included in the appendix to this report. Chapter V consists of conclusions and recommendations for future research.
CHAPTER II

A REVIEW OF SELECTED BEL CANTO LITERATURE

Definition of Bel Canto

Bel Canto is a difficult term to define in that authoritative references disagree with regard to certain aspects of its definition. Literally it means "beautiful singing." Invariably the term is used in a description of the "Golden Age of Song" during the seventeenth and eighteenth centuries.\(^1\) Cornelius Reid, in *Bel Canto Principles and Practices*, made the following statement concerning its definition:

> In the century preceding our own, and more especially the seventeenth and eighteenth centuries, the art of Bel Canto singing had a very real meaning, both as to the singing style itself and with regard to the basic principles of tone production resulting in that style.\(^2\)

However, in a survey of references, the term was not included in either musical or general dictionaries until after 1900. Also, the term does not appear as a particular expression during the period with which it was associated.\(^3\)

Other discussions of the term speak of its application to the seventeenth and eighteenth-century Italian style of singing and that in the nineteenth century it came to be distinguished from the German declamatory
Further discrepancies appear in the definition of bel canto in German lexicons which refer to a wider application of the term.

They admit that its standard to tone quality and vocalization have been an integral part of the Italian methods of singing from the seventeenth century to date. They also admit that German style of singing has placed more emphasis on dramatic and declamatory elements. However they make the point that the German style of singing also calls for beautiful tone and virtuosity.

Another conflicting definition is expressed in an article by Mary Craig concerning the writings of Michele Fonticoli. Fonticoli studied in Italy and was a teacher, singer, and author of textbooks on various principles of singing. Craig pointed out that Fonticoli made a distinction between the terms "bel canto" and "buon canto."

Buon Canto is the combination of words and music, the integrated song. . . . This type of composition and its teaching arose with Giulio Caccini (1546-1614), was defined by Monteverdi, the founder of the opera, and it was amplified by Handel, Gluck and Mozart, . . . Bel Canto is defined as being a development from instrumental music. . . . The singer began to imitate the musical instruments, and the human throat became an instrument of technical music. This type of singing had its full development with Spontini, Rossini, Cimarosa, and Bellini, and it was called bel canto music.

In the buon canto the word is as important as the music, while in the bel canto music is more important than the word. Bel canto is the acrobatics of the vocal organ, . . . The term "bel canto" should pertain only to the style of vocal music and not to the method of training.
A further conflicting definition is expressed by contemporary authority Weldon Whitlock.

Let me state here that the term bel canto refers more to a "period" of singing than to any definite school of singing. However, through long usage we are inclined to associate it with a style, or particular school of singing. . . . We generally accept the bel canto period as representing the very best in singing, for these principles as set down by the teachers of the era have more than withstood the test of time.

Bel canto is properly associated with the florid and embellished style of singing at the turn of the sixteenth century. Mm. Ida Franca, in her book, Manual of Bel Canto, tells us that bel canto by the seventeenth century flourished and dominated all vocal music, and by the middle of the nineteenth century it began its decline, about 1830, . . .

Its zenith was reached in the works of Handel, Mozart, Bellini, Donizetti and Rossini, . . .

Giulio Silva, in an article titled "The Beginnings of the art of 'Bel Canto,'" agreed with Whitlock's definition and offered the following historical perspective:

That period in the history of Italian music which is called "the golden age of bel canto" is not marked by exact boundaries; it embraces a span of approximately two hundred years, from the middle of the seventeenth century to the middle of the nineteenth.

It was called thus because the singers and composers of the time devoted, first and foremost, to the pure musical beauty of melody and the singing voice; . . .

It is said, and may also be read in many books, that bel canto really originated with Giulio Caccini, who is considered by many to be the founder--the inventor, so to speak of the aria for a solo voice with instrumental accompaniment, and with the establishment of the melodrama.
through the initiative of the Florentine camerata. This means, that the origin of bel canto is attributed to the solo song and dramatic recitative.

In an article concerning opera and contemporary opera singers, George H. Reeves made the following statements concerning bel canto and its meaning:

One reads with wonderment of those legendary singers of the early nineteenth century, who could go down to a low F or up to an easy high C with no break in the voice. They were the epitome of the bel canto tradition; for them and their kind Vincenzo Bellini composed operas like 'Il Pirato,' 'Beatrice di Tenda,' 'I Puritani' -- and, 'Norma.'

Years later, when bel canto had given way to Wagnerian declamation and Italian verismo, soprano Lilli Lehmann declared that she would rather sing three Brunnhildes in a row than one Norma. Caruso undertook the role of Arturo in 'I Puritani' only once in his career. Too taxing, declared the greatest of all twentieth-century Italian tenors.

BEL CANTO MEANS simple 'beautiful singing,' but it encompasses a technique and style by which that beautiful singing is achieved.

Edward Foreman defined bel canto in terms of the singers ability to sing with style and good taste. He made the following statements in the article "Bel Canto: A New Definition":

What, then, is bel canto? We use it to mean 'good singing,' but it is far more than fine vocal emission. It is style, the delivery of the text with clarity, understanding and sympathetic color, as well as ornaments carefully selected to underline the meaning of the text.

Bel canto means to sing with style; it presupposes that the instrument is at the singer's command, and that the singer has a sense
of style which will enable him to perform any music as the composer intended it to be performed, whether it be Scarlatti or Schoenberg.11

Ida Franca refuted the idea that bel canto is a method and considered it to be a style of music that evolved from the medieval discant. She wrote the following:

Many people believe that 'Bel Canto' is the famous Italian singing method of bygone days. Instead, and although Bel Canto means literally beautiful singing, it is by no means the terminology for any method of voice production, but refers to the superb polyphonic and melismatic (florid, embellished, ornamented) style of music that emerged from the medieval crude polyphonic music—the discant.12

The International Cyclopedia of Music and Musicians defined bel canto in terms that illustrate a distinction in bel canto technique and a technique with emphasis on dramatic and emotional concepts. The entry is as follows:

Bel canto (Italian). [Literally 'beautiful song.'] The term is applied to the traditional manner of cultivating and using the voice, and in modern usage to distinguish between a somewhat 'instrumental' employment of vocal technique, with first consideration given beauty of tone, freedom of production, perfection of legato and facility in ornamental phrases, and that singing in which dramatic or emotional concepts are uppermost, often at the expense of tonal perfection.13

As stated above, the term "bel canto" was not used in the seventeenth and eighteenth centuries to denote the particular definition with which it is now associated. Further, dictionaries did not include its definition until
after 1900. Considering the cited contradictions in definition and the diverse usage of the term, it seems that an investigation into the origin of the term is warranted. However, it is not within the scope of this report to include research into the numerous books, periodicals, and dictionaries of music history for the origin and usage of bel canto. However, it would be pertinent to offer the conclusions of such an investigation by Philip A. Duey.

1. The term bel canto does not appear as such during the period with which it is most often associated, i.e., the seventeenth and eighteenth centuries; this may be said with finality.
2. The words bel canto did not take on a special meaning until the 1860's in Italy.
3. By 1880 the other countries had recognized this special meaning to the extent that it began to appear in print in Germany, France, and England and America.
4. Neither musical nor general dictionaries saw fit to attempt definition until after 1900.
5. The conflict between the German "Sprechgesang" and Italian bel canto was an important factor in the latter's etymology.
6. Present usage favors its application to the Italian singing methods of the seventeenth and eighteenth centuries with its emphasis on beauty of tone and virtuosity.

The usage of bel canto, in this report, will agree with Duey's limitations of the term as cited above. The usage of the term will also agree with a more concise definition which appears in the Harvard Dictionary of Music.
Bel canto [It., beautiful singing]. The term denotes the Italian vocal technique of the 18th century with its emphasis on beauty of sound and brilliancy of performance, rather than dramatic expression or Romantic emotion. In spite of the repeated reactions against the bel canto (Gluck, Wagner) and in spite of the frequent exaggeration of its virtuoso elements (coloraturas), it must be considered as a highly artistic technique and as the only proper one for Italian opera and for Mozart. Its early development is closely bound up with that of the Neopolitan opera (A. Scarlatti, Porpora, Jommelli, Hasse, Piccini).\footnote{The Revival of Bel Canto and Its Relevance to Contemporary Teaching and Performance, much evidence and documentation is cited for the revival of bel canto and its importance to current teaching and performance. In Franzone's words:}

In a dissertation by Margaret Smith Fransone, titled The Revival of Bel Canto and Its Relevance to Contemporary Teaching and Performance, much evidence and documentation is cited for the revival of bel canto and its importance to current teaching and performance. In Franzone's words:

There has been renewed interest in bel canto in the last two decades. This revival is evidence in the writings of voice teachers, musicologists, and professional music critics as well as the repertoire selected for concert and recital performance, opera and oratorio, and all media of sound reproduction.\footnote{According to Franzone, the following factors have contributed to the revival of bel canto: (1) the concern for improving vocal standards, (2) the emphasis on historical authenticity in modern performance practices, (3) the effect of recent vocal research upon vocal pedagogy, (4) the virtuosi performance of bel canto repertoire by such singers as Maria Callas and Joan Sutherland, and}
the availability and wide distribution of stereo recordings of such performances.\textsuperscript{17}

As to the relevance of \textit{bel canto} to contemporary teaching and performance, Franzone stated the following:

The study has led to the conclusion that \textit{bel canto} is relevant to the current vocal scene, not only as a style and a necessary technique to be used for stylistic interpretation of past musical works, but also for effective performance of modern composition.\textsuperscript{18}

In addition, Franzone came to the following conclusion concerning the performance of contemporary literature:

Regarding the use of \textit{bel canto} style and technique in performance of modern writings, there is conclusive evidence that singing of all literature needs the basis of the Italian \textit{bel canto}, even though some of the devices may seem foreign to 'beautiful singing.' However, if the singer does not know how to produce a resonant tone, free of unnatural obstructions and capable of agility in movement he will be unable to do the additional skills required of him and still keep the health of his voice. \textit{Bel canto}, then, is relevant to the performance of contemporary literature as well as to the performance of past literature.\textsuperscript{19}

In context with the above cited definition and usage of \textit{bel canto}, it is important to recognize that the historical and contemporary usage of the term apparently had reference to a method, style, and period that held a higher aesthetic standard of performance than any other in music history. In view of this understanding of the term "\textit{bel canto}," and its evident relevance to contemporary pedagogy and performance, the significance of its

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pedagogical concepts, principles, and techniques are of great importance.

A Review of Primary Sources of Bel Canto

Twentieth-century teachers and students of voice have realized that more comprehensive agreement regarding vocal concepts was needed in order to maintain and improve vocal standards. In order to accomplish this, they were motivated to re-examine the techniques of voice teachers of the past. The concern of modern voice teachers for improving and maintaining vocal standards is demonstrated by Duey in the following statement:

The unexcelled vocal artistry of the performers of bel canto and their influence on singing throughout the Western world are more than sufficient evidence that a sympathetic and thorough study of the entire subject would indicate positive means for the restoring of an improved art of singing in the studios, concert halls, and opera houses of today.20

Modern students and teachers hoped that this study would establish a set of general principles that might be applicable to contemporary vocal pedagogy.21 Ralph Appelman is an example of a modern scholar who made an analysis of a concept associated with past vocal pedagogy and has suggested that the concept is relevant today:

Vowel modification to the best knowledge available, was employed first by the Italian teachers of bel canto and the bel canto concept
seems to be the yardstick for determining the technical excellence of singers today. The teachers of bel canto taught the development of a vocal scale without interruption of break throughout its length. The transition of registers, while singing up or down the scale demanded modification of vowel in the upper notes to preserve the vowel sound as well as to prevent such notes from becoming disagreeable or harsh. Thus, for many centuries, teachers have used the modification of vowels as a means of transition into the upper voice.22

As was emphasized by Franzone, there is little doubt that Appelman based his reference to the Italian masters on statements such as the following made by Pietro Francesco Tosi (1650-1730):

In the sol-fa-ing, let him [the student] endeavor to gain by Degree the high Notes, that by the Help of this Exercise he may gain as much Compass of the Voice as possible. Let him take care, however, that the higher the notes, the more it is necessary to touch them with softness, to avoid Screaming.23

Tosi, the old Italian master, knew that vowels sung at the extreme high tones of the upper range could not be sung as in the lower or middle range without sacrificing beauty of tone. As all of the early Italian masters, Tosi believed beauty of tone to be the highest ideal of the vocal art. In the words of Franzone, "Virtuosity in florid singing was never to be attained through the sacrifice of beauty of tone but, rather, through the enhancement of it."24 As Franzone concluded, the concepts, beauty of tone and virtuosity of performance, formed the basis of bel canto principles. These concepts provided the motivating
energy that led to the formulation of the principles upon which bel canto is based. The means of the attainment of these concepts became the bel canto technique. The style which resulted from their development became bel canto. 25

Many writers have supported the conclusion that the bel canto principles are based on the concepts of beauty of tone and virtuosity of performance. Weldon Whitlock came to the same conclusion when he stated, "It is my impression that the singing of that period [bel canto] was founded on pure beauty of tone, with great clarity and agility being of equal importance." 26 Ida Franco supported this conclusion when she wrote, "the Bel Canto style brought to perfection the pure beauty of tone, the clarity or agility of the voice." 27 In addition, Edward Downes came to the same conclusion with the following statements:

The singers for whom Rossini, Donizetti, and Bellini wrote were the heirs to a long tradition of Italian singing—a tradition that had been fostered since the days of Caccini (1558–1615) by such great singing masters as Tosi (c. 1650–c. 1730) and Porpora (1686–c. 1766). The aim towards which their system of training aspired was the production of a pure even tone coupled with the acquisition of such perfect athletic control over the voice as would enable all sorts of ornaments to be executed with the utmost agility. They were not interested in the volume of tone produced—only in its quality. 28

If the principles of bel canto are based on beauty of tone, virtuosity in performance, clarity and agility,
what, then, are the techniques and principles of bel canto? What are the secrets of the old Italian masters that raised the singing art to such heights as to be known as the "Golden Age of Song?" The first purpose of this report was to establish the significant pedagogical principles of the bel canto masters. In order to accomplish this purpose, a review of selected writings by bel canto masters was undertaken.

There are a number of documents written during the seventeenth and eighteenth centuries that are concerned with singing. However, some of these writings show an emphasis on the general areas of music history, music theory, and contemporary performance practices. Few of these documents are of important pedagogical significance.

The first bel canto school was established in Bologna by Francesco Antonio Pistocchi (1659-1726) around 1700. Antonio Bernacchi (1685-1756), a student of Pistocchi, continued the tradition after Bernacchi's death. Unfortunately, these exponents of the art of bel canto did not furnish history with writings of their art. However, a student of Pistocchi, Pietro Francesco Tosi, wrote ". . . the first book to deal with the technique of singing to any extent and a book of some value because written by a singer. . . . " Tosi's Observation on the Florid Song was published in Bologna in 1723. Tosi was also a student of Nicola Porpora, who was probably the
greatest of bel canto teachers. Unfortunately, as far as is known, there is no record of pedagogical writings by Porpora.

Another treatise on singing of importance to vocal pedagogy was written in the eighteenth century by Giambattista Mancini. It was titled:

... Practical Reflections of Figured-singing, which appeared in two editions prepared by Mancini, 1774 in Vienna, 1777 in Milan. There are several reasons for considering the Mancini book preeminent. First of all, it is an exhaustive study of the precepts of teaching, with information on literally all the aspects of singing. In addition to a brief background on the history of singing, Mancini gives advice on intonation, breathing, registers and their joining, on the position of the mouth, on the means of drawing out the voice, and on all kinds of ornamentation then in use. Tosi is a dictionary, Mancini an encyclopedia in regard to the training of the voice.

Mancini was a student of Bernacchi and enjoyed a greater reputation as a singer and teacher than did Tosi.

Other documents of significance are Domenico Corri's The Singer's Preceptor, London, 1810, and Issac Nathan's Masurgia Vocalis, London 1823 and 1836. Corri was a student of Nicola Porpora and Nathan was a student of Corri's in London. Of course, Porpora was linked to the tradition of bel canto as a composer and a teacher.

... he was the most famous teacher in an age of famous teachers, his pupils led the rosters at the great opera houses of Europe, and he left no personal record of his teaching. ... the complete list of his students reads like a 'Who's Who' of eighteenth century opera.
The treatises by Tosi, Mancini, and Corri were examined in order to determine significant pedagogical concepts and principles. Specific areas considered in the study of these treatises included the following: prerequisites for a singer, physical position of mouth and body, use of vowels, breathing, intonation, union of registers, strengthening the voice, expansion of range, messa di voce, portamento, and ornamentation. According to the Harvard Dictionary of Music, messa di voce refers to "[It., placing of voice]. A special vocal technique of the 18th-century *bel canto, consisting of a gradual crescendo and decrescendo over a sustained tone." Also, portamento is defined as "a special manner of singing, with the voice gliding gradually from one tone to the next through all the intermediate pitches."

Observation on the Florid Song by Pietro Francesco Tosi was published in 1723. It is important to note that it would serve as a guide to instructors of voice. As Tosi explained, before a scholar begins the serious study of singing he should have the following prerequisites: (1) the scholar should be able to sing at sight, (2) he must be able to make himself understood with ease, (3) he must have perfect intonation, and (4) he must have the patience to endure. In addition, the master must determine if the student has a voice and so advise him. With regard to mouth position, Tosi stated that pronunciation of
vowels should be clear with the proper mouth position. The correct position of the mouth was explained to be that of a smile. The student should always stand when singing so the voice may have all its "organization free." All motion of the body, head, and mouth should be corrected. With regard to use of vowels, Tosi recommended that solfeggio should continue as long as necessary and the student was instructed not to move to the vowels too soon. If the student's progress warranted it, he was allowed to study on the three open vowels. As the student practiced the open vowels, he was reminded to alternate between the various vowel sounds in order to firmly establish the quality of each vowel.

Tosi did not discuss the mechanics of breath control. However, he did state the following guidelines for breathing: (1) the student should not breathe in the middle of a word, (2) he should always take more breath than is needed, and (3) the student should learn the proper breathing place in all sorts of compositions. On intonation, Tosi merely stated that intonation must be emphasized in execution of solfeggio. He was equally brief in matters of joining the two registers. "The feigned voice (falsetto) and natural voice should be united so that they are indistinguishable." Tosi's only reference to expansion of range was also quite sketchy. Tosi recommended that "the student should endeavor to gain by degrees the high notes while Sol Fa-ing."
In an explanation of messa di voce, the student was instructed to hold out the notes without shrillness or trembling. Tosi did not discuss the vocal technique of portamento.

Ornamentation was treated by Tosi with more comprehensive coverage than some of the other areas of this investigation. The appoggiatura was not to be studied until the conquering of the vowels was complete. The appoggiatura was indicated to be studied by an application of the use of vowels. With regard to the shake or trill, Tosi directed that the student should look to the instrumentalist for an example. He explained that the shake should be "equal, distinctly marked, easy, and modestly quick." Shakes should be practiced on all vowels and on all the notes within the student's range.

Tosi described basic pedagogical principles in advising that the student should be lead from the most easy to the more difficult, according to how he improves. Also, no matter how difficult the exercise, the singing must always be natural and agreeable. Basically, Tosi's treatise was a statement of his method for the development of the voice. This method was skillfully graded and it closely adhered to the pedagogical principle of progression from easy to more difficult.

At this point, it is important to note that Tosi advised that all the exercises cited above should proceed
singing with words. "Only after all these were mastered -- and it might take years -- did the pupil proceed to singing music with a text." On studying music with words, the student was advised first to read and pronounce the words with distinction and clarity. No syllable should be softer or louder than another. When this is accomplished, then the student may join the syllable to the note. This process demonstrates the technique of the isolation of a particular problem and studying it to perfection before practical application in a musical context. This principle of isolation of a problem is also evident in the gradation of Tosi's method from easy to more difficult.

In the chapter titled "Observations for a Singer," Tosi described other pedagogical principles. For instance, he advised that the student should be able to accompany himself at the piano forte and have a knowledge of counterpoint. Tosi advised that the student should listen to as many excellent singers and instrumentalists as possible. Of particular significance was the advice that a student should endeavor to be his own master. The remainder of this treatise was concerned with matters of contemporary performance practices of which Tosi gives considerable information. The next treatise to be examined was written by Giambattista Mancini.

Practical Reflections on Figured Singing by Giambattista Mancini was much more comprehensive and
detailed than the work of Tosi. The purpose of Mancini's treatise, as stated by the author, follows:

\[\text{... in so much as it is directed at the instruction of the young and to the improvement of the nobility of the Art, that youth would find food for thought here, and the professionals, delight.}\]

Mancini cited several prerequisites for a singer. A child should undergo an examination to assure he has nature's gift of a beautiful voice united with good talent. More specifically, Mancini stated:

\[\text{... the master should examine to see if the epiglottis is free and not pressed down by the enlarged thyroid gland, ...; and that the action of the small muscles of the larynx is not impeded. ... He should observe the uvula and the soft palate attentively; and whether there is any tumor on the palate, or an unusual opening; if the tongue is loose and agile; whether the lips close equally; or whether the chin sticks out so far as to deform the good symmetry of the mouth; or scarcity mars the even-spacing of the teeth. He should note the good form of the nose, whether it is flattened or protrudes too much.}\]

Mancini advised, that only those who have a beautiful voice that is agile, flexible, sonorous, full and of rich range should undertake the study of singing.

Concerning the position of the mouth, Mancini was of the opinion that the mouth should take on the position of a natural smile when singing. The upper teeth should be perpendicular and moderately separated from the lower teeth. This same position of the mouth should serve for every articulation of the vowels. Mancini further
explained that the student should be made to put the mouth in this position and pronounce the five vowels. No change from the proper position is necessary except in "O" and "U" and this change is not far from the original position. The student should first practice pronouncing the notes solfegging with the proper mouth position and then vocalize distinguishing each vowel in its true and clear position. Also, the student should guard against contortion of the mouth and unnecessary motion of the body. 61

Mancini offered little information about breathing. However, he did make reference to breath control on two occasions. The first was related to defects in tone quality. He explained that these defects arise from the failure of the singer to derive and sustain the voice from "the natural strength of the chest." 62 The second reference to breath control was related to the singing of intervals. This discussion also had much pedagogical significance.

In order to arrive at the possession of the knowledge of singing by leaps, the most sure study is to begin to leap with the voice on long notes, and these very well in tune, holding the voice and passing a number of notes without taking a breath, with caution always to not force them, in order not to prejudice the chest.

This method will facilitate for the scholar the execution of passing to another study on notes of lesser value, the stabilized intonation from the above exercise, and the art of knowing how to conserve the breath will facilitate his learning this other style which is faster, and consequently more difficult. 63
Mancini's method of improving intonation consists of the use of singing in solfeggio every note in all degrees of the scale with close attention to tuning. This study should be followed by solfegging the notes of intervals. Also, the vocal technique of *messa di voce* was included as a device for improving intonation.\(^{64}\)

Mancini formulated firm principles as to the proper method of attainment of the union of registers and strengthening the voice. His method of strengthening the voice is presented first, in that the techniques used in this process are the same as those used for union of the registers. The student should study, on a daily basis, a solfeggio of long notes. This exercise should not exceed the natural range of the student at that time. The master should advice the student to increase little by little the body of the voice. After sufficient progress using the above solfeggio, the student should "change solfegios, which ought now to be arranged by notes a little higher."\(^{65}\) This exercise also was used for expansion of range. As for union of the register, Mancini advocates a determination of which register (head or chest) is the weaker. After this has been determined, the student was to abandon the stronger register and concentrate on the weaker register using the above technique for strengthening the voice until the two registers are equal in strength.\(^{66}\)

Regarding the vocal technique of *messa di voce*, Mancini demonstrated skillfully his knowledge of excellent...
teaching techniques. His opening statement, about *messa di voce*, warned that this technique should not be attempted until "the art of conserving, reinforcing and taking back the breath is acquired."67 His method for studying *messa di voce* was as follows: The mouth should be scarcely open when starting the note and then a gradual crescendo begun. As the note increases in volume it should be reinforced by opening the mouth until it reaches the proper dynamic level. Then the opposite occurs as the volume is diminished. This exercise should be practiced with moderation and frequent rest to avoid fatigue.68

Mancini described the proper execution of *portamento* as "... passing, tying the voice from one note to the next with perfect proportion and union, as much in ascending as descending."69 His method of perfecting this technique was to make the student exercise on a solfeggio sung with the two vowels "A" and "E." He stressed the importance of the vowel purity. The solfeggio should be written with alternating rhythmic patterns from fast to slow, and containing regular leaps. The student must not take a breath on the notes that rise in pitch or on those that leap upward.70

On the subject of ornamentation, it is significant that Mancini made reference to Tosi's explanation of the use and proper execution of the various embellishments. In fact, Mancini quoted Tosi's explanation of a trill as
being equal, solid, easy, and moderately fast. Mancini states that all ornaments should be studied with slow movement at first. When intonation and all elements of the ornament are perfected at a slow tempo, then the tempo should be gradually increased.

Mancini's treatise is filled with many statements of pedagogical significance. At the outset of the treatise, he spoke of the bad schools and teachers that allow students to fly over the rules of music and singing. He explained that they prepare students with a few arias and a motet or two and then sent them out to a professional career. Mancini said, "In this manner they remove the means of continued study, and soon their defects harden and become incorrigible . . ." Mancini expressed the importance of a good teacher when he said, "the master should decide what method of singing is natural for the particular student and lead him through it."

Additional pedagogical concepts were expressed by Mancini in regard to the order, regulation, and gradation of studies.

When the schools follow a good system they do not disturb the order of the study, because methodically every voice ought to pass gradually through every rule of the art, and from this it will arise that every voice will be heard to perfect itself securely in every style of singing.

In addition, he explained that the master should write solfeggio for the strength and weakness of each student.
Also, he believed that arias should be treated as poison until the student is ready for them. Mancini further explained that the student should recognize the method and be able to put into effect all the advice he acquired from the master. In addition, the student should have a thorough understanding of the method and its techniques in order for study to continue long after the completion of formal instruction. Mancini's advice to students included study of duets for intonation, expression and balance; study of madrigals for intonation, rhythm, strength, and to reinforce the ear. As illustrated by the above examples, Mancini's treatise has important pedagogical significance. The treatise is also valuable for its information concerning eighteenth-century performance practices.

The Singer's Preceptor by Domenico Corri was published in 1810. It was written with a more comprehensive purpose and scope than were the previous treatises.

THIS TREATISE IS EXPRESSLY CALCULATED TO TEACH THE ART OF SINGING AND CONSISTS OF ESTABLISHING PROPER RULES, (THE RESULT OF FIFTY YEARS EXPERIENCE) ACCOMODATED TO THE CAPACITY OF EVERY STUDENT WHETHER AMATEAUR OR PROFESSOR, THEATRICAL OR CHORAL ALSO TO ASSIST THOSE WHO SING BY EAR ONLY, AND SO ARRANGED BY THE EXERCISE OF THESE RULES, IN THE ABSENCE OF A MASTER.

Corri's treatise is especially valuable to this investigation in that the treatise includes musical examples and exercises. These exercises are arranged consecutively by lesson. A commentary is included with each lesson which furnishes an explanation of its principles,
purpose, and proper execution. Also, the introductory material is presented in a "Dialogue between Master and Scholar." In this delightful section, Corri covered areas not only of pedagogical significance but of historical importance.

Corri demanded six prerequisites for a singer as follows: (1) A singer should have a good ear, (2) the voice must be capable of great improvement, (3) the singer should be able to execute the swelling and dying of the voice, (4) distinct articulation of words and sounds is necessary, (5) a quick perception of the music is necessary in order to give the proper expression, and (6) the student should fulfill the physical requirements of spacious lungs, muscular larynx, wide mouth, and regular teeth.

Corri described the ideal practice routine in detail. He explained that the student should begin with one-half hour of practice time and gradually increase this time in proportion to age and strength. He was of the opinion that the most productive time to practice was after breakfast. The student should always sing before a mirror and near a piano forte. The body and head should be held upright and unnecessary motion avoided. The open mouth should be in oblong form as if in the position of a smile.

Corri was very adamant with regard to the proper use of vowels and he emphasized the importance of
solfeggio in correct vocal training.

Many devote years to this practice alone (in Italy very frequently six years are thus employed), thinking it impossible to be proficient in vocal music without such length of practice . . . and here I may quote my Preceptor, Porpora, whose decided opinion it was, that solfeggi were not properly understood; the improvement of the voice he maintained is best acquired by sounding the letter "A"--the position of the mouth in uttering this letter being most favorable to produce a free and clear tone.84

In the ensuing investigation of Corri's treatise, reference is made to specific "lessons" or musical exercises that are included in the treatise. A sampling of significant "lessons" is presented in the pages following. The consecutive order of progression of the Corri "lessons" is retained in this presentation as in the original. In this order, the concept of progression from easy to more difficult is quite evident. Following the presentation of these figures is an explanation of the exercises. It must be emphasized that any one of these vocal exercises could and do apply to any number of vocal techniques. In other words, in performing these exercises the student was not only concentrating on intonation, but vowel sound, tone, breathing, strengthening the voice, and other facets of voice production.
Begin with a delicate softness, increasing the tone to its loudest degree and diminishing it to the same point of softness with which you began.

The swelling and dying of the Voice

Messa di Voce

The Soul of Music.

These accords are only intended to give the Notes their Harmonic parts, if Scholars find the Arpeggio difficult as noted, they may take only the Chord, which may be played with either hand.

Fig. 1. Corri's Lesson I

Fig. 2. Corri's Lesson II
Fig. 6. Corri's Lesson VI
C. MINOR

Do Re Mi Fa Sol La Si Do

Prelude

Do Si La Sol Fa Mi Re Do

C. MAJOR

Do Re Mi Fa Sol La Si Do

Fig. 7. Corri's Lesson XII
Fig. 8. Corri’s Lesson XVII
In the commentary concerning Lesson I (figure 1), Corri specifically stated that "the intention of this Exercise is to acquire the art of taking breath and how to retain it, by which is effected the swelling and dying of the voice, . . ." In figure 1, intonation is emphasized in his directions for the student to play the arpeggio several times in order to finally establish the pitch. In regard to intonation, Corri expressed an opinion that apparently deviated from the common practice of the time. He stated the general method of establishing intonation was the study of the major scale. However, he believed it advantageous to begin by a study of the semitones. Once they are perfected, then increase by regular progression to the wider degrees of intervals. This principle is evident in the order of the lessons. The first exercise (figure 1) and Lesson III (figure 4) emphasize the semitone. The whole tone was not presented until the last section of Lesson III (figure 5).

Notice in Lesson II (figures 2 and 3) the emphasis given to the intonation of one note. In figure 2 the note is sustained over a continually changing harmonic accompaniment. The student is instructed that the purpose of this exercise is "to give firmness to the ear" and reference was made to breathing and proper mouth position. Figure 3, which is the next example in Lesson II, presents the student with the same problem, however, now with an
arpeggiated accompaniment. Lesson III (figure 4) also has emphasis on intonation. This exercise progressed from the study of the minor semitone through the major semitone to the whole tone. This exercise illustrates Corri's knowledge of the difference in actual pitch of enharmonically spelled notes.

Lesson VI (figure 6) was intended for the perfection of intonation of the intervals beginning with major and minor thirds and gradually progressing by degree to the octave. Lesson XII (figure 7) also emphasizes intonation in a study of the major and minor scales sung in solfeggio. The remainder of Lesson XII, which is not included in the figures, continued through all the major and relative minor keys. Figure 8 illustrates passages to be practiced after the perfection of the rudiments cited above.

Corri neglected to include in the treatise discussions regarding the union of registers and strengthening of the voice. However, these concepts may be inherent in the student's systematic progression through the seventeen lessons and supplementary solfeggio included in this method. With regard to expansion or range, Corri offered Lesson XV which consists of four scales covering two octaves in range. The first two progress by major and minor semitones. The third is a two-octave minor scale and the fourth is a two-octave major scale. The student is
instructed to sing these exercises on the vowel sound "A." 91

An explanation of messa di voce was cited above with reference to figure 1. The vocal technique of portamento is not included in the Corri lessons. However, in the "Dialogue between Master and Scholar," Corri offered the following explanation of the device:

Portamento di voce is the perfection of vocal music; it consists in the swell and dying of the voice, the sliding and blending one note into another with delicacy and expression—and expression comprehends every charm which music can produce; the Portamento di voce may justly be compared to the highest degree of refinement in elegant pronunciation in speaking. 92

With reference to ornamentation, Corri presented much significant information especially in regard to eighteenth-century performance practices. He devoted Lesson VII to the explanation and method of development of the shake or trill. He explained that the long shake should begin on the note and the short shake should begin with the auxiliary note. This gives insight into the era's common treatment of the ornament which is often a point of disagreement among musicians of the present. Corri explained that the development of the trill should begin at a slow tempo and gradually increase the tempo. Also, the trill should be perfected on every note of the student's range. 93 Corri also discussed the mordent, appoggiatura and the turn.

As were the writings of Mancini and Tosi, this
document contains much material of pedagogical significance. In the "Dialogue between Master and Student," Corri made the following point with regard to basic pedagogical procedure:

... it is a misfortune attending our art, that songs are learned and sung before the rudiments are acquired. ... In order to attain any degree of perfection, a singer should be instructed at a very early period in life, and the practice ought to be gradual; ... the organs of the voice are incapable of much exertion; they acquire strength and flexibility only by degrees, often much patient and attentive exercise; and it too frequently happens that a singer by attempting difficulties before he is accustomed to the performance of progressive passages gets a habit of singing out of tone; occasioned chiefly by the relaxation of the wind-pipe, and other organs not having attained sufficient strength and tone: Knowledge and practice should 'grow with the growth, and strengthen with the strength';...  

This pedagogical principle illustrates Corri's belief in a proper order of study and that the perfection of one level of the method should be achieved before progression to the next more difficult level.

Corri stated that the master should determine which style is most suitable for the student's natural gifts. He referred to Tosi's treatise on this point and argued that the singer should always continue to study to maintain his art as he did to acquire it. The concept of progression from easy to more difficult was illustrated in the order of the lessons presented. Also evident was the concept of problem isolation and the perfection of details before progression to the next difficulty.
Many observations can be made, as a result of the investigation of these three treatises. All three have common characteristics with regard to basic singing principles, methods, techniques, and most of all, characteristics included in the area of performance practices. Since these authors were trained in the same tradition, the likelihood of similarity between these treatises is not too surprising. As stated before, Tosi was a student of both Porpora and Pistocchi. The latter had the distinction of being the founder of the first bel canto school. Mancini was a student of Bernacchi who continued the school after Pistocchi's death. Corri, being a student of Porpora, also wrote his treatise under the auspices of the Porpora tradition.

The strict standard of prerequisites imposed upon students of these eighteenth-century vocal instructors provides evidence that bel canto teachers undertook the training of only the most talented students. In some fashion, all three teachers made reference to the following qualities that a student must possess: (1) he must be able to sight sing, (2) he must have a good ear, (3) he must possess the gift of a natural voice, (4) he must not have any physical defects, and (5) he must have good diction. Further agreement among these pedagogues is evident with regard to physical position of the body and mouth. The student should always sing while standing, avoid unnecessary

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body motion, and the position of the mouth is that of a
smile. Also, the use of vowels in conjunction with the
proper mouth position was essential. The importance of
solfeggio and the use of vowels practiced to perfection
was also emphasized.

In reference to the use of solfeggio and vowels,
Weldon Whitlock related a legend concerning Porpora and
Caffarelli in an article titled "Practical Use of Bel
Canto."

We are all familiar with the legend of
Porpora keeping Caffarelli for five, some
say six, years on one page of exercises. and
then pronouncing him the world's greatest
singer.96

Whitlock declared that he possessed an original
Porpora sheet of exercises. He explained that the sheet
consisted of fourteen very simple exercises. The exercises
were to be combined in a number of ways according to the
student's needs. Emphasis was placed on the pure vowel
and most of them were to be sung on simple syllables. The
first two exercises were sung on the syllables Mi-Si in
whole tones. They were intended to be sung slowly with
great care given to the pure vowel. The next exercise
was a series of triads sung on the syllables Law-Maw-Law.
Porpora also used the syllables Va-Do-Va in exercises
containing triads or other intervals.97

On the subject of breathing or breath control all
three of these teachers were equally sketch. No reference
was made in any of the treatises to the mechanics of breathing or to diaphragmatic breathing. The point must be made, however, that knowledge of physiology was limited at the time these treatises were written. Eugene Casselman offered the following explanation for lack of specific information on breathing by the treatises of the seventeenth and eighteenth centuries.

We have only the broad general statements, and it can be accepted as fact they were sufficient for developing the voice, and were common knowledge of the teachers. As Tosi said in his introduction, the "first Elements" of singing were "known to all," and needed little explanation. . . .

They obviously did not consider breath a problem, worked at it instinctively, and found they could get the results they needed.

. . . it is not mentioned by Tosi, Mancini, or any of the others of the 17th and 18th centuries. The point is that these teachers did not have the physiological knowledge, and did not feel the lack of it.96

Intonation was a topic that received little emphasis by Tosi and Mancini. Corri, however, was quite comprehensive in this regard. His opinion that the semitone should be perfected before the wider intervals was explained in detail. Also, the lessons included in the treatise illustrated strict discipline in the area of intonation.

On union of registers and strengthening the voice, Tosi and Corri were equally brief. However, Mancini prescribed a definite method for the accomplishment of these techniques. His method of uniting the registers was that of abandonment of the stronger register and concentration of the
weaker register using the technique of voice strengthening. These techniques were also used for expansion of range. Corri offered a series of two octave scales for the purpose of increasing range. He directed that the student should not force notes that are not easily attainable and that with patient practice these notes become easy. All three teachers emphasized the vocal techniques of messa di voce. This device was used for "bringing out the voice": or voice placement, for strengthening voice and chest, for expansion of register, and for improvement of intonation. Portamento was not discussed by Tosi. Corri offered little information about this device. However, Mancini was explicit in his definition of portamento and in the presentation of a method for its development. Again, in this method, the use of vowels was emphasized.

On ornamentations, all three of these treatises are of great historical importance for information concerning eighteenth-century performance practice. In regard to vocal training, all authors seem to agree as to the correct method of teaching the various embellishments. That method consisted of methodic practice at a slow tempo with a gradual increase in speed until the embellishment was perfected.

This investigation of these eighteenth-century treatises has uncovered a wealth of information with respect to the vocal pedagogy of these bel canto teachers.
Following is a list of pedagogical techniques and principles that were agreed upon by these masters: (1) only the training of talented and gifted students was undertaken, (2) students were lead through a method that was graded from easy to more difficult, the perfection of one degree of the method was accomplished before progression to the next level, (3) the concept of problem isolation and concentration on its perfection permeated all aspects of the bel canto method, (4) the essence of the method was a concentrated study on pure vowels, and (5) students were made to understand the method and its application in order for continued study to endure after the completion of formal study.

Weldon Whitlock substantiated that the bel canto masters agreed on the basic aspects of singing. He condensed the bel canto concepts and methods into three basic principles.

In the study of the bel canto principles it seems that all of the teachers demanded three things and in this order: [1] ABSOLUTELY PURE VOWELS; [2] THE ABILITY TO SING A LONG SMOOTH LEGATO; AND [3] SIMPLE ORNAMENTATION, LEAVING IN TURN, TO ELABORATE FIORITURE, AND MASTERY OF RECITATIVE. How long the mastery of these fundamentals required is not stated, but we can conjecture that it was considerable, for we were definitely told that the student was not permitted to progress to the next exercise until the one at hand had been reasonably mastered.

After the death of such famous teachers of the bel canto tradition, as Mancini and Porpora, a trend toward a
mechanical and scientific approach to vocal pedagogy became the vogue. Leading voice teachers became interested in descriptions of the anatomy of the throat. At first, the mechanical ideas of tone production were combined with the old bel canto techniques. However, in conjunction with the overall trend toward enlightenment of the early nineteenth century, the old traditional principles and techniques were gradually discarded. Many books on voice culture were written during this transitional period. Most of them made reference to the bel canto masters, however, the major portion of each book was devoted to descriptions of voice anatomy and mechanical control of vocal organs. A leading proponent of the old bel canto method inadvertently caused the total abandonment of the bel canto method.

Manuel Patricio Rodriguez Garcia received vocal training from his father and Giovanni Ansani. Ansani was a celebrated Italian tenor and had received his training from Porpora. Manuel Garcia became the teacher of many famous singers of the period. Included among his students were his famous sisters, Maria Malibran and Pauline Viardot Garcia. Other famous singers who studied with Garcia were Adelina Patti and Jenny Lind. Garcia was thoroughly trained in the bel canto tradition and had total confidence in the method. However, as early as 1830, he became interested in a study of vocal action and by 1835 his reputation as a scientific teacher was firmly established. His
interest in vocal action lead him to the discovery of the laryngoscope. Being able to observe the vocal organ during the act of phonation, Garcia experimented with different tones and noted the changes that occurred as the various tones were produced. Garcia became convinced that the method of the old masters was correct. In 1855, he submitted to the Royal Society of London a paper titled "Physiological Observations on the Human Voice." Although Garcia enjoyed the prestige and reputation of a scientific teacher of voice, his methods were basically those of bel canto masters.

After Garcia's invention of the laryngoscope, the way was clear for the development of a totally scientific and mechanical approach to voice culture. Advocates of the bel canto method could not defend against proponents of the new scientific method. This new scientific approach advocated various methods of managing the breath, directions for resonance of tone, and mechanical management of the voice. As a result of interest in the new approach to voice culture and the influences of the Romantic era on musical style, bel canto principles and techniques became a thing of the past. As Paul Klingstedt stated in his book Common Sense in Vocal Pedagogy, . . . just when the old Italian method disappeared would be hard to say. Francesco Lamperti, who was quoted so much by the teachers of the early twentieth century, is said to have been the last exponent of the old traditions. . . . He retired from active teaching about 1880.
Manuel Garcia wrote two books on the art of singing. The first was titled *The Art of Singing* and the second was given the title *Hints on Singing*. Both books illustrate his interest and knowledge concerning what is called the scientific method. However, in the book *Hints on Singing*, his fundamental training in the bel canto tradition is apparent. In his discussion of the elementary qualities of good vocalization, the following bel canto concepts are illustrated: "Firstly, perfect intonation; secondly, equality of note value; thirdly, equality of strength; fourthly, equality of degree of legato; and fifthly, harmony of timbres." In addition, other bel canto concepts are apparent in his discussion of the method for executing passages.

... first, the legato, in which notes should slow distinctly and evenly, . . ., smoothly, without either gliding or aspiration. This is the dominant characteristic of good vocalization; . . . The next is portamento, or slur, which is the gliding of the voice through every possible sound between note and note. . . .

The student must sing each measured exercise strictly in time, but at first slowly enough to give each individual note all the requisites already mentioned: intonation, value, strength, legato, timbre. . . .

Garcia's first book, titled *The Art of Singing*, also reflects aspects of the bel canto tradition. The exercises included in this book demonstrate a gradation of simple to more complex and easy to more difficult. All the exercises are written in the key of C, however, there
are instructions to practice the exercises in all keys.

Reference has been made to the fact that Francesco Lamperti is said to be the last direct descendent of the bel canto tradition. His book, *A Treatise on the Art of Singing*, demonstrates the combination of the bel canto tradition and elements of the more recent mechanical system of voice culture. For an example, Lamperti explained breath control in terms of "support afforded to the voice by the muscles of the chest, especially the diaphragm acting upon the air contained in the lungs." In regard to position of the body, mouth, and vocal organ, Lamperti stated the student should stand erect with shoulders relaxed and the chest expanded. In Lamperti's words, the singer should stand "in the position of a soldier." Throughout Lamperti's treatise, the concept of breath control and position is emphasized.

Despite Lamperti's emphasis on the mechanical approach to voice culture, there are references to bel canto precepts. An example of this reference to the bel canto tradition is illustrated in Lamperti's "Observations on Art."

It is by singing with the voice well appoggiata, that the pupil, under careful supervision, will learn what is the true character and capabilities of his own voice; he will know what music to sing, how to render his singing elegant, and remedy defects of intonation. In this, in my idea, lies the great secret of the art of singing.
Other aspects of bel canto are discernible in Lamperti's discussion of agility. According to Lamperti, agility can be studied in the four principle ways that follow: portamento, legato, picchettato, and martedato.\textsuperscript{112} Lamperti stated that "agility should be studied slowly. The exercises should be executed so that the intervals are clearly distinguishable."\textsuperscript{113} Later in his treatise, Lamperti explained in greater detail the proper execution of such exercises.

He should guard, too, against abandoning the control from one to another, as the second will always be wanting in character and color, without which two qualities singing can neither be artistic nor capable of expression.\textsuperscript{114}

Giovanni Battista Lamperti (1839-1910) is perhaps more deserving of the distinction of being the last of the bel canto teachers. In G. B. Lamperti's book titled \textit{Vocal Wisdom}, he unequivocally stated the guiding philosophy of the bel canto masters.

These teachers made few rules, but insisted on obedience to natural laws, which were physical not anatomical. The ear, not the muscles, guided both master and pupil through strenuous gymnastics of breath and voice. . . . These exercises did not constitute a 'method', nor were they intended to be followed in the final use of the voice. They were simply 'setting-up' movements. . . . Therefore, no definite system of bel canto has descended to us, except advice by word of mouth, from singer to singer.\textsuperscript{115}

This principle of the ear as the guide toward proper voice production was continually emphasized throughout Lamperti's book. The following statements are but a
few examples of Lamperti's emphasis of this principle:

The ear leads "clairvoyantly" and recognizes the real spark that kindles the voice.116
The physical ear perceives and knows how pure tone sounds in voices and even in musical instruments.
The mental ear "visions" little by little how to produce it. Our knowledge and power come only from our individual reactions and realizations--on them our progress depends.117

Lamperti further expounded upon this principle in a discussion of the secret of singing.

There are three sensibilities that govern singing.
Sensibility to pitch and tone (over-tones) developed through nerves of hearing.
Sensibility to vibration and resonance developed and controlled through nerves of touch.
Sensibility to energy and breathing developed and controlled through nerves of the entire body.
These sensibilities, though studied and developed separately, must be coordinated, so as to cause unity of action. .....
Arousing and maintaining a continuous activity of this co-ordinated trinity of sensibilities is the secret of singing.118

Lamperti also discussed another principle, which, in his opinion, was associated with the bel canto tradition. This principle is closely akin to kinesthetics. "To anticipate the 'feel' of resonance (vowels) before singing, and to keep the sensation during pauses and after singing, is the lost art of the Golden age of Song."119

G. B. Lamperti was also the author of a book titled The Technics of Bel Canto. Although Lamperti states that his method can be traced back to the Italian singing masters Gasparo Pacchierotti (d. 1821) and Giovanni Velluti.
(d. 1861), the book seems to be mainly devoted to the mechanical approach to voice culture. Not only are diagrams of voice organs included in the book, but much of the discussions are in terms of physical management of various parts of the anatomy. Therefore, this book is of little value in an attempt to establish the principles of bel canto.

A Review of Secondary Sources of Bel Canto

Reference was made above, to the fact that modern teachers of singing came to the realization that wider agreement regarding vocal concepts was needed in order to maintain and improve vocal standards. This realization prompted many modern teachers and scholars to re-examine the techniques of past voice teachers. It was hoped that such a re-examination of past writings would establish a set of principles that might be applicable today. Also, as demonstrated by Franzone, there was a revival of interest in bel canto due to concern for improving vocal standards, authenticity in performance practices, virtuosi performances of bel canto repertoire, and the widespread availability of records of such performances. A number of reputable teachers and scholars have written books, articles, theses, and dissertations concerning the re-examination of the teachings of the bel canto masters. In order to establish the pedagogical principles of bel canto in a more comprehensive and authoritative fashion, a
review of selected literature by the more recent proponents of bel canto was implemented. The ensuing results not only served to better document and authenticate the bel canto principles already established but a better understanding of these principles and their significance was effectuated.

Upon arranging selected bel canto literature of the twentieth century in chronological order, the first author of significance is David C. Taylor. Taylor is the author of three books concerning what he calls the "old Italian method." These books are titled The Psychology of Singing, Self Help for Singers, and New Light on the Old Italian Method. As the title of the first book might imply, Taylor has endeavored to explain the concepts and principles of bel canto in terms of modern psychology.

According to Taylor, the old Italian masters found the precise phrases that describe perfect singing. Obviously extracted from the writings of such masters as Tosi and Mancini, these few simple phrases are as follows: open throat, support of tone, sing the tones forward, and sing on the breath. Taylor explained that these phrases should be considered in terms of empirical descriptions of properly produced singing. An example of such a description of "sing the tones forward" follows:

Every lover of singing is familiar with this characteristic of the perfectly produced voice: the sound seems to come directly from the singer's mouth, and gives no indication of being formed at the back of the throat. This characteristic of the perfect tone is simply heard.
It is not distinguished by any sympathetic sensations, but purely a matter of sound.\textsuperscript{122} Only when considered as an empirical description is the forward-tone precept of value. In the sense the precept describes accurately the difference in the impressions made on the hearer by correct and incorrect singing. A badly produced tone seems to be caught in the singer's throat; the correctly used voice is free from this fault, and is therefore heard to issue directly from the singer's mouth.\textsuperscript{123}

Taylor explained each descriptive phrase of perfectly produced singing in terms of the impression made upon the hearer.

Since, in Taylor's opinion, the bel canto tradition is based upon the above empirical descriptions of perfect singing, such description of perfectly produced tone leads him to the conclusion that training of the ear was of the utmost importance.\textsuperscript{124} Taylor's thoughts on ear training are as follows:

The sense of hearing is developed by listening; and attentive listening is rendered doubly effective in the singer's education by the attention being consciously directed to particular characteristics of the sounds observed.

A highly important aspect of ear training in Voice Culture is the acquainting the student with the highest standards of singing. The student derives a double advantage from listening to artistic singing when he knows what to listen for. Telling the student that in perfect singing the throat seems to be open makes him keenly attentive in observing this characteristic sound of the correctly produced tone. . . . A student may be helped in imitating correct models of singing by knowing what characteristic of the tone it is the most important to reproduce. . . . Probably the old masters treated the precepts about in this fashion.\textsuperscript{125}

Throughout Taylor's book, The Psychology of Singing, are direct references and quotes from the writings of Tosi.
and Mancini. From quoted statement of Tosi, Taylor came to the following conclusions concerning basic aspects of bel canto:

First, that the student learned to use his voice by imitating the voice of the master. Second, that the initial work of "voice placing" was merely an incident in the training in sight singing and the rudiments of music. Third, that "voice placing" was considered of too little importance to claim the attention of masters of the first rank. This feature of instruction, so important now as to overshadow all else, was at that time left to masters of a lower rank.126

Taylor, also, emphasized Tosi's use of portamento and messa di voce as having an important place in voice culture.127 In addition, Taylor supported Tosi's instructions that the ability to read music at sight should not be overlooked. In Taylor's words, "... this injunction might well be taken to heart by the modern teacher. Good sight readers are rare nowadays, ..."128

As stated, Taylor made frequent reference to the writings of Mancini as well. Taylor expounded upon Mancini's comments on the following concepts and principles: perfect intonation and the means of its achievement, development of a true musical ear, emphasis on quality and beauty of tone, free deliverance of the voice, unification of registers by means of beginning with the easy register and extending the compass of the voice one note at a time, and methodic instruction with graded progress from easy to more difficult.129
In *Self Help for Singers*, Taylor reiterates the principles of the student learning proper tone production by imitation of the master's voice and the sense of hearing as guide to proper voice production. Taylor stated that if the student has the correct mental conception of artistic tone, then the derived tone is attained by the practice of singing under the guidance of the sense of hearing. According to Taylor, this occurs through the following process: "The vocal organs adjust themselves instinctively and automatically to produce the tones demanded by the mental ear." Taylor is of the belief that the basis of the old Italian method is the faculty of imitation. In other words, the ability of the voice to reproduce various tone qualities as a result of the manner of production. As Taylor wrote,

> While the old masters in all their teachings appealed to the faculty of imitation, they did not merely sing correct tones for their pupils to imitate. They also pointed out several striking characteristics of the perfectly produced vocal tone, in order that the pupils might more readily hear how the correct tone sounds, and how it differs from a wrongly produced tone.

Taylor explained the importance of proper ear training in order for the faculty of imitation to be effective. Taylor stated that a musical ear can be trained only through a continuing process of attentive listening. Taylor suggested that the student should listen to as much good music as possible by attendance at concerts, recitals, and operas.
A third book by Taylor, titled *New Light on the Old Italian Method*, gives much detailed information as to the teaching methods and techniques of bel canto. Therefore, this book is a valuable source for determination of the pedagogical concepts and principles of bel canto. According to Taylor, the old Italian masters found the vowel sound "ah" most favorable for voice training. From the beginning of instruction, the master sang an exercise on this vowel and instructed the student to imitate the sound. With this precise sound in mind, the student practiced the exercise striving to attain the desired tone. Simple songs and vocalises were given early in training. Usually, the student was instructed to sing the vocalises on ah and, once perfected, the words were added.

The middle range of the voice was perfected before beginning to extend the range. This included the ability to totally command all degrees of dynamics from soft to loud. However, during the early period of training the student was instructed to sing in a natural voice, not soft or loud. Single tones of the middle octave of the voice were sustained at a moderate dynamic level until the tone was even for the full duration of a breath. Following the perfection of the development of the middle octave of the voice, the practice of soft tones on short scale passages was begun. After this was mastered, the student
began the study of messa di voce. Messa di voce was studied in order to extend the range and for development of power.

In order to further extend the range of the voice upward, scale passages of three or four notes above the middle octave were sung softly and in a light tone quality. When these tones were perfected, the student began the practice of messa di voce on these upper notes. This process continued until the upper limit of the voice was reached. The student then began the practice of scales in all degrees of dynamics. The lower range was extended in the same fashion.

Pure legato singing was always cultivated by the master's frequent demonstrations as to how a perfect legato should sound. Clarity of tone was always emphasized as was the clear motion from one note to another.\textsuperscript{135}

Taylor, also, made reference to a favorite teaching technique of the bel canto masters, in which instruction was carried out in small classes. According to Taylor, the old masters preferred to teach four to six students at a time. Each student was given his lesson consecutively. While one student was receiving instruction, the other members of the class listened and benefited by the master's recommendation and criticisms. As Taylor pointed out, another advantage of class instruction was the additional benefit derived by each student in ear training. As time progressed, each student observed the progress of
others in class. The students became familiar with all the
differences in tone quality of a voice as it was developed.
Also by observation of each student's progress and the
instruction of the master, the student learned the system
and how to teach it himself.\textsuperscript{136}

Taylor emphasized that all bel canto masters empha-
sized the following principles: a gradual progression
from the simple to the difficult, the concept that musical
perfection was more important than speed, beauty of tone
at all times, speed in execution of rapid passages was
gained in a gradual process, all notes must fulfill the
requirements of clarity, evenness, and perfect intonation,
a thorough plan was followed in the ear training of the
students, and consideration was given to the individual
needs and talents of each student.\textsuperscript{137}

The next book in this review of twentieth-
century bel canto literature was written by W. Warren
Shaw. The book, \textit{The lost Vocal Art and Its Restoration},
demonstrates that Shaw's conception of bel canto cor-
responds exactly to Taylor's writings above. Shaw stated
"the science of psychology is shown to be the real
science on which the old school actually stood, . . . "\textsuperscript{138}
Shaw stated the backbone of the old master's school of
voice culture was as follows:

\[ \ldots \text{the mental consciousness of effect in vocal utterance being the constant considera-}
\text{tion and guide for the singer. The idea of improvement through its development of the} \]
physical powers by means of exercises guided for the most part by musical conception and appreciation, was the actual though unnamed vital principle of thought and action.\textsuperscript{139}

Shaw, also, parallels Taylor's conception of the essence of the bel canto tradition with the following statements:

The ability of the master is determined by his ability not only to hear and judge correctly the voice of his pupils, but also to make them hear and correctly judge their own voices, and his skill must be further shown in the use of devices for the promotion of desired ends. . . .

The imagination and idealization of tone is placed before the action, thus being the actual initiative.

This means concentrating the mind on tone desired and willing the effect, the process being in a measure subconscious and aided by physical activity.\textsuperscript{140}

Shaw also agreed with Taylor and others that the following descriptions of voice production were the ideals the old masters strove for:

Sing on the breath.
Open the throat.
Sing the tone forward.
Support the tone.\textsuperscript{141}

Shaw stated that an important teaching technique of bel canto was the practical demonstrations of the masters. Students were not taught to imitate the master, but upon hearing a proper produced tone, they more readily attained the tone themselves.\textsuperscript{142} This statement also corresponds to Taylor's conclusions on the same matter. Throughout Shaw's book, information is provided that closely corresponds to that stated by Taylor. It suffices to say that
Shaw came to the following conclusions concerning the basis of bel canto as did Taylor: a gradual progression from the simple to the difficult; musical perfection took precedence over speed; speed in execution was gained in a gradual manner; emphasis on beauty of tone at all times; all notes should fulfill the requirements of clarity, evenness, and perfect intonation; a methodic plan of ear training; and consideration for individual students.

Edgar F. Herbert-Caesari is another writer who supports Taylor and Shaw in respect to the concept of the ear as the guide to proper tone production. According to Herbert-Caesari,

... the very art of singing should, at the outset call forth a state of mental-nervous excitement which vitalizes the singer's tone as soon as he goes into action... The essence of singing partakes much more of the mental-nervous than of the physical... The ear guides the voice--the mind through thought adjust vocal mechanics to produce proper sound.

It is evident that writers agree that one of the fundamental concepts of bel canto was that of preconception of tone in the mind before the act of phonation. Working in conjunction with this concept, was a methodic ear training program. This ear training program emphasized imitation and listening so that the student developed musical appreciation and a discriminating ear. Perhaps Stanley and Maxfield explained this phenomenon best in an argument against mechanical management of the voice parts.
The vocal cords stretch to a certain length and tension for the pitch. This stretching action is reflex. One cannot tense the vocal cords consciously. The exact length and tension for a given tone depends upon the singer's sense of pitch--ear--and his coordination between pitch and muscular reaction. If the pupil is tone-deaf he cannot be made to sing.

Similarly, the exact positioning of the resonance cavities for the fundamental and vowel depends upon the sense of pitch and of vowel (or quality, which is practically the same thing)--ear. It is useless for the teachers to tell the pupil how to consciously shape or position his resonance cavities.144

Stanley and Douglas provided a more detailed explanation of how the ear guides voice production in the following discussion:

With a perfect voice the adjustments and coordination of the musculature used in the act of phonation is virtually reflex, and the singer has a perfectly clear, cleancut mental concept of all the characteristics of the tone he is about to produce--i.e. a concept of pitch, quality, intensity and vibrato.

As a result of this concept, or mental pattern, nerve impulses travel along diverse never fibres and bring into tension the muscles which should be in action in the correct balance--i.e. correct coordination exists.145

Stanley and Douglas concluded their agreement with the following:

Once the attack has been initiated, everything that the singer can do to produce a good tone has been done. Interference with the adjustment for the purpose of improving the quality which he himself hears is always destructive. . . . The vital point is that the singer must attack the tone definitely from a preconceived concept of its characteristics and hold it absolutely constant in all these characteristics. . . Knowing how to sing is primarily a psychological, not a physical process.146

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John De Bruyn is another writer who supported the above contingent of authorities on the essence of bel canto. In De Bruyn's view, the bel canto master's system of training was based on listening, imitation, and intuition. In addition, he emphasized that the old masters of bel canto paid much attention to the following concepts: breathing, intonation, vowelization, freedom from tension, openness of tone form, equalization of qualities in the tones, and perfect diction.  

De Bruyn explained the concept of the ear as the guide to voice production in the following manner:

Since we have assumed a mental initiation as our point of departure, we logically must assume also that a consistent Bel Cantist does not place his voice anatomically or physiologically. Preferable he thinks, listens, sees, feels, and relies very much upon his esthetic sense—which we define as the sense of beauty. . . .

De Bruyn further explained how this process is achieved in terms of three psychological-physiological operations. De Bruyn's explanation is as follows:

. . . first, the student has attempted to control attention so that the stream of consciousness will focus upon a tone heard by the "mental ear." Second, the quality of the mental tone has been effected by the past experience of the pupil, registered in the subconscious, and by the degree to which he possesses an esthetic sense. Third, the will has set into action, through the nerve channels, the motor expression of the mental concept stimulating the voice mechanism so that, ideally, the conceived tone will be sounded as it has been mentally heard. . . .
Homer Henley proclaimed confidence in the art of bel canto when he stated that it has enjoyed universal success over the centuries and has become acknowledged as the one system of voice culture worthy of confidence by all students and teachers. 150 Henley enumerated the fundamental principles of bel canto as follows:

1. Principle of Breathing. "The art of singing is the school of respiration."
2. Principle of Pronouncing. "He who knows how to breathe and how to pronounce, knows well how to sing."
3. Principle of tuning. "Unerring tuning places the voice."
4. Principle of Joining. "He who knows not how to join, knows not how to sing."
5. Principle of agility. "The voice should be cultivated by correct performance of exercises in agility. Then it will be at the command of the singers."
6. Principle of Swelling and Diminishing the Voice. "Until the singer has learned how to use his breath so that he can swell from the softest piano to the loudest forte, and again diminish and divide the sound into a thousand parts, he cannot say he is master of his breath."
7. The Principle of Expression. "The aim of the singer should be to touch the inmost soul." . . 151

Henley emphasized that much time was taken in mastering these bel canto principles. In the following excerpt, he explained a favorite saying of the Italian masters concerning the time involved in learning and understanding these basic principles of proper voice production.

". . . I can tell you all the that I know about the voice in twenty minutes; but it will take you six years to learn and understand it." Therein lies the answer: the body learns slowly.
much more slowly than the mind; and it takes indefinitely longer to put what has been learned into practice.\textsuperscript{152}

In his writing on vocal pedagogy, Francis Rogers brought attention to another aspect of bel canto. Rogers emphasized the importance of coloratura in the development of vocal freedom and agility. Rogers' thoughts on the subject are as follows:

Though the old masters did not bequeath to us many definite precepts for the development of vocal technique, they did provide us with some valuable "hints of the proper craft." They were sure that it took a long time to learn how to sing. . . .

The old masters had no doubt about the value of coloratura in the training of all kinds of voices. The vocal freedom and flexibility developed thus in early and systemically graded training in coloratura offer the safest and surest approach to sustained and dramatic singing.\textsuperscript{153}

In Rogers' Article, "What is 'Bel Canto' Anyhow," he stressed the importance of the student developing a discriminating ear. As Rogers pointed out, there are one hundred and eight hours in a week. In modern times, the student is fortunate if two hours per week are spent in individual instruction. This emphasizes how vital it is that the teacher awaken and develop the pupils ability of self-criticism.\textsuperscript{154} As Rogers stated,

At the outset, the student must sing constantly, even exclusively, with his teacher whose duty it is to instill in him the fundamental principles of breath control and complete muscular freedom. The teacher referring tirelessly to these principles, with the object of establishing in the pupil's understanding their influence on the production of beautiful tone, strives to train and develop
the pupils ear and general sensibility to such a point of acuteness that the pupil can judge for himself the beauty of his tone, and recognize reliably the mutual relations of cause and effect.155

Paul Klingstedt's book, titled *Common Sense in Vocal Pedagogy as Prescribed by the Early Italian Masters*, is primarily a historical overview of bel canto. The book covers the following topics: the formative period of bel canto, teachers of the formative period, the golden age of bel canto, famous teachers of the bel canto period, the castrati, the transition period, and the mechanical and scientific period. Klingstedt, also, discussed the concepts and principles upon which bel canto is based. According to Klingstedt, the bel canto method was based on the concept of the obedience of the voice to a trained ear. Klingstedt stated the following on the subject:

A great deal of research has been carried on in order to ascertain how the old vocal masters taught. Their books and writings, which are few in number, have been studied with the hope of finding something definite regarding directions for the management of the breath, the control of vocal cord action and information regarding the resonation of vocal tone. No such information has ever been obtained for the simple reason that their method of vocal instruction paid little or no attention to these topics. Their method was a natural one in perfect accord with nature. Finding that the natural way brought desired results they did nothing to interfere with its proper co-ordination. It was the obedience of the voice to a trained ear which formed the basis of the old Italian method.156

In Klingstedt's discussion of the formative period of bel canto, a description of the bel canto method is included. This description is quite informative and gives
much insight into the techniques and principles of bel canto. In describing the bel canto method, Klingstedt emphasized the importance placed on sight singing in the early stages of training. The student was not allowed to begin the study of advanced vocal technique until he had satisfactorily completed the course in sight singing. Klingstedt stated that sight singing was the means by which students were taught the rudiments of music. Once the study of advanced vocal technique was begun, the emphasis was to develop a natural way of singing. According to Klingstedt, this was achieved through a process of ear training, in which the student listened to the model tones of the master and also to the master's imitation of the faulty tone production of the student. In this fashion, the correct concept of tone was established. Klingstedt emphasized that much time was devoted to the acquisition of a properly trained ear. In addition, Klingstedt stated that a tone was evaluated solely by its sound characteristics and that no attention was paid to the physical aspects of singing. According to Klingstedt, the bel canto masters knew the voice was capable of correct tone production if guided by a well-trained ear. Klingstedt, also, pointed out that the masters were always aware of the condition of the student's voice and prescribed the kind of exercises needed for continued development. In summary, Klingstedt stated that the overall training
program was a gradual progression from one stage to the next with an emphasis on natural laws. \(^{157}\)

Regarding more specific aspects of the techniques and principles of bel canto, Klingstedt said, "each new study prepared the voice for the following one." \(^{158}\) In addition, Klingstedt stated, "the songs and exercises were carefully selected and graded as to their technical and musical difficulty." \(^{159}\) Regarding breath support, Klingstedt made the following statements:

The teachers did not include instructions in breathing in their courses. They believed that the right way to find out how to breathe was not to decide first how you should breathe and then make the tones accordingly but rather to make the tones until you find out how they can be made best. \(^{160}\)

Klingstedt also made reference to the pedagogical technique of the student's imitation of the master. In Klingstedt's words,

. . . in presenting a new song to be studied the teacher would generally sing it through, making various comments as to the tone and the interpretation. The student would then practice it with these suggestions always in mind. \(^{161}\)

In regard to basic concepts upon which bel canto principles are formulated, Klingstedt listed four.

The precepts are nothing more or less than a set of rules used by the teachers in their teaching. The following were used a great deal by the old masters.

1. Sing with open throat.
2. Sing the tone forward.
3. Support the voice.
4. Sing on the breath. \(^{162}\)
Klingstedt explained the first precept of "Sing with open throat" as follows:

When the master used this term in his teaching, he did not mean for the student to actually concentrate his thoughts on his throat in order to expand the throat cavity in a muscular sense. . . . The idea was to let the throat be opened in a natural way without direct muscular control. This was accomplished by the ear. The state of an open throat was purely auditory. . . . They heard it and taught their pupils how to hear it also. When listening to the great singers of their day the student's attention was called to the sound which always found in correct voice production and which is characteristic of the open throat. The pupil's mind was thus centered on the tone and not on the physical action which produced the tone. It was a vital part of the student's musical education to hear all the leading singers of his time.163

Concerning the second concept of "Sing the tones forward," Klingstedt explained that the phrase did not refer to the singer's attempt to direct the tone toward any part of the mask or face. According to Klingstedt, the old masters knew, . . . if this was done the tone would be impaired by interference of throat muscles. It was again the auditory idea of being able to determine the tone which seemed to give that straight forward characteristic of delivery.164

Klingstedt explained the third concept of "Support the voice" in similar terms. "They considered tone just a sound to be heard and the idea of vocal support was received altogether by means of the ear."165

The fourth concept of "Singing on the breath" is perhaps the most subjective. Klingstedt said that his expression was not a rule for management of vocal organs,
but was simply used to describe an ideal quality of tone.

Klingstedt's description of this tone quality follows:

. . . tones of the perfect voices seemed to float in the air, leaving the impression on the ear that the breath was exhaled in an easy and free manner, much the same as in normal breathing, and it caused the tones without effort to the farthest corners of the opera houses and concert halls. The term, Singing on the breath, was given to this floating quality. . . . It was noticed that as the pupil approached technical perfection, the voice gradually took on this quality. It seemed to be a characteristic of finished singing.166

Chapter VII of Klingstedt's book is titled "Famous Teachers of the Bel Canto Period." Bel canto teachers included in this chapter are the following: Tosi, Pistocchi, Porpora, Bernacchi, and Mancini. In this discussion of bel canto teachers, Klingstedt included biographical information, facts concerning their careers as singers and teachers, and more importantly, information concerning their teaching techniques. Klingstedt's description of Tosi's system of voice culture was quite informative. According to Klingstedt, Tosi's system was one of progressive development from beginning to end. The first months of study were devoted to the middle register of the voice. In Klingstedt's words,

. . . Single tone exercises were practiced until the student could sing with a clear steady tone, for the full duration of the breath, in varying degrees of dynamics, all the intervals of the middle octave. Short scale exercises for acquiring agility were then added. They consisted of just a few tones which were sung at a slow tempo. As the voice gained in flexibility, the speed was increased. Upon mastering the short scale exercises the messa di voce (swelling and diminishing a
a tone) was taken up. It was used to develop control and power of voice. Tosi considered the messa di voce of the greatest importance.\footnote{167}

According to Klingstedt's description of Tosi's system, after the middle register of the voice was established, the range of the voice was extended in both directions. This was accomplished by the combined practice of messa di voce and scale exercises, adding note by note, until both extremes of range were attained.\footnote{168}

According to Klingstedt, the next stage in the student's training was the study of such ornaments as the appoggiatura, the trill, and runs. In the beginning of the study, each ornament was practiced at a very slow tempo. Precision and musical perfection were stressed rather than speed. Therefore, the process of gaining speed and agility required much time and patience. In addition, florid exercises were practiced at a slow tempo on open vowels. As the student's voice acquired freedom and flexibility, the tempo was gradually increased. Tosi required perfection in vowel sounds. Once this perfection was achieved, the student was allowed to practice the exercises with words. At this point in the system, the building of the student's repertoire began.\footnote{169}

Klingstedt, also, stated that Tosi emphasized pure legato singing from the first lesson. The student was taught how to sing with a steady flow of tone moving from one note to another with perfect intonation.\footnote{170} In regard

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to Tosi's technique for handling the break in the voice, Klingstedt made the following statement:

The terrible break in the voice that we hear so much about today, and which seems to be the main source of trouble is the development of an even scale, was given little thought by Tosi and his associates. The chief reason for this was that in their methods of teaching, the weak places in the voice were strengthened gradually and never reached the proportions of a break.171

Klingstedt was rather sketchy in regard to information concerning the methods of Porpora, Pistocchi, and Bernacchi. However, he did make the following statements about Mancini:

The first lessons consisted of sol-fa-ing the scales ascending and descending. Special attention was given to the intonation and quality of each tone. No slurring or scooping was tolerated. When the student became proficient in the scale exercises the messa di voci was studied. . . . When the messa di voce was perfected the next step was the study of the ornaments and coloratura. The exercises were graded and given in progressive order. The pupil was never permitted to go from one stage to the next until the voice was ready for advancement.172

In Klingstedt's concluding chapter, he stated that the old Italian master's ideas of vocal control were based on instinctive guidance. In addition, he stated the guiding principle of the bel canto method was that the desired tone was first conceived in the mind and then the vocal organs automatically adjust themselves to create the desired tone.173 In Klingstedt's words," . . . when the voice is guided by a keen musical ear, it naturally adopts
vowel vocal action."\textsuperscript{174} Klingstedt also stated that the students of bel canto were carefully trained in both listening to all kinds of voices and in detection of vocal faults. According to Klingstedt:

... their philosophy was that if the student knew how a correct tone sounded and practiced with the sound in mind, the vocal mechanism would automatically adopt correct vocal action... They believed that the first step in training the voice to produce correct tones was to acquaint the ear with a correctly produced tone.\textsuperscript{175}

It has been noted that there has been a resurgence of interest in bel canto in the recent past. This revived interest in bel canto is evident in the numerous publications on the subject in the past twenty years. Most of these publications seek to re-examine original bel canto literature in order to derive principles and concepts that may be applicable today. Not only do several of the publications accomplish this purpose, but they also serve to show insight into other aspects and opinions about bel canto. An example of such a publication was written by Edward Downes.

Downes agreed with the majority of twentieth-century authorities on bel canto that the period of training was long and arduous.\textsuperscript{176} In addition, Downes described the proper order of study as advocated by Tosi. This order of study consisted of:

1) the "placing" of the voice, 2) gymnastic vocalization on vowels, 3) the study of ornaments, and 4) the singing of songs with words...
In addition, all vocal students had to study composition, performing on instruments, and literature—so that the mind behind their vocal accomplishments was that of a complete musician.177

Downes described, in more detail, his concept of this system of training and in so doing, gave insight into an interesting philosophy of sight-reading. Downes' description follows:

This system of training involved an intensive and prolonged study of scales and arpeggios in much the same way as such exercises and studied by an instrumentalist. Indeed, the ideal was for the perfectly trained singer to have all the purely technical possibilities of his instrument at his command so that, in whatever dramatic or emotional situation might arise, he could, at will, draw upon these resources for expressive purposes.

The exercises which were studied consisted of all kinds of melodic cliches (such as runs of four notes, changing notes, or short arpeggio figures) in all possible variations and inversions.178

In other words, if a musician learns to execute and recognize all of the patterns in conventional music, such as rhythmic, melodic, and harmonic patterns; then, indeed, there is no such thing as sight-reading. Instead, when confronted with a new piece of music, the musician simply recognizes each pattern as it is presented and executes the pattern as an automatic response. Perhaps this is the lesson to be learned from Porpora, who confined his student Caffarelli for five years to the study of exercises written on one sheet of manuscript paper. As previously indicated, Caffarelli became one of the most famous singers of the period.
Ida Franca is another twentieth-century writer who has demonstrated rather unique insight into certain aspects of bel canto. Reference has been made to Franca's definition of bel canto, which referred to bel canto as a style of music that emerged from medieval discant. Reference has also been made to the fact that, like other authorities, Franca agreed that bel canto is based on the ideal concepts of beauty of tone, clarity, and agility in the voice. In addition, Franca has defended the viewpoint that the system of bel canto voice culture resulted from the teacher's efforts in the achievement of these ideal vocal concepts. As Franca said,

In order to arrive at the elasticity of throat and mind that was indispensable for meeting the demands of this epoch—the greatest in Italian singing—the teachers of singing who oftentimes were not only vocal virtuosos but excellent composers too, wrote special exercises, called solfeggi, intended suitably to train the future artist.179

Franca suggested that in order for a serious voice student to be able to execute bel canto vocal literature properly, the basic techniques of bel canto must be studied to perfection. In Franca's book, Manual of Bel Canto, a means of studying bel canto technique is demonstrated. According to Franca, the study of bel canto begins with legato singing. Franca explained the proper execution of legato in terms of the passing from one note to the next clearly, readily, and naturally. Franca warned that there should be no irregularity in the voice.
and no interruption between two notes. In addition, warn-
ing was given that no clicking should be heard between
notes no matter what the interval.\textsuperscript{180}

Franco placed much emphasis on a technique per-
taining to proper musical phrasing. In the book section
titled, "Sound Detachment," Franca described the technique
of retention of breath support after the termination of
sound.\textsuperscript{181} In Franca's opinion, the proper execution of
this technique avoids any trailing sounds and adds much
to the beauty of the musical phrase.\textsuperscript{182} The proper
execution of this technique was illustrated as follows
in figure 9.

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{fig9.png}
\caption{Franca's Breath Retention Technique.}
\end{figure}

Franca, also, provided insight into the proper
manner for the study of the following techniques:
the registers and their union; the semitones and chromatic
scales; the study of intervals; sustained notes; the
portamenti; the study of solfeggi and text singing; the
timbre of the voice; and musical embellishments. The
following pedagogical principles permeate Franca's dis-
cussion of each technique: progression of easy to more
difficult; progression of graded exercises; perfection of each degree of difficulty before progression to the next level; isolation of a problem and the study of the problem to perfection before execution in a musical context. In each discussion, Franca continually made reference to the following ideals of vocal production: beauty of tone, agility, pure legato, and perfect intonation. It is important to illustrate that Franca made no reference to mechanical management of the voice in the discussions of the above listed techniques. Instead, emphasis was always placed on attention to the sound of the voice in the execution of the various techniques.

Lillian Strongin is another twentieth-century authority who has advocated the need for the revival of bel canto. In an article titled "What is Bel Canto," Strongin listed the following ingredients of bel canto: perfect pitch; evenness in tone quality throughout the range; perfect blending of diction with tone; perfect legato; sustained unbroken phrase; and the insistence on a pure tone at all times.\textsuperscript{183}

In the same article, Strongin emphasized the importance of proper breath control in the support of all vocalization. In Strongin's opinion, proper breath control was the key to the achievement of ideal voice production.\textsuperscript{184}

Perhaps one of this century's foremost authorities
on bel canto is Cornelius Reid. The claim to this distinction is evident by the number of writers in the literature who have quoted the book, Bel Canto: Principles and Practices. This book is a valuable contribution to bel canto literature. It is not only valuable for the information regarding pedagogical principles and procedures, but for information concerning such topics as: the historical background of bel canto, the development of opera, descriptions of the abilities of famous singers of the era, and the early history of voice training.

The following excerpt sums up Reid's opinion of the essence of bel canto and the ideal upon which it is based:

Translated, "Bel Canto" may be interpreted to mean "Beautiful singing." Accepted at face value, this expression is exceedingly vague and indefinite until it is realized that beautiful singing implies much more than an ability to produce lovely sounds. . . . When a tone is truly beautiful it signifies the vocal mechanism is functioning correctly, . . . Bel Canto singing is impossible without vocal freedom, and true vocal freedom finds its expression in vitally resonant tones covering a wide pitch range, in a complete control over extremes of dynamics, and an ease and flexibility of execution. These characteristics of the perfectly used voice constitute the Bel Canto ideal, and are elements without which it would be impossible to have genuinely beautiful tone. In sacrificing every other consideration in the interest of tonal beauty the early Italian teachers instituted a sound basis for developing the voice.185

Reid outlined the vocal training procedures of the seventeenth and eighteenth centuries. The outline was based on the writings of such teachers as Caccini, Tosi,
and Mancini. In Reid's opinion, the training procedures of these exponents of bel canto were as follows:

1. Sight singing;
2. Vowel formation;
3. Establish chest and falsetto registers in all voice types;
4. Develop each register as a separate entity;
5. Blend registers by perfect mutation;
6. Simultaneous development of following in order of difficulty: (a) Solfeggi, (b) Legato, (c) Portamento, (d) Easy embellishments, (e) Difficult embellishments, (f) Messa di voce, (g) Agility;

Reid put much emphasis on the importance of pure vowel quality. He referred to the results of research projects carried out by Bell Telephone Laboratories and Electrical Research Products, Inc., as well as other companies in radio communication. These research projects substantiated the empirical observations of the bel canto teachers as to the importance of vowel purity. 

As Reid stated,

... the constant striving of the early masters of singing toward the goal of "vowel purity," therefore, was in effect an effort guided by instinct whose purpose was to duplicate a favorable acoustic condition.

In establishing the above procedures of voice training, Reid made reference to numerous bel canto pedagogical principles. Examples of these references to bel canto principles are evident in the following excerpts:

... the instruction always led insensibility from the easy to the difficult.

It is impossible to overemphasize the importance of listening carefully and analytically to every sound produced in singing. Learning to sing well is in a large measure dependent upon the cultivation of aesthetic principles, and
the student must become hypersensitive to perfections and imperfections of the mechanisms as they are revealed and exhibited by the vowel quality. 190

In addition, Reid emphasized the importance of imitation as an aid to development of the ear. 191 He substantiated this claim with references to Mancini's treatise and to Johannes Hiller's How to Teach Refined Singing (1774). 192

As a result of his research into primary sources of bel canto, Reid concluded that discussions on the subject of breathing were almost totally absent. He stated . . . the only conclusion to be drawn is that the respiratory processes were known to instinctively fall into line once the fundamental principles of tone production had been established. 193

At the end of this book, Reid seems to have summed up his philosophy of vocal pedagogy with the following statement:

Virtuoso singing not for the sake of virtuosity itself, but to allow the sensitive artist to give full expression to his inner conviction and understanding of the great masterpieces of music. Mastery over the techniques of Bel Canto singing is the surest guarantee of this achievement. 194

In more recent times, Reid has contributed another publication to the literature of vocal pedagogy based on the principles of bel canto. According to Reid, the primary purpose of The Free Voice was to set forth a technique of voice training which utilizes conceptual controls to evoke spontaneous coordination of vocal organs. 195 In the following excerpt, Reid proclaimed the
superiority of the bel canto principles in the achievement of this purpose.

Many different paths have been taken through the years in an effort to devise a satisfactory technique for bringing the vocal organs into a state of functional efficiency. Strangely enough, the available evidence indicates that the teaching practices employed up to the middle of the nineteenth century were superior to those which came later. One of the reasons for this is plain: knowing nothing about the mechanics of the vocal function from the standpoint of anatomy, the instruction never expressed itself in physical terms. To the early teachers of singing, vocal training was conducted through an interplay between two minds in which conceptual evaluations were revised, improved and developed on the basis of the student's ability to respond freely and spontaneously to the pitch, intensity and vowel patterns suggested by the teacher. It was this kind of procedure which was responsible for the golden age of Bel Canto.196

Reid made reference to the fact that much has been said about the lost art of bel canto and the belief that those teachers carried the "secrets" of its training procedure to the grave.197 However, he stated,

The lost art of Bel Canto is, quite clearly, to be found in qualities of hearing, thinking, feeling, and empathetic rapport. . . . The basic principles . . . , were, according to the record, few and simple, even though the application of these principles to the individual was subtle and complex.198

Reid described the bel canto approach to ear training in terms of developing the ability to hear functionally. He described functional hearing as follows:

Functional listening is that which recognizes tone qualities for what they are, the aural equivalent of muscular coordination occurring as a response to mental concepts.
Learning to hear functionally means that tone qualities are judged and evaluated for their intrinsic health, and as a reflection of a coordinative process, rather than for their aesthetic charm or beauty.\textsuperscript{199}

Reid explained the initial steps in the training of functional hearing in the following excerpt:

For the singer, objective judgements are of lesser importance than those which are subjective. Training must begin, therefore, with an effort to improve and perfect subjective concepts. In this program the student must be taught what to listen for; then when he becomes capable of making right value judgements between aural phenomena and functional laws, both objective and subjective judgements will have been brought into agreement.\textsuperscript{200}

Reid seemed to refute the \textit{bel canto} concept of beauty of tone as the ideal of all vocal training. Instead, he emphasized that the purpose of vocal training was the achievement of functional freedom in voice production. As he said,

without functional freedom the natural beauty of the voice is unknown. . . . Success in achieving pure tone quality will only come with the release of wrong tension, which is the meaning of vocal freedom.\textsuperscript{201}

Reid also emphasized the importance of the proper mental conception of tone in voice production. He stated that in the initial act of phonation the reaction of the vocal organs is the mental conception encompassing the three elements of vocal tone--pitch, intensity, and the vowel. The manner in which the vocal organs react is determined by the clarity of the mental concept, the efficiency of
the respiratory function, and psychological factor which
manipulate muscular involvement. He explained, once
freedom of function is gained, the singer is able to
intuitively preserve muscular coordination through sensory
perception.

Reid seems to agree with the basic bel canto concepts
that the fundamental purposes of vocal training are the
achievement of agility, a pure legato, and evenness of
tone throughout the vocal range. He stated that the
properly trained voice should be capable of free execution
of the following techniques: the ability to execute all
dynamic levels and gradations between; to move smoothly
from one note to the next on all vowels; to have access
to high tones when performing in the low range; the
ability to descend without physical preparation from high
tones without disjunction; and the ability to demonstrate
a unity of functional relationships among the various
parts involved in voice production.

In the following excerpt, he emphasized the impor-
tance of pure legato:

The essence of all vocal exercises, . . ., is
the legato. In effect, legato singing equates
with technical proficiency and indicates that an
adjustment has been maintained throughout the
length of the musical phrase within which all
functional elements have met in agreement. To the
extent the adjustment is correct, a natural homo-
genity is attained which affords the singer more
than ample control over technical resources. . . .

Legato singing, then, is important to all
periods of training. . . . The legato is fundamental
to good singing.
In regard to the purpose of vocal exercises, Reid stated that vocal exercises should be so constructed to meet the following prerequisites:

1) to re-establish basic functional principles,
2) to reduce complex problems to simpler and more manageable components, 3) to correct errors of technique, and 4) to exercise the voice. 207

Reid emphasized that the value of any social exercise can only be recognized if it is practiced in the proper frame of mind. In other words, the student should understand the purpose of the exercise, why it is being practiced, the purpose of its use at that level of development, and exactly how it is to be executed. 208

Reid also voiced his opinion concerning the methodic progression through each stage of development. He advocated supervised practice as an advantageous means of guiding this progress. 209 In a discussion of repertoire and its use in vocal training, Reid cautioned against repertoire that contained material beyond the student’s abilities. He suggested repertoire should be chosen that strikes a balance between musical ability and technical proficiency. He also stated that the technical demands of a piece should be mastered before considerations for interpretation are employed. 210

Reid has written another book within the past five years on vocal pedagogy. The title of which is Voice: Psyche and Soma. It becomes apparent to the reader within
the first few pages that this is another contribution to vocal pedagogy based upon the principles of bel canto. As he said,

Before the era of scientific investigation many notable teachers (Tosi, Mancini, the Lambertis and Garcia, to name a few) recognized definite parallels between stimulus and response and promulgated a theory of registration which remains valid to the present.211

It is a recognizable fact that this book is a further development of topics Reid discussed in The Free Voice. This is apparent in the overall plan of the book and especially in regards to such topics as functional hearing and quality concepts. His discussion of the meaning of functional hearing is virtually a rewrite of the same topic as it appears in The Free Voice.212 Regarding the topic of quality concepts, Reid demonstrated the importance of the correct mental conception of tone quality in voice production.213 Overall, it seems quite apparent that Reid's writings on vocal pedagogy are deeply rooted in the bel canto tradition.

The next writer to be considered in this review of bel canto is also an adamant proponent of the teachings of the old Italian masters. Weldon Whitlock is one of the most prolific writers of this century on the subject of bel canto. He has published numerous articles as well as the book, Bel Canto for the Twentieth Century. Reference has been made to Whitlock's definition of bel canto. However, in Whitlock's book, he relates a more personal interpretation
of the term. He wrote,

So often I am asked, "Bel Canto--What is that." Or, "What do you mean by 'Bel Canto'?" Invariably I find myself replying, "The Best in singing for ALL TIME." Then I may explain that it literally means "Beautiful Singing," and that it usually refers to a period in the history of singing, or an Era; and yet it is the term BEL CANTO that always intrigues.214

Concerning general pedagogical aspects of bel canto, Whitlock continued,

We have learned that the Bel canto TECHNIQUE was fabulous. It was achieved through the most rigorous training, over LONG periods of time, in bold contrast to the measly thirty-minute, two-a-week lessons of today. 

... It was the firm belief of the Bel Canto teachers that, if the student sang ABSOLUTELY PURE VOWELS, that there could be NO FAULT IN THE TONE.215

Whitlock proclaimed the pedagogical superiority of the bel canto era to modern times in the following excerpt:

It was the ABILITY TO SPAN THE LONG, UNBROKEN PHRASE, again and again, that gave them their superiority; they developed this through the purity of the vowel and superb legato. Herein lies our real problem today, if we are to bring back Bel canto in its original greatness. The "secret" lies in phrasing. . . . The ability to develop the BREATH, to conserve it, through the PURE VOWEL and the absence of ALL TENSION, and then be able to perceive and negotiate LONG, UNBROKEN PHRASES, lies at the root of our real problem.216

Reference was made to Whitlock's summarization of four basic points in the acquisition of bel canto technique. These points are as follows: (1) the absolutely pure vowel; (2) pure legato, and the long unbroken phrase;
(3) simple ornamentation, followed by elaborate fioritura;
(4) sensitive treatment of recitative. Whitlock stressed that the bel canto masters placed legato and the long, unbroken phrase second in importance to the pure vowel sounds. He perceived the art of bel canto as "consisting of the FLOW-THROUGH OF SOUND, representing the continuity of the idea being expressed." In more detail, he stated

... if the breath is kept flowing through the phrase, so that it is "used" instead of being "held," the singer will find that the LEGATO grows out of the flow of air through PURE VOWELS.

All of Whitlock's writings demonstrate his working knowledge of bel canto principles. In his article "A Renaissance of Bel Canto," the primary purpose was to emphasize the bel canto principles of long periods of intensive training and the perfection of one level of development before progression to the next more advanced level. He said, that in his own teaching, he utilized the bel canto principles of simple before complex--two notes, then five--and slow before fast. In addition, he utilized the principle of the isolation of a technique and its perfection before execution in a musical context.

In a discussion of the purpose of vocalise, Whitlock stressed the importance of ear training in vocal training and, in so doing, emphasized another bel canto principle. He said,
... keep in mind that any vocalise has a TWO-FOLD purpose; first, to develop and strengthen muscles, and second, to develop the ear of the singer; for it is only through the well-trained ear that we are able to judge the vocalise and its effect.222

This statement seems to demonstrate Whitlock's agreement with the bel canto principles of ear training. As indicated, this concept of ear training consisted of developing the ability to mentally perceive tone before phonation and the ability of the ear in guidance toward proper voice production.

As exemplified by both primary and secondary sources concerning bel canto, many aspects of vocal pedagogy—past and present—are of a rather subjective nature. Perhaps one of the most scientific approaches to vocal pedagogy was written by D. Ralph Appelman. In his book, The Science of Vocal Pedagogy, Appelman defined singing as follows:

Psychophysically, artful singing is the dynamic (ever changing) act of coordinating instantaneously the physical sensations of respiration (the will to breathe), phonation (the will to utter a sound), resonation (the will to form a particular vowel position), and articulation (the will to communicate by forming both vowel and consonant) into a disciplined utterance.223

It is interesting to note in this definition that resonation is linked to vowel position. It seems that an obvious correlation can be made between this definition and the importance of pure vowel sounds emphasized by Whitlock and the bel canto masters.
Appelman seemed to agree with the bel canto principle of the perception of tone in the mind before phonation. His agreement is apparent in the following excerpt:

All artful singing is conceptual. A singer cannot possibly sing a pitch knowingly without first conceiving it as sensation. Equally a singer cannot establish a controlled vocal equality or control variations in intensity, without first conceiving these elements as sensation.\(^{224}\)

Appelman illustrated this principle in a diagram which represented the firing order or sequence of decisions a singer must make at the precise second of phonation.\(^{225}\)

In a discussion of breath control, Appelman made a direct reference to the Italians and their use of messa di voce.

The point of suspension is the body sensation created by a balanced pressure of the thoracic muscles of inspiration opposed by the abdominal muscles of expiration. ... The Italians, drilling constantly with the messa di voce, attempted to establish this sensation as a basic sensation for all singing. The wise singer will always use the point of suspension as a reference for correctly produced sound.\(^{226}\)

With the following reference to bel canto, Appelman seemed to substantiate his hypothesis for the importance of the coordinated control of laryngeal action and breath pressure in the development of a firm singing technique:

The gradual change of intensity on a single pitch at the point of register transition, rather than diatonic drills which involved high tessitura, is the basic of the bel canto technique as reported by Mancini, Bernacchi, and Issac Nathan by Reid.\(^{227}\)
Appelman, also, quoted Reid in regard to the use of *messa di voce* in joining the two registers of the voice.\(^{228}\) With the above statements as evidence, it seems that Appelman's approach to vocal pedagogy can be said to be eclectic in nature. Eclectic in the sense that he seems to have selected certain aspects of *bel canto* and combined them with modern science in order to effectively resolve various problems in vocal pedagogy.

The next writer to be considered has taken exception to various statements about *bel canto* made by other twentieth-century writers. The primary disagreement involves one of the fundamental concepts of *bel canto*. In *The Singing of the Future*, David Ffrangcon-Davis declared that "*bel canto* was not a school of sensuously pretty voice-production."\(^{229}\) Instead, he placed the emphasis on the principle of musically saying the words, or rather, on truth of expression. In his words, "surely, on the face of it, bel-cantists must have concerned themselves with something higher than mere sensuous 'beauty of voice and vocal plastics.'"\(^{230}\)

Ffrangcon-Davis implied that this misconception, by twentieth-century writers, grew out of the activities of the last years of the *bel canto* era when emphasis was on virtuosic *fioritura* performances. However, Ffrangcon-Davis admitted that *bel cantists* of the earlier part of the era were probably correct.\(^{231}\) Through the brief
historical perspective that follows, Ffrangcon-Davis substantiated this claim:

... the impetus given to "truth of expression" by Peri and other reformers (when they made the vocal adaptation of the text conform to ordinary Italian speech) must have affected the teaching of bel-canto. ... Add to this the Florentine love of colour, the predisposition of Italians to "long-vowel" singing, and the character of Cavalli's music, which was dramatic and aimed at verisimilitude, and we have—in the times which led up to those of the first bel-canto schools—elements making for truth of expression, and not for mere vocal plasticity and so-called "beauty."\(^{232}\)

Ffrangcon-Davis stated his position on vocal pedagogy in the following excerpt:

... voice must grow out of language, and singers must begin their studentship by singing THOUGHTS. The senses must not be allowed to tyrannise over the vocalists of the future, who will moreover show perfect correlative beauty and absolute agility of voice, resulting from linguistic or, if you will, literary purity.\(^{233}\)

In Ffrangcon-Davis's opinion, "bel canto meant mastery over the voice."\(^{234}\) By this he meant that the voice serves the words and the mental conception of the singer.

In reference to basic pedagogical principles, Ffrangcon-Davis stated

... the records of bel-canto enabled us to exercise the analytic faculty, and we had sufficient historical ground to assure us that bel-cantists worked on lines of rational consistency, patience, and perserverance.\(^{235}\)

In the following excerpt, it is apparent that this writer is in agreement with the basic bel canto principle of graded progression from simple to more difficult:
Nature secrets, and waits till the hour arrives, and then brings out from her store things new and old. She starts from small beginnings; the student of voice must do the same, carrying small, then larger burdens, and training his carrying power to bear the great, by first bearing the small.236

In regard to the importance of a well-trained ear, Ffrangcon-Davis agreed with the concept of the singer's ability to conceive tone before phonation and the importance of the ear in guidance toward proper production. He stated, "the training of the ear is one half of the training of the voice, but your mind is the court of appeal when in doubt."237

Within the last decade, two dissertations have been written on the topic of bel canto. The primary or secondary purpose of these scholarly works was the establishment of the pedagogical principles of bel canto. The first of these dissertations to be considered, in this review of bel canto literature, was written by Edward Vaught Foreman. Not only is Foreman distinguished by the authorship of this dissertation, titled A Comparison of Selected Italian Vocal Tutors of the Period Circa 1550 to 1800, but he has also written articles on vocal pedagogy and is the editor of Twentieth Century Masterworks on Singing.

In his dissertation, Foreman set forth the belief that students of the historical development of singing have labored under the delusion that hidden within the treatises of the seventeenth and eighteenth centuries are...
secrets for the development of vocal emission. The consensus is that the recovery of these secrets would provide the basis of a system for the development of voices with unparalleled abilities in tonal beauty, range, and agility. As a result of Foreman's research into the writings of the vocal tutors of the period, he stated that there are two basic misconceptions inherent in his consensus.

The first is that there was anything "secret" about the teaching of vocal emission; the precepts set down are admittedly simple, but, given the prevailing conditions, are more than adequate to explain the results which they produced. The second weakness, far more serious because it has heretofore gone unexamined, is the belief that the primary ideal of the so-called "Bel Canto Period" was beauty of tone allied to virtuosity of execution.

Foreman stated that he did not mean to imply that tonal beauty, range, and virtuosic performance agility were not pursued by tutors and singers of the period. Instead, Foreman set forth the idea that . . . rather than implying a method of producing the voice, it implies a method of reducing the ear of the listener, a gracious and "just" style of performing which exceeds all questions of vocal emission. The use of the voice must be such that it does not hinder this "just" emission.

This statement seems to parallel the statements made by Ffrangcon-Davis when he stated that the fundamental concept of bel canto was "truth of expression." Foreman added emphasis to this conception of bel canto with the following statement:
The period of 1550 to 1800 represents what has been termed the "Classical Period" of bel canto when perfection of technique and performance aesthetics were in almost complete balance.\textsuperscript{241}

Foreman, also, seems to have been in agreement with Ffrangcon-Davis concerning the impetus behind mistaken attitudes about bel canto. Foreman's statement about this problem follows:

Much of the mistaken attitude toward bel canto as a technical achievement grew out of the feverish activity of the last decade of the century, when the aesthetic of bel canto was overshadowed by the necessity to outdo competitors in technical brilliance. The new century would retain the impression of technical virtuosity, while losing sight of the fundamental ideals which it had earlier served.\textsuperscript{242}

Foreman's dissertation is, unequivocally, a valuable contribution to the literature and is indispensable to this review of bel canto literature. Foreman's dissertation presents a synopsis of the writings of each tutor selected from the period between 1550 and 1800. As a result of his study, Foreman was able to draw a number of conclusions regarding the true impression of bel canto as it was understood during the period. Foreman found that there were no references to vocal physiology in the writings of the period. Teaching was based on the empirical knowledge and performance experience of the tutor. There was a general consensus that voice production should be free of effects with the undesirable qualities of throatiness and nasality as the major defects to be avoided. In addition, the blending of the registers and even emission of the
registers was a requirement of the tutor in the later years of the period. Tutors of the period preferred the innately talented student who possessed a naturally coordinated vocal mechanism. However, the tutors of the eighteenth-century were found to be of the opinion that serious vocal defects could be corrected.\textsuperscript{243}

The lack of instruction regarding breathing by the tutors lead Foreman to the conclusion that breathing was apparently understood and that a natural approach to the problem was advocated. The emphasis of the Italian teachers was the discovery of natural solutions in vocal training.\textsuperscript{244}

A basic pedagogical principle of the period was time. Much time was given to the perfection of each vocal technique before advancement in the training program was allowed. In addition, the student was given new and more difficult material only as his progress allowed.\textsuperscript{245}

As to his findings regarding artistic considerations, Foreman stressed the following points:

\begin{itemize}
\item\item\item\item\item\item\item\item\item\item the approach to the artistic aspects of singing is consistent throughout the writings of the period.\item The single artistic aesthetic which dominates the entire period, and which continued to be felt, although to a lesser extent, into the nineteenth century, is that of taste and style in singing all music.\item It must be stressed that tonal emission was understood to be a prerequisite to artistic expression, however; it was a tool for the singer's use, just as his well-trained ear and his sense of verbal expression were tools. The tone was not
\end{itemize}
the sole end, as has been inferred by other students of the period.246

In the conclusion to his dissertation, Foreman made a number of observations. These observations were found to be of such importance to this report that they were included in the following excerpt:

1. The basis for teaching vocal emission was largely empirical, since scientific knowledge available during the period was not discussed. . . .
2. Vocal emission was carefully studied, but does not represent the ultimate goal in those singers who are to be considered the ideal artists of the period.
3. Taste and variety of expression are considered to be preferable to technical perfection, although the ideal artists were those who combined the two, . . .
4. Verbal clarity and appropriate musical and vocal style for the expression of the verbal content of the music are stressed throughout the period. . . . It is inaccurate to state that beauty of tone and technical polish were the sole ideals of the singer and teacher in this period, . . .
5. Meaningful dramatic action was also encouraged, . . .

The basis appeal of the singer was his vocal virtuosity, compounded of beautiful tone, facile execution of difficult passages, tasteful ornamentation, and clear enunciation of the text.247

The next and final work to be considered in this review of bel canto literature is the dissertation by Franzone. Reference has been made to Franzone in regard to the substantiation of the revived interest in bel canto in modern times. Franzone was also referred to as being responsible for establishing the relevance of bel canto to contemporary vocal pedagogy and performance. A primary purpose of Franzone's dissertation was deriving
pedagogical principles from bel canto literature. As a result of Franzone's research, the following principles were derived from the literature:

1. The Ability to Create a Beautiful Singing Tone.
2. The Ability to Unify the Entire Vocal Range.
3. The Ability to Maintain Vowel Purity and Free Articulation of Consonants.
4. The Ability to Sustain the Unbroken Phrase.
5. The Ability to Execute Florid Passages with Ease and Accuracy.
6. The Ability to Express Variety of Mood and Style.248

As Franzone developed these principles, it became apparent that each principle was dependent upon another. Franzone said, "... all bel canto principles seem to be integrated..."249 Franzone also demonstrated that the last stated principle—the ability to express versatility of mood and style—was especially inclusive of and dependent upon all the others.

As a result of Franzone's research, the following conclusions were made:

1. Authentic or stylistic performance, as we understand it, requires the knowledge and understanding of bel canto style and technique. . . .
2. An eclectic approach is indicated for modern voice teaching due to the vast accumulation of knowledge that is now available. . . .
3. The performance of contemporary music clearly requires the technique of singing known as bel canto.
4. Creative approaches should be developed for meeting the vocal needs of teaching and performance.250
Summary

As a result of this review of selected bel canto literature, it seems evident that a number of observations can be made.

1. In view of a more comprehensive and practical usage of the term "bel canto" in modern literature, the definition of the term may be said to be inclusive of the following: (a) Bel canto literally means beautiful singing and in common usage refers to the seventeenth and eighteenth centuries' ideal of tonal beauty, agility, and virtuosity; (b) Bel canto, conceived as a musical style, can be characterized by: beautiful singing tone; brilliant execution of fioritura; pure legato, with emphasis on the sustained unbroken phrase; clarity of vowel sound and articulation; an even vocal range; perfect intonation; complete mastery of dynamics; and a freedom of voice which results in unhindered deliverance of musical expression; (c) Bel canto, as a pedagogical approach to voice production, can be said to include the pedagogical techniques, concepts, and principles reflected in primary sources of the seventeenth and eighteenth centuries and in modern interpretation of these sources. Upon being exercises, these pedagogical techniques, concepts, and principles apparently result in vocal emission that can be characterized as bel canto.
2. Twentieth-century literature reflects a revived interest in bel canto. It has been established that this resurgence of interest in bel canto is due to the following factors: a need felt by modern pedagogues and performers to improve and maintain vocal standards; interest in authenticity in performance practices; a need to correlate the results of recent vocal research and traditional pedagogical practices; interest in historical research; virtuosic performances of bel canto repertoire; and the wide availability of such performances on stereo recordings.

3. It is apparent that recent research has established the relevance of bel canto to contemporary vocal pedagogy and performance.

4. It is evident from a study of bel canto primary sources that definite pedagogical concepts and principles can be ascertained.

5. It can be said that there is a consensus among numerous secondary sources as to the fundamental concepts and principles of bel canto.

It has become increasingly apparent that the bel canto masters stated the results of their instruction in terms that described student behavior. Perhaps, the bel canto masters were the first pedagogues to state teaching outcomes in terms of behavioral objectives. Therefore, for the purposes of this report and in keeping with
current educational practices, the concepts of bel canto—derived from selected primary and secondary sources—can be stated in the following terms:

1. Demonstrates a beautiful tone at all times.

2. Demonstrates agility and virtuosity in the performance of the following: fioritura; all dynamics and gradations between; access to high tones when performing in low range; access to low tones when performing in upper range; range demands of the music; motion from note to note without loss of expression; production of desired musical effect on demand; and the free execution of the technical demands of the music.

3. Demonstrates a smooth, pure legato and a long, sustained, unbroken phrase.

4. Demonstrates perfect intonation as a result of proper production.

5. Demonstrates an ability to deliver the demands of musical expression in an unhindered and free fashion.

Demonstrates a Beautiful Tone at All Times. It has been observed that beauty of tone was the ideal sought by bel canto teachers of the seventeenth and eighteenth centuries and by modern pedagogues as well. For the purposes of this report, it must be understood that the concept of beautiful tone encompasses such concepts, derived by other investigators, as maintenance of vowel purity and unification of the entire vocal range. It has been observed by
many investigators that the ability to produce a beautiful tone is dependent upon the proper coordination of all the mechanisms involved in voice production.

**Demonstrates Agility and Virtuosity in Performance.** This concept implies the ability of the voice to execute with ease and accuracy the following techniques: elaborate *fioritura*; all dynamics and gradations between, executed on single tones and in expressive passages; access to high tones when performing in low register; access to low tones when performing in upper register; adequate range for the demands of the music; flexibility to move from one note to the next without loss of musical expression; the capacity to produce a desired musical effect on demand; and the overall capacity to execute the technical demands of the music.

**Demonstrates a Smooth, Pure Legato and Sustained Unbroken Phrase.** Primary and secondary sources of bel canto seem to agree that a pure legato is the essence of good singing. It has been observed that the ability to sustain an unbroken phrase and execute a pure legato demonstrates an application of the preceding concepts. It suffices to say that without beauty of tone and agility, a pure legato is impossible. Perhaps Reid's observation said it best.

Although the early teachers could have known nothing of the accoustical rules governing resonance, they certainly must have recognized the unmistakable quality of a resonant tone when they heard it. The natural tendency of all well-resonated voices
to "flow" doubtless proved a determining factor in making legato singing one of the constant aims of their instruction. Resonance is "the drawing out of the voice" spoken of by Mancini as being one of the initial steps to be taken in Bel Canto procedure.251

Demonstrates Perfect Intonation as a Result of Proper Voice Production. Again, this concept is a product of the application of the preceding concepts. It seems obvious that before perfect intonation can be achieved, the musician must first have mastered the execution of a beautiful tone, agility, and a pure legato. Perfect intonation has been observed to be the goal of virtually all exponents of bel canto.

Demonstrates Unhindered Deliverance of Musical Expression. The observation has been made that some exponents of bel canto consider this concept to be the supreme goal of vocal pedagogy and performance. It is obvious that all bel canto concepts are integrated in this final concept.

It is apparent that all the derived concepts of bel canto are dependent upon each other. All the sources of bel canto insisted that the singer should be able to demonstrate beauty of tone, agility, a pure legato, perfect intonation, and an expressive interpretation of the music. Apparently, all exponents of bel canto agree that beautiful singing is impossible without the ability to demonstrate these concepts.

The above concepts provide the motivation for the formulation of the following bel canto principles:
1. **Bel Canto Principle of Ear Training.**

2. Graded Progression of Exercises and Techniques.

3. Absolute Perfection of Each Level Before Progression to the Next.

4. Problem Isolation.

5. Comprehension of the Method and Its Application.

**Bel Canto Principle of Ear Training.** The interpretations of primary sources by contemporary investigators have indicated that ear training for the **bel canto** pedagogues meant much more than normal interpretation might imply. It has been observed that the first stage in training was devoted to sight-singing and through this study the rudiments of music were learned. However, it has also been noted that the **bel canto** conception of ear training involved the student's acquisition of the ability to perceive the desired tone quality before emission. Once this ability was developed, the ear became the guide to proper tone production and to the ideal of beautiful tone. In addition, this principle of ear training permeated the entire development and training process. In other words, the ear of both student and teacher guided the way through the execution of every exercise always evaluating tone, intonation, vowel purity, rhythmic accuracy, and other sound properties. Various observers have indicated that the acquisition of the properly trained ear was a long and arduous task. The student was not rushed and each
lesson was oriented to only as much as the student's ear was capable of grasping.

Graded Progression of Exercises and Techniques. Numerous examples have provided evidence that this principle can be considered a fundamental element of bel canto. All primary sources have advocated the gradual progression through graded exercises and techniques. This principle has been illustrated in examples of actual exercises and by documented statements in primary and secondary sources. The principle requires the intelligent selection of repertoire to match the student's abilities.

Absolute Perfection of Each Level Before Progression to the Next. This principle has been demonstrated as being one of the fundamental principles of bel canto. It implies that a strict teaching standard is an innate characteristic of the bel canto pedagogical system. It has become increasingly evident that no matter how much time each stage of development required, the student was not rushed or pushed beyond his abilities.

Problem Isolation. This principle implies the isolation of a particular musical or technical problem and its practice to perfection before inclusion in a musical context. The application of this principle has been illustrated in connection with a number of musical techniques. A sampling of these techniques follows: joining of the registers, extension of range, study of
dynamics, study of ornaments, intonation, technical passages, and rhythmic problems. This principle has been illustrated as being an intrinsic characteristic of bel canto.

Comprehension of the Method and Its Application. This principle implies that inherent to the pedagogical process of bel canto is the prerequisite of teaching the student the method and its application. The principle was illustrated as being of primary importance for correct practice and for continuation of study. It has been illustrated that the student should be made aware of what to practice. He should understand exactly how the exercises in a particular lesson are to be executed. The student should understand the reason as to why the lesson is being presented and its significance to the total program of study.

The review of selected bel canto literature was undertaken in order to establish the pedagogical concepts and principles of bel canto. It has been observed that there is a degree of ambiguity concerning the definition of the term. However, due to contemporary interpretation, usage, and apprehension, the term can be said to have a definite denotation. The result of the review of bel canto literature facilitated the identification of definite concepts and principles upon which bel canto is based. The concepts of bel canto were observed to have been stated in terms of instructional outcomes and, therefore,
were stated in terms of behavioral objectives. Due to the efflorescence of interest by modern vocal pedagogues in bel canto, it is apparent that the bel canto concepts and principles are important to contemporary vocal pedagogy. It is conceivable that these concepts and principles have significance for other disciplines as well.
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104 Ibid., p. 41.
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110 Ibid., p. 10.


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CHAPTER III

A REVIEW OF SELECTED BRASS AND TRUMPET LITERATURE

A secondary purpose of this report was to establish the feasibility of comparing bel canto pedagogical principles with corresponding pedagogical principles derived from selected brass and trumpet literature. In order to accomplish this purpose, a review of selected books, dissertations, theses, and periodicals was implemented. These materials were limited to those that served to correlate and substantiate the application of bel canto pedagogical concepts and principles to trumpet pedagogy and performance. The materials selected for this review of brass and trumpet pedagogy were observed to be of the following types: articles of a pedagogical nature, texts designed for brass techniques classes, brass texts, trumpet texts, theses, and dissertations. It must be understood that the majority of this literature included information concerned with such topics as acoustics, the embouchure, mouthpiece placement, lip aperture, articulation, breath control, mouthpiece and instrument selection, care and maintenance, tone production, intonation, daily routines, technical facility, range, and endurance. Of

120
course, all these topics are relevant to any discussion of brass pedagogy, however, some of these topics are not within the scope of this study. Therefore, the topics included were limited to those having relevance to the application of bel canto pedagogical principles to trumpet pedagogy.

Periodicals

The Brass Anthology is a compendium of articles on the subject of playing brass instruments from the Instrumentalists. The articles appear in chronological order beginning in 1946 and ending in 1974. The book purports to present just about everything known about brass instruments and brass playing. This claim seems to be substantiated by the numerous brass authorities represented in the articles on a wide variety of subjects. For the purpose of this dissertation, all articles by an author were reviewed throughout the anthology. Only those articles germane to the application of bel canto to trumpet pedagogy and performance were included in this review.

Bernard Fitzgerald is one of the most prolific authors represented in the Brass Anthology. In his article, "Tone Control," Fitzgerald stated that the basic problem of most players involves the development and coordinated control of breathing, embouchure, and articulation. According to Fitzgerald, the most common faults of brass players are those of tone control and articulation.
In Fitzgerald’s opinion, the best method of developing tone control is the practice of sustained tones. He said the initial step in the practice of tone control should emphasize performance of sustained tones with an even, steady quality and without change of dynamic level or pitch. Fitzgerald emphasized that the advantage of this type of practice is that it provides an opportunity for the player to truly listen to his tone quality and the pitch of the tone. Fitzgerald stated that while the player listens to the tone, he has the opportunity to evaluate the many characteristics of the tone and make the proper physical adjustments in order to improve the tone.¹

Fitzgerald emphasized that the immature brass player should begin the study of sustained tones in the middle register for a period of four to eight slow counts. More advanced players should be able to sustain tones for twenty to thirty seconds. According to Fitzgerald, the second step in the study of tone control is controlling the crescendo and diminuendo. Fitzgerald outlined the following six exercises which were to be sustained from four to eight counts: (1) crescendo from mezzoforte to forte, (2) diminuendo from forte to mezzoforte, (3) diminuendo from mezzoforte to piano, (4) crescendo from piano to mezzoforte, (5) crescendo from piano to forte, and (6) diminuendo from forte to piano.² Fitzgerald
stressed that considerable time was required in gaining control of the dynamic range from piano to forte. In addition, he stressed that this development should be a gradual process with constant emphasis on a steady pitch at all dynamic levels. In concluding this article on tone control, Fitzgerald stated that beauty of tone is the first requirement of any musical performance.

In the article, "The Daily Practice Routine," Fitzgerald stressed the importance of the proper kind of playing in the first few minutes of the practice session. He prescribed that it is desirable to include the playing of long sustained tones in the middle and lower registers in the first minutes of practice. More specifically, he advocated the playing of steady controlled tones without change in dynamic level and sustained tones performed with all the gradations in dynamic levels within the ability of the performer.

In the same article, Fitzgerald stressed the importance of lip slurring in brass performance and as an essential part of a daily practice routine. He emphasized the importance of precision and accuracy of the embouchure change in the development of a perfect legato. He also advocated the perfection of slow moving lip slurs with a gradual increase in tempo and range as flexibility and control were acquired.

In the article, "Teaching Tone Production," Fitzgerald stressed the importance of the player's ability
to produce a clear and steady buzzing sound with the mouthpiece. In addition, he discussed the importance of buzzing on the mouthpiece as essential to developing the awareness of differences in lip tension in producing various pitches. According to Fitzgerald,

... this realization is essential to the development of aural sensitivity and discrimination with respect to pitch placement, since a high degree of accuracy must be acquired in determining the necessary lip tension for different pitches.

Fitzgerald emphasized this point again when he made the following reference to the importance of listening while playing:

From the very beginning, emphasis should be placed upon both tone quality and a constant and consistent development of pitch consciousness and discrimination. The failure of a large majority of instrumentalist to learn to listen as they learn to play constitutes one of the principal obstacles to artistic musical performance.

In the article, "Teaching Problems and Techniques," Fitzgerald discussed the inherent problem of all brass teachers which requires the ability to analyze and diagnose performance problems and prescribe remedies to correct these problems. Fitzgerald stated that the means by which a brass teacher is able to detect faults in performance is through what is seen and heard. In his words,

... visible indications are of course more obvious, but frequently the audio and visual factors must both be considered, since tone production on the brass instruments involves
coordinations which are not always visually apparent, and the teacher must rely upon what he hears in order to determine the source of the difficulty.  

As he explained, it is for this reason that the development of a concept of tone quality is an absolute necessity.

In the following excerpt, Fitzgerald placed much importance upon the development of a discriminating ear:

... the ear must be trained to detect those flaws which exist in respect to purity of tone, accuracy in pitch, style of articulation, and fingering. ... Unless the student develops the ability to discriminate between good and poor performance, little improvement can be expected. As a result of instruction the student must acquire the ability to analyze his own problems, since during practice periods he is actually teaching himself; otherwise the effects of the teacher will be in vain for incorrect practice will nullify good teaching.

Kenneth Laudermilch is another advocate of the concept that long tones are an essential part of the trumpet player's basic foundation. In the article, "Long Tones for the Trumpeter," Laudermilch stated that it was essential that long tones be a part of the daily practice routine for serious students of the trumpet. In this article, he emphasized that long tones develop breath control, attacks and releases, dynamic control, endurance, and tone quality. Laudermilch provided many long tone exercises which were designed for the elementary, intermediate, and advanced stages of development. Included with these exercises were objectives for performance and suggestions for practicing them.
In the article, "The Diaphragm and Its Auxiliaries as Related to the Embouchure," Edward Mellon used the writings of two exponents of bel canto as primary references in explaining his approach to proper breath control. These writings by exponents of bel canto were The Art of Singing by W. Shakespeare and Hints on Singing by M. Garcia. According to Mellon, a tone which is produced with full diaphragmatic support can be distinguished by the outstanding quality of a fine flexibility of tone. By flexibility of tone, Mellon meant a full command over the range of tone from softest to loudest. Mellon stated that the tone will begin to exhibit the following characteristics upon being produced with full support of the diaphragm:

a. It will be of maximum breath.
b. It will be both brilliant and resonant.
c. It will have maximum carrying power.
d. It will be extremely easy to produce—as easy as singing a tone.
e. The embouchure will not be required to carry a double duty and will revert to its true function, that of producing vibration.

Ward Moore set forth an interesting thesis in regard to tone in the article "Tone Color in Brasses." Moore's theory is that there are two columns of air involved in the production of tone on brass instruments. He explained that one of the air columns was within the instrument and the other air column was within the body of the performer. Moore stated that these two air columns vibrate sympathetically. Moore explained that the
performer cannot directly affect the vibration of the air column inside the instrument. However, he can modify the air column within the body, thereby, indirectly modifying the air column within the instrument. Moore stated that the tone is produced and colored within the body, therefore, the inner tone produced in the body has a direct relationship on the tone produced in the instrument. Moore admitted that this conception of bodily resonance seems to be theoretical in that it is difficult to provide evidence that it does exist as well as provide instruction as to how it may be obtained. However, Moore did provide the following essentials of body resonance: (1) adequate support of the tone; (2) good body position and posture; and (3) absolute relaxation of the throat. Moore concluded that:

Just as the column of air within the instrument divides itself into sections to sound the overtones which make up the register of the instrument as we go higher, so does the column of air within us vibrate in sections to give resonance and color to the tone.

Tone, then, is a part of the individual: it is part of his physical make-up, . . .

Daniel Tetzlaff has written numerous articles for the *Instrumentalists* on various aspects of brass pedagogy. Four of his articles appearing in the *Brass Anthology* are relevant to this study. In the article "Toward a Professional Sound," Tetzlaff discussed various aspects of a professional sound and provided practical exercises for the attainment of this tone quality. According to
Tetzlaff, a professional sound may be attained if the performer, coordinates knowledge with listening, concentration, and practice.\textsuperscript{24} A fundamental goal in achieving a professional sound is evenness of tone which results in the matched quality of every tone. This concept is greatly emphasized by Tetzlaff in his discussion of the proper procedure for the achievement of a professional sound.\textsuperscript{25} Tetzlaff outlined the following procedures in the attainment of a steady-even tone:

\begin{enumerate}
\item Holding the embouchure absolutely firm and motionless throughout the duration of the tone.\ldots
\item Hold the tongue, after the attack, absolutely motionless inside the mouth.\ldots
\item Hold a steady, unfltering pressure on the exhale mechanism.\ldots\textsuperscript{26}
\end{enumerate}

In conclusion, Tetzlaff stated that the purpose of the article was to encourage proper thinking to illustrate what to listen for and to emphasize more ear training.\textsuperscript{27} As Tetzlaff said, "Take all cues from the sound that comes out the bell."\textsuperscript{28}

In another article on the subject of evenness in tonguing, Tetzlaff re-emphasized the concept of careful practice and critical listening in attaining the desired goal.\textsuperscript{29} Tetzlaff expressed his conception of tonguing in the following excerpt:

\begin{quote}
Sustaining a tone and tonguing on a single tone should feel almost identical. The only difference is that in the latter the tip of the tongue makes interruptions in the desired rhythmic pattern.\textsuperscript{30}
\end{quote}
In his discussion of the following topics concerning tonguing—the attack, rhythm, style, spacing, tempo, and volume—Tetzlaff stressed the importance of listening in order to achieve the proper results. Each of these topics was discussed in terms of definite performance goals, how and what to practice, and most importantly—what to listen for.31

In the article "Matching Tonguing and Slurring," Tetzlaff's main purpose was to emphasize the importance of critical listening and proper ear training in achieving this goal. In discussing the proper execution of musical exercises to be practiced, Tetzlaff consistently warned against pitfalls that can only be detected through critical listening. For example, top notes should not be louder, top notes should not be thinner in quality, and each tone should be matched in tone quality and intonation.32

The result of many varied teaching experiences brought Tetzlaff to the realization that there is a need for stressing the fundamentals of brass playing. The following excerpt illustrates Tetzlaff's views on this matter:

Honestly, we must admit that there is a constant pressure to press ahead and go faster than allows for care and accuracy and understanding, and we must admit that we all succumb in some degree to this pressure. Then also, we must admit that the success we all seek in music depends on a recapitulation of what was once hurried over, or even left out.33
In the following excerpt, Tetzlaff expressed his opinion that the long tone is the fundamental of all brass playing:

Good tonguing is simply an interrupted long tone. If the long tone wavers or weakens, so will the tonguing passages. Good slurring is simply a long tone moving from one pitch to another. Unsteadiness or weakening of the long tone results in bumpy, broken slurs. Smooth, connected lip slurs depend greatly on the same steady blowing used for the long tone.\(^{34}\)

In the article "Tone Production," Vincent Malek stated that tone production on brass instruments is determined by the performer's ability to coordinate the amplitude and frequency of lip vibration with breath pressure in producing a tone of the desired pitch and intensity. Therefore, Malek concluded that all aspects of brass performance including articulation, fingering, slurring, the attack, intonation, smoothness in playing and musical discrimination are dependent upon a highly developed ability to control the breath.\(^{35}\) In view of this conclusion, Malek stated that a serious study of brass instruments must emphasize breath control over all other performance techniques.\(^{36}\)

Robert Rada is another writer who has placed primary importance on the ability of a brass player to produce a good tone. According to Rada, an essential factor in the development of good tone quality is that the player must first establish an aural image of the desired tone quality.\(^{37}\) Rada said that it is this mental image which
serves as the guide to proper tone production. This mental image can be developed by listening to respected artists in order to determine what constitutes the desired tone quality and musicianship. In addition, Rada stressed that once the proper aural image of tone is established the player has the criteria to judge for himself whether or not he is producing a tone in keeping with his mental image.

Rada also outlined a number of performance ideals for all brass performers. These ideals are as follows: a constant tone quality at all dynamic levels, a constant tone quality in all registers, and the ability to establish a definite pitch on each tone produced.

Lawrence Meyer agreed that one of the most important factors in developing good tone quality was the proper mental concept of good tone on the part of the student. As Meyer stated in the article "Trumpet and Cornet Tone Quality,"

... developing a good tone requires correct teaching methods on the part of the instructor, faithful practice on the part of the student, and a proper concept of tone on the part of both teacher and student.

William Whybrew supported other authorities concerning the importance of good tone production in his article "Singing Approach to the Brasses." As Whybrew said, "Beauty of tone, technical facility, range, and
even expressiveness are all largely dependent upon good tone production." As the title of this article implies, Whybrew used the analogy of singing as a basis for solving fundamental aspects of brass performance.

As the result of listening to hundreds of young brass players, Whybrew was disappointed by the large number who failed to maintain a flow of sound and by those who puff at each individual note in succession. Upon being asked to sing a similar musical phrase, the students did not respond with the same disjointed manner of performance as demonstrated upon their instruments. Instead, the flow of sound was continuous. According to Whybrew, it is this concept of flow which must be transferred to the playing of the brass instrument, . . .

In playing a brass instrument, the performer should experience all the sensations in the mouth, the throat, the chest, and the diaphragm that he would if he were singing the same line, . . .

Whybrew emphasized that this flow of continuous sound must be maintained at all times and especially during the execution of staccato passages. He explained that many tonguing difficulties may be overcome by the slur. A better result may be obtained if the student were to first slur a passage, then keeping the same flow of sound and air, play the same passage using the tongue.

In concluding this article, Whybrew suggested that the singing style of performance can be effectively developed through extensive legato playing. He recommended
the following material for this purpose: familiar songs, various vocalises—such as those by Concone and Bordogni, and chorales. Whybrew warned that no material itself can develop a phase of playing, it is the proper concept which guides the student to the desired goal. Basic to all aspects of brass performance is the proper use of the breath. As Whybrew said, "The singing approach is a means of obtaining the flow of breath and the maintenance of proper breath support." 

In his article "Improving Brass Instrument Performance," DeForest Chase listed the following fundamental problems of brass playing: posture, breath control, tone production, finger or slide technique, lip flexibility, dynamics, range, and intonation. Chase provided suggestions to aid the student in improving each of these problems. Under the problem of tone production, Chase made the following recommendations:

1. Get a clear conception of a good tone by listening to performing artists.
2. Listen to tone quality and use tape recorder, stroboscope, and oscillograph.
3. Use the following drill to obtain resonant tone:
   a. Find the center of the tone by humoring the pitch to the most resonant sound.
   b. Sing the tone.
   c. Buzz the tone on mouthpiece.
   d. Play the center of the tone again on the instrument.
4. Use the following drill to improve intervals:
   a. Sing scales, arpeggios, intervals, exercises, and solos.
   b. Buzz them on the mouthpiece.
   c. Play them on the instrument.
   d. Sing, buzz, and play octave intervals. . . .49
Under intonation, Chase recommended similar pedagogical procedures. He suggested developing the ability to mentally hear a tone before producing it. In addition, he suggested that the student should sing and buzz unfamiliar music on the mouthpiece before playing it.\(^5\)

William Cramer, in his article "Embouchure Control and Development," seemed to agree with Moore's concept of tone production involving the synchronization of the body and the instrument. The following excerpt illustrates Cramer's position on the matter:

The art of performing on a brass wind instrument is essentially that of properly manipulating muscles of the body in such a way that air is directed to the lips which are then set in vibration, and they in turn cause the air in the instrument to vibrate and produce musical sound. Tone production is accomplished by the human body in motion. The instrument itself acts as a resonator and amplifies only. The instrument and body must by in sympathy with each other to achieve maximum results.\(^5\)

In another article on the subject of tone quality, Cramer discussed various determinants of tone quality on brass instruments. The first two determinants discussed were the mouthpiece and the instrument bore. The third determinant involved the student's own conception of good tone quality. Cramer made a number of suggestions to aid the student in improving his conception of tone quality. Among these suggestions were the following: developing an awareness that good tone quality is important; developing the proper concepts through listening, comparison, and
discrimination; and developing the proper concepts of tone by listening to excellent artists in person or on record.  

Cramer discussed three principal determinants of tone quality in this article. He emphasized that the most important determinant was the development of the student's tonal conception. As Cramer stated, "The student who is receiving instruction and learning will advance more rapidly than the student who buys the finest instrument. . .".  

Victor Kress is another pedagogue who advocated a vocal approach to brass pedagogy. Kress emphasized that singing intervals and all exercises to be played is an excellent means of developing good intonation. He also advocated that the brass player set himself up physically as if he were to sing but instead play the instrument. In this way the vibration of the lips and instrument may be better synchronized. In addition, he emphasized the ability of the brass player to hear the pitch of the note before it is played—just as a singer must mentally hear the pitch before singing.  

Patrick McGuffey, in the article "Brass Pitch in Depth," set forth the thesis that intonation is one of the basic factors of brass tone quality. As he stated, "Pitch, or intonation is the greatest factor in obtaining a rich and full tone." McGuffey stated that the first step in developing good intonation was tuning to the center
of the pitch and not to the top or bottom of the pitch. Secondary factors in obtaining a good tone were the embouchure, the proper mouthpiece, and the proper instrument.

Wesley Lindskoog's article "Polishing the Trumpet Player" was concerned with only two facets of brass performance—the slur and the attack. However, in discussing these two topics, Lindskoog referred to various pedagogical principles that are basic to all aspects of brass performance. In Lindskoog's opinion, students are hindered in their ability to develop a good slur and attack because of an undeveloped conception of these performance techniques. Lindskoog stated that the proper conception of a good slur and attack can be developed through consistent listening until the proper concepts are ingrained. As he said, "... if a student knows what the sound should be, he will—with proper guidance—make the adjustments necessary to produce this sound."

Lindskoog's conception of a slur is continued sound and consistent tone quality between the two notes. In addition, the slur can be conceived as one continuous sound changing in pitch, therefore, there is sound on the slur itself.

Lindskoog's conception of a good attack is a clean and precise beginning of sound with no extraneous sound. He stressed that the first sound to be heard should be
the pure tone attacked precisely in the center of the pitch. Lindskoog advised that each note of a tongued passage should sound exactly the same as any other note. He also advised that attacks should be practiced slowly at first and in the middle register.

In the article "Development of Brass Tone," Glen Law proposed that through the study of orchestral music and orchestral playing brass players can concentrate on the development of tone. Law set forth the opinion that the foundation of brass performance is tone production. Law also advocated that the similarity of brass playing to singing can be used to great advantage. In his words, "Tone on brass instruments should be executed with a communicative force that emulates fine singing."

Law also stressed the importance of all the tone producing mechanisms in playing brass instruments. In this discussion, he set forth the concept of the musical instrument as an attachment to the various tone producing mechanisms including the diaphragm, lungs, and lips. In Law's opinion, breath support--by correctly using the diaphragm--is the essence of good tone production.

As for the importance of a good tone in the orchestral playing situation, Law expressed the following opinion:

A beautiful, rich tone seems to fit into this mass of tone quality, blending with the sounds of strings and woodwinds. The demands of the symphonic ensemble permit only judicious divergence from the clear, solid tone expected. It is left
to the performer to embellish this quality by phrasing, elegant interpretation, and sensitive adjustment to style.  

Harry Jenkins, in an article devoted to the development of the high register on the trumpet, made the following statements:

When one has full command of a high note: He can attack it cleanly, piano and forte; he can slur to and from it with comparative ease; intonation presents only a minor problem.

Obviously, these statements are criteria for judging whether or not a performer has full command of a high note. It would follow that the same criteria can be used in judging whether or not the performer has full command of all notes within his range.

John Kinyon's article on beginning brass classes emphasized the importance of not rushing ahead until each stage of development is perfected. Kinyon concluded his article with these remarks:

It may be well to remind ourselves that we must constantly ask perfection of our students and patience of ourselves. It is so easy to lower our standards when the pressure is on; it is so tempting to "go to the next lesson" before today's assignment is really accomplished. My recipe for brass players: . begin with TONE. . . add range slowly. . . mix thoroughly with rhythm. . . season well with patience.

As stated above, the Brass Anthology is a compendium of articles that appeared in the Instrumentalists from 1946 through 1974. The ensuing articles appeared in the Instrumentalists after 1974.

Guy Kinney, in an article on articulation, provided

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some suggestions as to how to gain better control of tonguing on brass instruments. Kinney's first suggestion was to gain absolute control of articulation on one note. He provided an exercise that consisted of a whole note \( g^1 \) followed by a whole measure rest. This pattern of whole note and whole rest was repeated several times. Kinney suggested that this exercise should be practiced chromatically, up and down, as far as the range of the student would allow. In practicing these exercises, Kinney emphasized that each tone should not waver from beginning to end. Also, he insisted that any variation in sound should not be accepted. The desired goal was a smooth and straight sound from the initial attack to the release.\(^{73}\)

After perfecting the articulation of a single note, Kinney suggested that the next step should be the playing of the tones in an arpeggio. Kinney insisted that the arpeggio should be the next step, instead of a scale pattern, because, in his opinion, the execution of the intervals that make up the arpeggio establish better muscular and tonal memory for each note than a scale pattern. He also stated that in practicing scale passages the tendency is to play too fast. He insisted that the arpeggio should be practiced slowly. Like the first exercise, he recommended that the exercises be performed chromatically up and down to extend the range.\(^{74}\) The third exercise, suggested by Kinney, was the practice
of octaves with a rest between each note to encourage
tonal and muscular memory. The fourth exercise was a
scale passage in which speed could be attained if it were
perfected in slower tempos. Kinney stressed that after
mastering control of the attack in the above four
exercises, then, and only then, could the student's atten-
tion be directed toward the execution of rhythmic passages.

David Hickman, in an article titled, "A Natural
Approach to Trumpet Playing," described the capacity of
the subconscious mind to operate a complex series of
motor responses such as in driving an automobile, in
playing golf, or in playing a trumpet. However, as
Hickman explained, the conscious mind often competes for
control with the subconscious resulting in conflict.
According to Hickman, outstanding performers understand
this conflict between the conscious and subconscious mind
and have learned to control and separate their functions.

Hickman defined a "natural" trumpet player as
"...one who allows himself to play naturally regardless
of physical adaptability to the trumpet." Hickman
stated that even the naturally talented player could only
play correctly if he were exposed to correct playing.
Therefore, according to Hickman, imitation is most impor-
tant in achieving early success. He also stressed that
correct imitation is achieved through a process of trial
and error. In Hickman's words,
The natural player should be concerned only with the end product of correct tone, attack, release, etc. He should not have to think about the process he uses to achieve these goals. Through repetition, the correct overall feel will be memorized subconsciously. . . . The student's playing should be developed patiently through uninhibited trial and error with a clear concept of correct tone, articulation, and phrasing. The teacher provides the correct playing concepts and guides the student physically without making him overly aware of mechanics. The goal is to play freely and naturally with musicality being the first priority.80

On the topic of tone production, Hickman agreed with the principle that a good mental concept of what a beautiful tone quality sounds like is an important pre-requisite to producing that quality. In Hickman's words, if one does not know what a good tone is it will be impossible to make the subconscious embouchure adjustments that will eventually attain the desired sound. In a sense the performer's ears control all playing mechanisms.81

A review of articles appearing in periodicals other than the Instrumentalists was also conducted. Examples of such periodicals are as follows: Brass World, Music Educator's Journal, Selmer Bandwagon, The School Music News published by the New York State School Music Association, and The South Dakota Musician. These periodicals proved to be valuable sources that served to further substantiate the feasibility of a comparison of bel canto pedagogical concepts and principles with similar concepts and principles in brass pedagogical literature.
An article appearing in the *Music Educator's Journal* titled "Getting Down to Brass Facts: A Roundtable," illustrated the differences in philosophy and methodology of seven leading brass pedagogues. The seven pedagogues included Michael Hatfield, Abe Torchinsky, Betty Glover, Tom Ervin, Philip Frakas, Vincent Cichowicz, and John Marcellus. Each brass specialist answered questions concerning such topics as breathing, embouchure development, articulation, tone quality, ensemble balance, use of vocal techniques in brass teaching, and range and vibrato development. The answers to the following question were particularly relevant to the purpose of this dissertation: "How do you convey to students what is meant by 'acceptable' tone quality?" All of the contributing brass pedagogues agreed that development of the proper mental concept of a good tone quality was of primary importance. They also agreed that the development of this mental concept should be developed through a process of critical listening to live performances, recordings, and radio performances. In addition, a majority of the pedagogues mentioned the importance of demonstrations by the student's teacher. One of the pedagogues emphasized the importance of long tone exercises in the development of tone quality.

The answer to the question concerning the vocal techniques that are applicable to teaching brass instruments were both interesting and valuable to this
report. Most of the answers made reference to the many parallels between singing and brass playing as well as emphasizing the apparent differences. Perhaps the comments by Farkas and Cichowicz provided the best insight into the consensus of the group. Farkas stated,

\[\ldots\] singers do not have keys to press or a harmonic series to create "bumps" in a legato style, they can more easily achieve the best possible legato and portamento. By emulating this smoothness of legato, brass players can greatly improve their own concept of legato.84

The following excerpts are from Cichowicz's answer to this question:

The goal of singers should be one of the overriding considerations in playing a brass instrument. The vocalises of Concone and Bordogni are among the finest available materials to develop a singing legato tone and artistic expression. \ldots I invariably prescribe a generous amount of vocal material to get things right. I like to believe that bel canto is possible on a brass instrument.

The parallel goal of the vocalist and the brass player is to produce a beautiful, clear, resonant sound in all registers at every dynamic level. It is at this point that the artist can emerge and convey a message to an audience.85

Robert Weast, in "A Report on the National Trumpet Symposium," provided striking evidence that supports the importance of the student's mental image of the proper performance objectives. As Weast reported, one of the sessions of the symposium was devoted to a public viewing of private lessons. Two high school trumpet players were asked to match their performance against Weast's sound
and demonstration of continuous air support. As Weast said, "The session demonstrated the value of a model aural image. Students are quick to grasp conceptions if they have a living model to lead them." In another article titled "Timing and Coordination," Weast stressed the importance of problem isolation as an effective practice procedure. In his discussion concerning the timing of the air stream, the embouchure, and the tongue, Weast emphasized the importance of practicing isolated tones in order to determine exactly what the air is doing. Regarding the timing and coordination of the embouchure, Weast stressed the value of buzzing the mouthpiece in order to reveal the speed and precision of the lips in adjusting for the various tones.

In the same article, Weast also recommended the technique of buzzing on the mouthpiece between the two tones of difficult intervals in glissando fashion. As Weast stated, "This places the control exactly where it belongs: on the lips." Weast cautioned that the buzzed glissando should be executed without flaws and once the player was able to successfully glissando the interval on the mouthpiece, he should be able to execute it on the instrument.

Daniel Tetzlaff emphasized the importance of mouthpiece buzzing and the use of glissando slide in an article on the subject of the high register. Tetzlaff
listed ten "what and whys" for practicing the high register. The first two items on the list were as follows:

1. Mouthpiece alone test. Play every phrase, any phrase—slowly, carefully. Just listen! Be sure the ear is acting "as boss" to the efforts of the lips and lungs.

2. Long glissando slides. Play as high as you can, without force; and then, down as far. Test for the evenness of the exhale stream by listening for an equally solid tone throughout all the pitches; while either descending or ascending.

In a recent article Martha Sobaje emphasized the value of music models in various music instructional situations. Included in these instructional settings were the ensemble, soloist, musical theater, the theory class, and the music appreciation class. In each instructional setting, Sobaje stressed that the students should be exposed to either live performances or recordings of the appropriate music situation. In Sobaje's words,

Progress will come slowly or not at all if the student does not have in his/her mind and ears the end goal or model for which you are striving. Your job will be much easier and more successful if you introduce the students to the model at the outset.

In a curriculum to attain a daily routine for trumpet, Harold Krueger made a number of statements that parallel the pedagogical concepts and principles of bel canto. In his introductory statements, he cautioned the teacher to always keep in mind the individual needs of each student and what is needed to inspire him to
overcome his problems. He also warned against forcing students to progress too fast.96

Krueger listed the following four exercises with the intention of achieving a systematic approach toward reaching a high aesthetic goal for all trumpet players:

1. mouthpiece buzzing on long tones, scales, arpeggios, and glissandos, 
2. warm up exercises including half-step patterns and lip slurs, 
3. long tones on straight long tones, on crescendos, decrescendos, and combinations of crescendo, decrescendo and decrescendo and crescendo, and 
4. scales and arpeggios.97

In his explanation of the mouthpiece buzzing exercises, Krueger emphasized the value of this kind of practicing for ear training as well as warming up.98 In discussing long tones, Krueger stressed the importance of truly listening for the best possible tone quality.99 In explaining the study of scales and arpeggios, Krueger expressed one of the universally accepted principles of all music educators. Krueger stated that scales and arpeggios are the foundation of all performance.100 In his words,

... they become the basis for sight reading and analyzing music. It is hoped that all teachers take the time to evaluate and "pick apart" the formal structure of all the music they teach, conduct or study.101

George Wiskirchen made similar statements in an article that set forth the opinion that brass performance
is the same no matter what the performance situation. In Wiskirchen's opinion, the elements and basis of good intonation, precision, articulation, phrasing, and tone production are all the same. The following excerpt expresses Wiskirchen's recommendations for the development of good tone quality:

The students need a good concept of what is a good brass sound. Listening and imitation is the best way to achieve it. A good brass tone is big (whether loud or soft), rich, warm, brilliant, centered or well focused. It is not small, pinched, distorted or uncontrolled at whatever dynamic level. Air and concept provide the answer.

It is apparent that these statements parallel the concepts and principles expressed by exponents of bel canto.

Texts Designed for Brass Techniques Classes

A number of texts designed for brass techniques classes were reviewed in order to further establish the feasibility of a comparison of bel canto pedagogical concepts and principles and corresponding concepts and principles in brass pedagogical literature. Much of the information contained in these texts were found to be of no direct relevance to this report. The major portion of these texts was devoted to such topics as brief historical sketches of each brass instrument, physical characteristics, embouchure breathing, posture, tonguing, the harmonic series of each instrument, care and repair, mouthpiece placement, listings of solos and methods, and
musical exercises. However, many of these texts contained information that was relevant to this report.

All of these texts emphasized the importance of posture in playing brass instruments. In addition, much attention was paid to breathing and breath support. The consensus of a majority of brass authorities was that proper breath support is fundamental to all aspects of good brass performance.

In E. C. Moore's *The Brass Book*, the practice of sustained tones was emphasized as essential in developing proper breathing habits and in developing breath support. In was interesting that Moore advocated starting the beginner on the note that comes out first, which he said would probably be a $g^1$ for the trumpeter. He provided a number of rhythmic exercises for the beginning trumpeter to practice on this initial tone. After these exercises are perfected, he prescribed similar exercises beginning first on the tone below $g^1$ and then exercises on the tone above.

Moore is also an advocate of beginning a student on simple lip buzzing exercises. After these exercises are accomplished, the student is to perform the same exercises on the mouthpiece. Following the perfection of these mouthpiece exercises the students are to begin expanding range by practicing similar exercises on tones higher and lower than the initial tone.
Norman Hunt stressed the importance of breathing and breath support in his book *Guide to Teaching Brass*. In Hunt's view, the ability to sustain a tone, to play a musical phrase, and to produce a good tone quality are dependent upon the performer's ability to provide the proper breath support. Hunt went into much detail in providing an explanation of the breath process and provided numerous exercises to improve breathing habits for brass players.

Winslow and Green also stressed the importance of a brass player to develop proper breathing habits in order to demonstrate a good tone quality, musical phrasing, and endurance of all brass instruments. Like Moore and Hunt, Winslow and Green advocated lip buzzing and mouthpiece buzzing before attempting production of a tone on the instrument.

Vernon Leidig also emphasized breathing and breath support as the foundation of tone quality in brass performance. In discussing proper tone productions on brass instruments, Leidig explained the proper function of the following: breath, windpipe and mouth, tongue, embouchure, mouthpiece, and instrument. Leidig, also, discussed the concept of bodily resonance and its effect on tone quality. Leidig stated that the air column within the player vibrates sympathetically with the air column in the instrument. He outlined the following ways that maximum
bodily resonance may be achieved: (1) the upper chest should be constantly full of air with the chest in an arched position; (2) full breath and diaphragmatic breathing; (3) posture of the body should be erect with the body slightly forward from the hips in a sitting-position; (4) the throat should be completely relaxed at all times and throughout the entire range; and (5) proper tongue position for maximum resonance.

Brass Texts

There are a number of books in brass literature which can be categorized as brass texts. These books contain information of a more general pedagogical nature than those designed specifically for instrumental techniques classes. These brass texts may be considered as reference books for the serious teacher and student of brass instruments. They contain information on such subjects as the embouchure's function, mouthpiece placement, lip aperture, articulation, breath control, mouthpiece pressure, tone production, and intonation.

Philip Farkas is one of the most respected brass authorities. He is the author of two important contributions to brass pedagogical literature. These books are The Art of Brass Playing and The Art of French Horn Playing. Both books are valuable references for the teacher and student.
In discussing the subject of tone quality in *The Art of French Horn Playing*, Farkas suggested that one should strive for the most natural, beautiful, and characteristic tone quality possible. However, before this is possible the player must have a mental conception of the ideal tone quality. According to Farkas, the most advantageous means of acquiring the proper mental concept is by listening to other performers in live concerts, on records, or on television and radio. Farkas recommended listening with an analytical mind in order that definite concepts about proper tone quality can be formulated. In the actual production of a good tone quality, Farkas stated that the tone is only as healthy as the column of air which supports it. Farkas also said that good tone quality is achieved through proper use of the diaphragm.

In *The Art of Brass Playing*, under the subject of slurs and legato playing, Farkas offered an interesting solution to the inherent problem of achieving a true legato while slurring on brass instruments. Farkas's solution to legato style was summarized as follows:

1. Keep the lips buzzing between the slurred notes.
2. Carefully time the up and down glissando buzz so that the slurs are smooth. If the glissando is made too slowly, intervening notes will have time to sound, spoiling the legato. If made too fast, slurs will be dry and hard.
3. Support the continuous buzz with a steady air-column, one which does not sag or weaken.
between the slurred notes.
4. By the subtle use of vowel formations in the oral cavity, . . .117

Farkas was quite adamant in his statements that the key to legato playing is in not allowing the lips to stop vibrating between the notes of a slur. As Farkas stated,

The feeling is that the buzzing lips make a rapid glissando from one note to the next. This is precisely what they do, but the glissando must be rapid and must stop accurately upon the desired pitch, or other intervening notes of the same fingering will be "picked up" along the way, spoiling the legato quality of the slur.118

In The Art of French Horn Playing, Farkas also emphasized the importance of continued lip vibration through the slur. In this book, Farkas offered the following exercise for producing true legato slurs:

The slurs are to be played slowly enough to allow all the intervening harmonics to sound between the two main notes in each group. The speed of the glissando between notes is then gradually increased until only the two main notes sound.119

Joseph L. Bellamah has published two books which contain the results of surveys of modern brass pedagogical methods and philosophies. These books are titled Brass Facts: A Survey of Teaching and Playing Methods of Leading Brass Authorities and A Survey of Modern Brass Teaching Philosophies. For both books, Bellamah prepared questionnaires which were mailed to a number of leading brass teachers. The teachers who participated in the survey were asked to answer questions concerning
most aspects of brass performance and pedagogy. Many of the questions and answers were found to be significant to this report.

As a result of Bellamah's surveys, a number of conclusions can be formulated concerning various aspects of modern brass pedagogy. Bellamah made the following generalized statements concerning answers to the question of teaching techniques for developing tone quality:

- Play with open and relaxed throat, play long sustained tones. . . ., have relaxed lips with definite opening between lips, breathe fully with good breath support, demonstrate good done, listen to develop concept of tone, and do lots of melodic playing.  

It may be said that a majority of brass authorities were in agreement that teacher demonstration was an important aid to teaching tone quality as well as other aspects of brass performance.  

Bellamah also indicated that brass authorities agreed that the essence of true legato playing is keeping the lips vibrating with a continuous flow of air and support between slurred notes. Bellamah also indicated that brass authorities recommended the use of critical listening in the development of a true legato.  

Bellamah also provided evidence that indicated a consensus among brass authorities that practicing sustained tones is beneficial to all brass players.  

In the book Essentials of Brass Playing, Fred Fox explained that there are two major physical areas involved
in tone production on brass instruments. The first area was defined as the air column which is controlled by the tongue position and muscles of the abdomen, chest, and throat. The second area was the embouchure of the performer. As Fox stated, "These two major factors, intelligently applied, determine the quality of sound and range that is produced by the vibration of the lips."\textsuperscript{124}

Fox seemed to agree with the concept of inner body resonance as an important factor in the ability of a brass player to produce a full resonant tone. According to Fox, when the lips are set into vibration, sound vibrations travel in two directions simultaneously. One direction is into the instrument and the other is to the bottom of the performer's lungs. Therefore, as Fox concluded, it is important for the performer to control the air column from the lips to the bottom of the lungs in order to produce the fullest tone possible.\textsuperscript{125}

In a more specific discussion of tone quality, Fox stressed the importance of the proper tongue position in achieving the desired tone. According to Fox, the proper tongue position may be determined by varying the tongue position from an extreme arch to a relatively flat position until the desired tone is achieved. Fox stated that through the process of listening and manipulation of the tongue a well-centered tone can be achieved.\textsuperscript{126} Fox also emphasized using the proper tongue position in
achieving a consistent tone in all registers of the instrument. As he said, "No one tongue position can be correct from the lowest to the highest note on any particular instrument, or from soft to loud on the same note." It may be concluded, therefore, that through the process of listening and tongue manipulation a constant tone quality may be achieved throughout the entire range of the instrument.

The importance of developing a discriminating ear and critical listening has been emphasized by many brass authorities. The following excerpt is evidence that Fox is another authority who emphasized this important pedagogical principle:

It is of utmost importance that the performer consciously develop an awareness of listening just as critically and dispassionately to his own playing as he does when listening to someone else. This is something that has to be worked at all the time. . . . by listening and being alert all factors can be judged and instantly corrected. . . . It must be done if a performer wishes to excel on his instrument. It is the attention to the minute details—which to me is the art of performing. . . .

Rafael Méndez has been a respected trumpet performer and clinician. He has also made an important contribution to brass pedagogical literature with the book *Prelude to Brass Playing*. In the book, Méndez discussed many aspects of brass performance including breathing, embouchure training, reading music, tone development, register development, and intonation. Perhaps the most innovative portion
of Méndez's book was the discussion concerning embouchure training.

For the beginning brass player, Méndez recommended lip buzzing exercises for the first week. These exercises consisted of buzzing notes of different pitches for as many seconds as possible. These exercises were recommended to be practiced in conjunction with a series of exercises designed to develop breathing and breath support. For the second week, Méndez recommended playing different tones on the mouthpiece. In the third week, Méndez advocated learning the notes and fingers before actually producing them on the instrument. After the notes are learned, Méndez recommended playing various tones on the instrument in sustained fashion. Following the perfection of these exercises, Méndez suggested the practice of tonguing while sustaining tones before progressing to a well-graduated method book.

In discussing intonation, Méndez stressed the use of singing solfeggio in developing good intonation. In addition, he stressed the development of the ability to see a note and mentally hear it before actually producing it. Méndez also stressed the value of critical listening in developing tone quality.

Charles Colin has been an important figure in brass pedagogy, performance, and publishing. Colin has made many valuable contributions to brass pedagogical repertoire.
and to brass literature. Colin's text *The Brass Player* contains two of his previous publications titled *Vital Brass Notes* and *The Art of Trumpet Playing*. As expected, these texts contain information concerning the usual topics in brass pedagogy. Colin described his philosophies and teaching methods concerning the following topics: breath control, the function of the tongue, the embouchure, range development, practice, and a variety of other topics of interest to the brass student and teacher. Colin's writings include many anecdotes concerning his relationship with numerous brass celebrities which proved to be both entertaining and informative.

In a chapter titled "Practice," Colin described his musical training and background in order to emphasize the importance of the correct mental approach to practice. The first ingredient of this proper mental approach was developing a good mental concept of the desired tone quality. Colin related that his teachers made sure that he was exposed to the highest quality of musical listening situations. In the following excerpt, Colin summarized his philosophy regarding the proper mental concept:

> Some of us are led to imagine a mental and physical sensation of "tasting each note." This is a figurative way of characterizing the total sensory phenomenon of brass playing. Our objective is to develop the necessary mental conception in order to synchronize all of our muscular functions in anticipation of the physical act of playing a musical passage. This anticipatory sensation must become so
controlled and so automatic that our entire muscular system will respond instantaneously.\textsuperscript{136}

In the same chapter on the subject of practice, Colin explained that impatience was one of the most common causes of problems for brass players. Colin advised that patience was essential in all aspects of training from the warm-up through progression to more difficult exercises.\textsuperscript{137} Colin also advised that the student should be patient in developing tone quality and range.

Colin demonstrated that he was a believer in daily practice of sustained tones as the key to a beautiful tone. Colin emphasized this belief by relating to Tommy Dorsey's explanation of how he developed such a beautiful tone. In essence, Dorsey's explanation was the daily practice of sustained tones for at least one hour.\textsuperscript{138}

Colin also demonstrated that he was in agreement with the use of the tongue as an important factor in controlling the speed of the air column and the resulting sound. Colin said that the tongue should act as a valve in controlling the speed of the air column. In Colin's words, "Resonance is formed by vowel singing."\textsuperscript{139} Colin explained the role of the ear and the tongue in producing a singing tone quality as follows:

The ear directs the pitch and regulates the air stream in proportion to the velocity of the air stream. A well-pitched air column controlled by the tensioned rear tongue brings about the correct amount of vibrations, consequently resulting in a singing tone quality.\textsuperscript{140}
It is apparent that Colin's writings, as is the case with many brass authorities, are based upon personal observations and experiences. As a result, such writings can be considered to be of a rather subjective nature. However, the writings of many contemporary brass authorities can be considered as being written with a more scientific and objective orientation. Robert Weast is an example of such a writer.

In the book titled *Brass Performance: An Analytical Text*, Weast explained tone production in purely scientific terms. According to Weast, tone production is the result of air passing across the mucous membrane of the upper lip which creates vibrations in the lip, therefore, setting the air into vibration. The resulting frequencies are determined by air compression, the air velocity, and the tension in the vibrating lips. Weast explained that the relationship between the air and the lip tension is an exact ratio to each other. In other words, if air pressure is reduced the lip tension must be increased in order to maintain the same frequency or if lip tension is reduced the air pressure must be increased in order to maintain the same frequency.\(^{141}\) Weast proved this theory in a series of experiments using what he called an air-membrane instrument.\(^{142}\)

Since lip tension is an important factor in tone production, it would follow that much emphasis should be
placed on embouchure development. According to Weast, the most advantageous means of gaining embouchure strength is through long tones and slurs. Weast explained that the benefits of practicing long tones include the following: (1) to allow the player to truly hear his tone; (2) to make necessary changes to improve tone; and (3) to establish the proper relationship between lip and air pressure. Weast advocated playing sustaining tones with a steady stream of air with no change in tone, pitch, or dynamics. Once this type of exercise was perfected, the student should progress to more advanced exercises involving crescendos and dimenuendos.  

In conjunction with long tone exercises, Weast advocated using slurs as an effective means of gaining embouchure strength. In order to gain better aperture control, Weast suggested slurring exercises that vary dynamics from one note to the next. Examples of such exercises are as follows: slurring downward from piano to forte, slurring downward from forte to piano, slurring upward from piano to forte, and slurring upward from forte to piano.  

Weast demonstrated that he agreed with the use of the tongue as an important factor in proper tone production as well as other facets of brass performance. In Weast's words:

Using the tongue properly greatly increases flexibility, i.e., glissandos, arpeggiated
figures, slurs and difficult passages. Correct manipulations of the tongue increase the effectiveness of the air on the vibrating lip and minimize the embouchure work load.145

In concluding his book, Weast offered the following advice to brass students:

It cannot be stressed emphatically enough that the root and essence of good playing is the full sonorous, centered tone, whose pitch and volume are unwaivering from the attack to the release.146

Donald Reinhardt has devised a system of brass pedagogy which he calls the "Pivot System." According to Reinhardt, the "Pivot System" was the result of adapting scientific principles which utilize all performance factors with maximum efficiency.147 In The Encyclopedia of the Pivot System, Reinhardt addressed himself to a number of topics pertinent to brass performance. Among these topics are posture, breathing, the tongue and attack, and physical type definitions of various embouchure settings.

Reinhardt expressed a number of definitive ideas concerning ear training. For instance, he stated that the student's ear should be trained in a logical progression in tonal timbre as well as in pitch. According to Reinhardt, the brass student should begin an ear training program by first learning to take pitch dictation from his own instrument. Reinhardt insisted that the student should not progress to another instrument until he has thoroughly mastered his own instrument. Once this is achieved the
student should progress to the other instrument groups.  
Another means of developing the ear suggested by Reinhardt was the playing of familiar tunes by ear. After becoming successful at this skill, the student could then attempt playing by ear with the radio or a recording.

Another interesting theory presented by Reinhardt was what he called the "sensation theory." He described the "sensation theory" as an approach to playing the instrument in such a way that the player relies on physical sensations rather than on sound in producing tones. Reinhardt described two types of playing sensations. The first was the pre-playing sensation which was defined as the playing sensation which is experienced in the embouchure and anatomy during performance. According to Reinhardt, consistent brass playing is dependent upon the merging of the pre-playing and playing sensations.

The majority of Reinhardt's Encyclopedia of the Pivot System was written in a question and answer format. Reinhardt's answer to a question concerning the principle of even blowing as applied to slurred and tongued intervals was of special interest. Reinhardt recommended that in slurring or tonguing intervals the player must always attempt to blow a steady air stream. He cautioned against using spasmodic thrusts or jolts from the abdomen in order to force out tones that may be delayed in sounding. He advised that the player should strive for even blowing
or glissing with the breath in the execution of such passages. Reinhardt stressed that the sensation of an even blown air stream should be the same while slurring and tonguing. Reinhardt insisted that even blowing was essential to brass performance and a vital factor in the development and maintenance of the following facets of performance:

1. an improved control of all dynamics
2. a consistent equality of tonal timbre (tone quality)
3. an improved control of intonation (pitch)
4. an improved control of all registers
5. a greater consistency in the various modes of attack and articulation
6. a superior all-round flexibility
7. an improvement in the endurance factor
8. a much finer, more delicate embouchure response
9. a reduction in the amount of mouthpiece pressure used
10. a reduction in the number of klinkers, clams, cracked notes, etc.
11. a much finer playing finesse
12. a more agile tone
13. a reduction in the amount of playing effort

In answering a question concerning the ability of a player to adjust his tonal timbre, Reinhardt demonstrated that he agreed with the use of the arched tongue in brass performance. Reinhardt's answer to this question indicated that the brass player was able to add brilliance to his tone by altering the contours of the back of the throat, the mouth, and the level of the arched tongue. He also explained that a more resonant sound could be obtained in the same fashion.

Reinhardt's method of extending the range consists
of a series of exercises using an ascending slurred glissando without using the valves or slides. Reinhardt recommended that these glissandos should begin on b-flat and should ascend as high as possible. In executing these exercises, the player should gradually increase the embouchure compression which should be synchronized with the increased tension in the abdominal muscles. After repeating such exercises four times, Reinhardt suggested that some slurred chromatics be played in the lower register or the playing of some pedal tones. These low register exercises were recommended to relax the embouchure after such strenuous high playing.\textsuperscript{154} Reinhardt's "Pivot System" has been the source of some controversy, however, the system has many points upon which most brass teachers agree and, therefore, has much to offer the serious-minded brass student.

\textbf{The Embouchure} by Maurice M. Porter was written for the purpose of answering questions concerning the following: the embouchure musculature, variations in different players, and individual embouchure problems. The book was designed as an aid for teachers and students of all wind instruments. Besides containing invaluable information concerning anatomical and physiological information on the embouchure, Porter provided information concerning such topics as relationship of breathing and the embouchure, the embouchure and staccato, the embouchure and legato,
tiring of the embouchure, care of the embouchure, the embouchure and resonance, and embouchure aids. For the purpose of this report, the most valuable information provided by Porter pertained to a discussion of the embouchure and resonance.

Porter described the role of the embouchure in producing resonance as the generator which excites the air column within the instrument to vibrate. The column of air was defined as the resonator. The frequency of the resonating air column may be controlled by changing its length. In the case of brass instruments this is accomplished by the valves or the slide. According to Porter, in addition to the air column within the instrument being set into vibration, the air inside the players head, mouth, throat, and chest is also set into vibration. Porter stated that how this happens is obscure, however, the control of this inner vibrating column of air by the player has a profound effect on the sound being produced. Porter referred to the vibrating air column within the player's body as a "supplementary resonator."

The player's management and control of the supplementary resonator was described by Porter as an essential factor in order to obtain a high level of performance. In Porter's words:

To reach this high level a wind instrumentalist needs to study, practice and develop to the best of his ability his control of the "primary resonator" within the instrument, and of the
"supplementary resonator" within himself, as well as his technique. His embouchure and breathing may be deciding factors through which he is able to accomplish this.158

Porter suggested that the student should come to a better understanding of the use of the "supplementary resonator" in the following ways: (1) observe the critical comments of experts and their positive reaction to the student's playing; (2) use tape recordings for self-criticism; (3) compare and contrast one's own playing to respected artists; and (4) observe an artist during a live performance to determine the way he manipulates his embouchure, face and neck muscles, and how he breathes.159

Fay Hensen addressed herself to the problem of tone production in the following terms:

Good tone quality, in my opinion, is a result of correct mental conception of beauty of tone, plus the ability to perceive and sense the color and image of the tone which is to be produced. Without the knowledge of how to secure this quality, tone cannot improve—regardless of the number of repetitions made of the same tone.160

Hansen suggested buzzing the lips with or without the mouthpiece as a valuable aid in developing tone production.161 Perhaps Philip Bate said it best when he summarized the importance of a good mental concept of tone quality as, "A good embouchure is vital to the cultivation of a good tone, in which only the player's ear can be his ultimate guide."162
Trumpet Texts

As emphasized by many authorities in brass pedagogy, a strong, flexible, and healthy embouchure is essential to good intonation and tone production on any brass instrument. Delbert A. Dale, in his book Trumpet Technique, outlined a number of general exercises designed to build a good embouchure. Dale emphasized the value of buzzing on the mouthpiece prior to all other practice. Following this pre-warm up on the mouthpiece, Dale recommended the daily practice of lip slur exercises and long tone exercises. He suggested that all lip slurring exercises should begin in the middle register in order to avoid what he called the "double-embouchure" habit. The lip slurring exercises were to be extended up as far as possible in range. As for the long tone exercises, Dale recommended playing sustained tones with a crescendo for the first half of their duration. Dale stressed the importance of steady air pressure and consistent intonation and tone quality throughout each long tone.

In addition to these suggestions for building the embouchure, Dale made definitive statements concerning other aspects of trumpet performance as well. In discussing intonation, he placed primary importance on ear training as an important factor in developing good intonation. In his words,

Intonation has such a great effect on the actual sound of a given note, that the average student
(unless he is fortunate in having perfect pitch or really excellent relative pitch), should probably spend as much time training his ear (intonation) and learning to apply it in his performance as he spends on the 'mechanics' of tone production.166

Dale was also quite adamant regarding the importance of ear training in developing a concept of tone quality. According to Dale, it was of primary importance that the student develop the ability to discern and recognize good intonation, good tone quality, and balance in order that he may improve these factors in his own playing. Dale said that the most profitable means of developing a concept of tone quality was to listen to live performances or recordings of outstanding soloists and orchestras.167

In his discussion of tone quality, Dale also emphasized the important role of the tongue in tone production. The initial role of the tongue, as stated by Dale, was that of a valve in starting the air flow through the lips and into the instrument. Dale stated that the initial sound of the release had a great effect on the sound of the resulting tone. The second role of the tongue in relation to tone quality was to serve the function of adjusting the actual tone and resonance of the tone.168

As stated by Dale, "The lower the tongue lies in the mouth and the larger the air passage in the throat and mouth, the broader the tone should be."169

As suggested in connection with embouchure building, Dale also advocated the use of long tone studies and lip
slurs in developing tone quality. In developing tone quality, he recommended the use of long tones with various dynamic levels including crescendos and decrescendos and the opposite. Dale also recommended that such long tone studies should begin in the middle register and continue from this point in both directions. In addition to long tone exercises, Dale suggested the playing of much melodic material such as operatic arias as excellent exercises for the development of tone.

In a chapter titled "Practice Problems," Dale advocated using problem isolation as an effective method of practicing. Dale recommended that during the rest periods of a practice session the student should use this time to practice whistling or singing passages in order to further develop good intonation. In addition, he stated that most fingering problems could be conquered without actually playing the instrument. Memorization of music was said to be accomplished much quicker and effectively without the instrument. Dale also suggested that the student work on individual sections of music and perfect them before playing the work as a whole.

The next trumpet text reviewed was by Irving Bush who is a respected performer and trumpet teacher. In his book Artistic Trumpet Technique and Study, Bush stated that one of the most beneficial techniques of studying trumpet was practicing on the mouthpiece alone. One of the
advantages to mouthpiece practice, as observed by Bush, was that any defects in playing were immediately recognizable. As Bush stated,

Playing on the mouthpiece teaches the student not to rely on the instrument to produce different tones, and places the individual's attention on the breathing, blowing, vibration, and syllables.

Bush recommended that while playing on the mouthpiece the students should play exercises covering the entire range, all articulations, intervals, and scales. Mouthpiece practice was said to solve intonation problems and was recommended as an excellent aid in ear training.

Regarding correct tone production, Bush stated that good tone quality was mostly a matter of concept. Bush said that a prerequisite to a qualitative tone was a mental image of the desired tone and this mental concept was the result of discriminative listening.

Bush described the predominant characteristic of a correct tone as having a tonal core or center which provides the tone with an intense, solid, compact sound. He said that a well-centered tone was the result of an even, consistent air stream. Bush, again, recommended playing on the mouthpiece alone as an effective technique in developing a centered tone.

Throughout the book, Bush provided insight into practice techniques which demonstrated his understanding of trumpet pedagogy. For example, Bush recommended slow
even practice of technical exercises until the fingers became flexible and controlled. When this was achieved, the exercises could be taken only slightly faster. This process was to be continued until the proper speed was reached with comfort and ease.\textsuperscript{179}

Bush also emphasized the importance of intelligent practice procedures for serious students of the trumpet. He stressed that the most important factors in correct procedures were the proper mental attitude and correct thinking.\textsuperscript{180} Bush also stressed the importance of qualitative listening at all times during playing. As Bush said,

\begin{quote}
The ability to discriminate between good or poor tonal quality, faulty intonation, musical phrasing, proper blend and dynamic level is only accomplished through careful listening. . . . A musician who does not listen can be compared to an artist who paints with his eyes closed.\textsuperscript{181}
\end{quote}

Byron Autrey’s book titled \textit{Basic Guide to Trumpet Playing} was written to serve as an aid to the trumpet teacher on all levels and to the beginning student through advanced stages of development. The book provides basic information for a text of this type including breathing, the embouchure, tone production, articulation, flexibility, the daily routine and solo literature.

In a discussion concerned with developing good breathing habits, Autrey described a valuable technique designed to enable the player to develop the proper flow
of air. Autrey recommended the use of long tone-slur exercises to develop better breath control. In playing these exercises, Autrey instructed that the intensity of the air stream should be maintained at a consistent level. As he explained, this intensity level should be that which was required by the upper tone of the exercise. 182

Autrey also advocated using vowel syllables as an aid to slurring from one harmonic tone to another of the same series. As he explained,

When the flow of breath power is smooth and consistent, the rise and fall of the arch in the tongue can make the change of pitches come as easily on the cornet and trumpet as they come when whistling. 183

Autrey also advocated using the tongue in a similar fashion when executing intervals, lip trills, and scale passages.

Autrey provided insight into his method of developing good tone production. Besides having all of the physical factors in a coordinated state for proper tone production, Autrey advised the use of the ear in combination with a sense of muscular memory. In his words, "Practice and listen carefully to the quality of tone being produced. When the tone quality is right remember the muscular feeling in the embouchure." 184

The majority of brass and trumpet pedagogical literature can be said to be based upon the personal
performance and teaching experiences of the writers. As a result, much information provided in such writings may be considered as largely subjective and based on conjecture. Clyde Noble, a psychologist and trumpet performer, has attempted to apply the scientific discipline of psychology to cornet and trumpet playing. The result of which can be considered as one of the most scholarly and scientific contributions to trumpet pedagogy. Noble's treatment of the subject was comprehensive in that the book included the following topics: historical sketches of the evolution and development of the trumpet and cornet, information concerning famous players of the past, the psychology of music, instruments, mouthpieces, intonation, embouchure techniques, breath control, tone quality, articulation, reading and playing with style.

In discussing timbre, Noble stated that what constitutes good or bad sounds on the cornet and trumpet is in part a matter of the individual's expression and his acquired esthetic preferences. Noble explained that the psychologist would describe the major characteristic of artistic expression in music as that esthetic deviation from the regular. Noble substantiated this claim by referring to Seashore's research which involved analysis of recorded performances by violinists, pianists, and singers. The analysis of these performances illustrated a significant deviation from precise note values and tempo.
This evidence lead Noble to the conclusion that musical artistry and expression were definitely acquirable and teachable. The requirements for teaching these qualities were stated as follows:

The student must be an intelligent person with an excellent memory who is equipped with basic sensory-motor capacities and above-average aptitudes for the discrimination of pitch, time, intensity, and the qualitative attributes of tone. The rest is a matter of listening to good models, learning the traditional renditions, and then of introducing some individuality into one's own interpretations.

Noble provided detailed descriptions of how the embouchure muscles should work in order to produce the most desirable results. Included in these descriptions were illustrations which labeled and identified each muscle of the embouchure. Noble explained that strong facial muscles were essential in order to maintain endurance and proper embouchure position for cornet and trumpet performance. However, as Noble indicated in the following excerpt, strength is not enough:

The embouchure muscles must be so delicately coordinated that the performer can produce on demand each one of the 31 semitones of the normal 2½-octave range, from F# to high C. The basic requirements are three in number: (1) every note must be sounded in good intonation and timbre; (2) there must be enough flexibility to skip around freely among the low, middle, and high registers; and (3) the player must be able to control his tone through all dynamic levels from pp to ff.

Noble described four methods for preparing the embouchure for a practice session. He classified these

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four methods into the following four kinds of exercises:

(1) embouchure muscle drills, (2) lip buzzing, (3) mouth-piece playing, and (4) warmups with the instrument. He suggested for embouchure muscle drills the contracting and relaxing of the facial muscles by way of various facial expression exercises. Lip buzzing exercises were described in terms of simply buzzing different pitches on the lips. Mouthpiece playing exercises were strongly recommended as the most beneficial of all preliminary warm up exercises.

In discussing breath control and tone quality, Noble was adamant regarding the importance of proper breath control and its relationship to tone quality. The following excerpts are but two statements that illustrate his opinion on the subject:

The relationship between the beauty and variety of a brass musician's tone and the degree of his control over air power is an intimate one. . . . The point to remember is that the wind-embouchure system of the brassman is similar to the wind-larynx system of the vocalist. In both cases the management of air power is fundamental to tone quality, articulation, range, dynamics, endurance, and artistry.

Most writers, in attempting to describe a good brass tone quality, used such subjective descriptions as "beautiful," "big," "rich," and many more. Noble, however, provided a scientific description based on acoustical research. A brass tone judged by musicians as beautiful or ideal must consist of the following: (1) a fundamental
frequency that contributes approximately twenty percent to the total energy output; (2) the fundamental should be accompanied by a minimum of fifteen to twenty harmonics; and (3) the formant pattern should show an initial increase followed by a progressive decrease in the strength of the overtones.

Noble pointed out that brass authorities differ in their recommendations for the most advantageous method of developing good tone quality. As he demonstrated some brass authorities recommend long tones, whereas others reject the benefit of long tone practice in favor of chromatic and interval slurring exercises. Noble has taken an eclectic position concerning this matter. He recommended the practice of long tones and chromatic and interval slurring exercises for the development of tone quality. However, he did warn that exercise playing of sustained tones can be harmful to the flexibility of the embouchure. In addition to the above exercises for tone development, Noble stressed the importance of listening to acclaimed artists and experimenting with oneself in attempting to simulate artistic tone quality. Noble stated that there were numerous variables which make tone quality an elusive subject. As he said, "It is part physical, part physiological, part psychological".

In discussing lip slurs, Noble referred to Walter Smith's description of the technique which stressed the
use of the arched tongue in ascending slurs. Noble made the following four recommendations for practicing lip slurs:

(1) try to produce the upward slurs in a liquid manner without any harsh transition or break between the intervals, imitating a fine singer's vocalise technique; (2) when the intervals begin to expand (e.g., ascending by octaves from middle C to high C) be careful to allow no stray, intervening harmonics (e.g., middle E, high G, or the false high B♭); (3) keep the rhythm steady for there is a natural tendency to speed up on close intervals and to slow down on wide intervals; (4) strive always for accurate centering of the tones, perfect intonation and a good quality of tone in all registers.

Noble devoted one chapter to the subject of reading and playing with style. In a psychologist's terms, Noble stated that sight-reading was "a complex type of neuromuscular activity requiring a high degree of perceptual-motor skill." According to Noble, such perceptual-motor skills involved two processes:

(1) rapid visual discrimination of the musical notation (key signature, time, tempo, dynamics), and (2) proper coordination of a variety and sequence of motor movements (embouchure, tongue, fingers, and breathing apparatus) such that the printed melodic or harmonic "code" is translated into a pattern of musical sounds from the cornet or trumpet.

Noble discussed four principles which are relevant to the acquisition of sight-reading skills. The first principle was called "The Principle of Multiple Causation" which in essence means that there is more than one way to reach the desired goal of sight-reading excellence. The second principle Noble called "The
Principle of Training" simply means practice improves proficiency. The third principle was "The Principle of Transfer." From a psychological viewpoint, Noble stated that gaining sight-reading skill was a problem in transfer of training. Transfer was defined as "the carrying over effect of practice under one set of conditions to performance under another set of conditions." This principle implies that the trumpet student should train for transfer. Noble stated that the student could maximize the degree of transfer by daily practice of the following:

. . . daily warm ups and calisthenics; breath control exercises; major, minor, and whole-tone scales; intervals and arpeggios in both dominant and diminished sevenths; all forms of articulation, including the single, double, and triple staccato; together with slurring, glissandi, syncopation, transposition, the vibrato, and all the standard embellishments.

Noble's fourth principle for acquisition of sight-reading skill was called "The Principle of Familiarity." Noble explained this principle by stating that sight-reading was the reading and recognition of what had been seen and practiced. In other words, the student's proficiency in sight-reading depends upon his ability to recognize patterns and configurations that should be familiar as a result of sound, basic training.

Dissertations and Theses

Many research projects in recent times have...
reflected an interest in the mechanical and physiological aspects of brass performance. Researchers have utilized modern technological advances in order to pursue this type of research. A dissertation by DeYoung using videofluorographic techniques had the purpose of examining the pharyngeal opening of trombone players while performing selected exercises. The results of the study were to provide evidence to settle conflicting opinions of eminent brass performers and teachers concerning the physiological changes in the oral cavity, tongue, teeth, and throat during brass performance.

DeYoung concluded that there was no significant difference in the pharyngeal opening for the change in dynamic levels. However, there was significant change in size of the pharyngeal opening for the change in dynamic levels. However, there was significant change in the size of the pharyngeal opening as the pitch ascended. Upon ascending in pitch, the pharyngeal opening was observed to enlarge. DeYoung hypothesized that the function of the enlarged pharyngeal opening for the upper register was to provide a large amount of breath to the oral cavity.

DeYoung also hypothesized that the role of the arched tongue was to act in conjunction with the enlarged pharyngeal opening. Thus, the arched tongue would restrict the air between the hard palate and tongue.
causing an increase in the speed of air to the vibrating lips.\textsuperscript{209} In addition, DeYoung hypothesized that the arched tongue serves to maintain a constant velocity of air when the dynamic level is decreased to piano. It has been observed that loss of centered tone quality and flattening in pitch usually accompanies an inexperienced player's attempt to play at the piano dynamic level. DeYoung stated that these immature performance traits were caused by the lack of breath velocity.\textsuperscript{210} Therefore, it would follow that in order to avoid flattening in pitch and loss of tonal center, the player should use the arched tongue to increase the speed of air while playing piano.

Joseph Meidt, as a result of his investigation using cinefluorographic techniques, made a number of definite statements concerning oral adjustments for various aspects of brass performance. He investigated oral adjustments made by French horn and trumpet players while performing the following tasks: slurring ascending and descending passages, playing extreme registers, tonguing notes in various registers, single and multiple articulation.\textsuperscript{211}

This study, no doubt, provided certain knowledge as to physiological adjustments made by performers in executing the various tasks indicated in the investigation.\textsuperscript{212} This knowledge may prove helpful to the brass
teacher in that he now has definite proof as to the ideal physiological adjustments in the oral cavity while performing. However, without access to cinefluorographic equipment the teacher has no way of knowing if his students are using these ideal oral adjustments while performing. It would seem that the ordinary brass teacher must rely on the more traditional techniques of brass pedagogy.

Lewis Hiigel used cinefluorographic sound pictures to determine the relationships between the action of the tongue in performing various pitches and styles on a brass instrument and the tongue action in enunciating selected syllables. The following statements illustrate the most significant results of Hiigel's research:

1. Significant differences exist between the tongue placement for legato and staccato with the exception of the contact placement of the posterior arch.

2. Significant differences exist between the tongue placement for performance of the various pitches and styles and placement for the enunciation of the syllables as they were matched to the pitches.

3. Significant differences exist between the tongue placement for the various registers with the exception of the contact tip placement.

4. Significant differences exist between the tongue placement of the respective subjects in all the measurement dimensions.

5. No evidence was found to support the postulate that thinking a syllable during performance will tend to simulate the tongue position resulting from the enunciation of that syllable.

6. The directional tendencies of tongue placement for both performance and syllabic recitation are similar.
7. No patterns of register change were apparent.

According to Hiigel, the implications of his research for brass pedagogy are the following: (1) the use of syllables to indicate correct tongue placement should be avoided, and (2) a more consistent tongue placement for the entire range of the instrument should be taught.

The research findings of Hiigel and others, such as Hall, have indicated that the utilization of vowel syllables, as advocated by many brass authorities, as an aid in register change may be a misnomer. In addition, such research projects have indicated that a more consistent tongue placement for the entire range of the instrument should be maintained. In view of these findings, it would seem to follow that instead of placing the emphasis on the mechanical and physical perhaps the emphasis should be directed to the sound and musical expressiveness being produced. In other words, instead of concentration on tongue manipulation, the attention should be directed to the quality of sound and striving for a more musical and expressive performance.

Gordon Mathie's dissertation emphasized the importance of striving for the qualities of an expressive performance rather than emphasizing mechanical or physical factors in brass training. Mathie stated that applied music study occupied a major portion of the musician's
preparation. Therefore, it would seem imperative that the trumpet teacher integrate and synthesize the broad area of the music curriculum in order that the performance of music may be coordinated with the study of music in the classroom.\textsuperscript{217} In Mathie's words,

The trumpet teacher, through the performance of music, and the solution of musical problems, can effectively apply the concepts learned in music history, music literature, and music theory courses.\textsuperscript{218}

The purpose of Mathie's dissertation was to develop a theoretical basis for the teaching of trumpet at the college level. In fulfilling this purpose, Mathie found it necessary to delineate the characteristics of a good trumpet player. According to Mathie, the characteristics of a good trumpet player included:

... a good tone, a good embouchure, suitable vibrato, flexibility, control, a knowledge of the literature for the instrument, the ability to interpret music well, a command of expressive devices, adequate range, and the technical wherewithal to play expressively and confidently.\textsuperscript{219}

Mathie expressed the above characteristics in terms of instructional objectives. He stated the objectives pertaining to listening skills as follows:

1. The student can accurately evaluate and improve performance. ... 
2. He can identify and analyze intonation problems. ... 
3. He can identify a suitable vibrato. ... 
4. He has an aural concept of fine tone quality. ... 
5. He can identify and analyze problems of flexibility. ...
6. He can identify and analyze a proper interpretation of the music of various periods.

7. He is able to hear music of a reasonable difficulty in his imagination, before and while performing.

Mathie was quite adamant in stating the opinion that college trumpet teachers should be more concerned with expressive performance as a goal rather than placing the emphasis on the mechanics of playing and technique. According to Mathie, technical problems should be seen as problems of expressiveness. The ability of the performer to communicate the meaning of the music and technical ability must be second place to the expressive demands of the music. Mathie pointed out that technical problems must be overcome in order that an expressive performance may result. However, he advocated that technical problems should be solved in a musical fashion.

Mathie suggested that upon undertaking the study of a new piece, the student should first experience the work in its entirety. He suggested that the student should listen to a recording or live performance. If this were not possible, he suggested reading through the work with the accompaniment. Mathie said that the student should have an understanding of the melodic and harmonic construction of the work before attempting to perform it. He suggested that the student be taught expressivity by examples set by the teacher, through
discussion and through application of the concepts of expressiveness. Mathie listed the following expressive elements: mood, phrasing, tone color, dynamics, tempo, rhythm, and articulation. He suggested that the ability of a student to apply these elements of expressivity could be measured and evaluated by the teacher observing the student's performance in ensemble sight-reading situations.

In applying the principle of learning to college trumpet teaching, Mathie stated that the student should be exposed to learning experiences which not only contribute to the skill required of a particular piece but to experiences that will lead to the solution of problems in other music as well. Mathie also emphasized that the experienced trumpet instructor should be skilled in selecting music at a level of difficulty appropriate to the student's ability and capacity to learn.

Mathie placed much emphasis on the importance of ear training in the total program of study for college trumpet students. Mathie stated that the trumpet player's aural ability was an important factor in his ability to perform well. The degree of skill achieved in his aural ability and sensitivity was a determining factor in the trumpet player's ability to perform with good intonation and confidence. As a means of developing the student's
aural ability, Mathie made the following suggestions:
(1) he must learn to play by ear, through transposition and playing familiar melodies; (2) he should gain skill in playing scales, arpeggios, and modulatory patterns; (3) he should use electronic tuning instruments in studying intonation and solving intonation problems; (4) he should make a concentrated study of ear training and sight-singing; (5) he should understand how music theory applies to performance; and (6) he should make every effort to develop his prior-hearing ability.  

Mathie explained that musical learning should proceed through a process involving opportunities for the student to experience provisional attempts. This should be followed by the teacher and student evaluating and interpreting the provisional attempt of the student. Leonard and House in *Foundations and Principles of Music Education* described the most effective process for musical learning as follows:

The pattern for effective musical learning is (a) an aural concept of what is to be achieved, (b) provisional tries, (c) reflection on what is wrong, and (d) a decision on changes to be made in the next tries.

Support for Mathie's ideas on the fundamentals of musical learning can be found in the writings of many music educators. Perhaps the following excerpt by Leonhard and House summarized the fundamental concepts of musical learning most effectively:
Aural awareness is the key to musical learning, and the music-learning situation should be constantly focused on ear training. Sight and kinesthetic feel are important but properly come into play only after aural concepts are well established.234

In describing the correct mental attitude for practice, Mathie emphasized that the student should work for the perfection of correct forms of movement which lead to the ultimate solution of musical problems. He warned against blind repetition and stressed intelligent and meaningful practice which results in a musical end. Mathie also stressed that technical difficulties should be analyzed and practiced in terms of their expressive significance to the music.235 According to Mathie, these learning experiences should present to the student opportunities to develop generalizations for solutions of specific musical problems. In this way, the student will develop the skill to apply previous solutions to new musical problems.236

There are numerous references to the concept of tone center or centered tone quality throughout brass and trumpet pedagogical literature. Many pedagogues explained tone center in rather vague subjective terms or with references to playing in the center of pitch. Daniel Bachelder, in a dissertation titled An Investigation of Trombone "Tone Center," set forth to explain in an objective and scientific fashion the concept of tone center. The fourfold purposes of Bachelder's dissertation
were the following:

(1) provide facts about tone center and its relationship to maximum resonance, (2) determine what factors effect resonance, (3) identify principles involved in producing a proper tone center, and (4) implement those principles into pertinent ways of teaching the principles of producing a proper tone center.237

It is important to note that Bachelder defined tone center as maximum resonance.238 With the aid of spectrum analysis, he was able to conclude that the spectrum of a centered tone proved to consist of a smooth shape with minimal secondary wave forms.239 Another experiment, which was devised to determine the electronic spectrum of a below-center pitch, resulted in the conclusion that such a pitch consisted of secondary wave activity indicating extraneous vibration within the sound. In addition, the wave spectrum lacked the smoothness indicated in the wave spectrum of a centered tone. There was also a loss in the amplitude of the first partial of the below-centered pitch compared to the centered pitch.240

A similar experiment was conducted involving the electronic spectrum of an above-centered tone which resulted in the following conclusions: upper partial strength tended to fall off quickly in an above-center tone, extraneous vibrations were prevalent, and these extraneous vibrations interfered with the tonal frequency output.241

As a result of Bachelder's experiments, he was able
to formulate a number of pedagogical principles for producing the proper tone center. Using a technique of separating the mouthpiece from the vibrating lips and trombone, preliminary investigation indicated the frequency of the mouthpiece changed to a different frequency being emitted by the trombone. Bachelder observed that an above-center tone was produced when the frequency changed to a high frequency upon separating the mouthpiece from the instrument. Conversely, he observed a below-center tone was produced when the frequency changed to a lower frequency upon separating the mouthpiece from the instrument.\textsuperscript{242}

Other data in Bachelder's experiments indicated that the upper lip vibrates much more than the lower lip in the extreme upper register of the trombone. Whereas, there was an equality of vibration between the upper and lower lips in the lower register. This data enabled Bachelder to conclude that tone center became difficult to achieve if the trombonist placed excessive pressure upon his upper lip while playing in the upper register. Therefore, the solution for this problem was for the player to shift the pressure to the lower lip in the upper register. In addition, he indicated that upon descending into the lower register the pressure on the lips should be equalized.\textsuperscript{243}

Bachelder was also able to conclude that in order
to obtain greater strength in the partial and formant region in the higher partials a mouthpiece placement of two-thirds upper lip and one-third lower lip was indicated. Bachelder also observed that there must be sufficient air pressure to maintain the aperture setting in the embouchure at a given frequency and amplitude. Therefore, he concluded that knowledge of breath support and correct breathing habits were imperative.

As a result of reviewing related literature and through experimentation, Bachelder was able to formulate the following principles for acquiring a tone center:

1. The trombonist should have an accurate aural concept of tone center
3. Slide placement will vary due to instrument construction, mouthpiece placement, and tone center concept . . .
4. The attack of a tone initiated by pulling the tongue from the aperture can cause interference with the partial structure of the tone, thus inhibiting tone center . . .
5. Air speed through the aperture must be sufficient to cause the lips to vibrate. If the aperture of the embouchure is set for a greater volume of air than emitted from the lungs, there can not be an initiation of lip vibration . . .
6. The aperture should be allowed to attain a maximum opening in the vibration cycle in order to produce a maximum amplitude for a minimum of effort
7. The spectrum of a centered tone should show a greater amplitude strength of partials than above- or below-centered tones of the same frequency
8. The tuning slide or slide placement of centered performance should be adjusted inward from above-center performance
Conclusions

As a result of this review of brass and trumpet pedagogical literature, a number of observations can be made.

1. It is evident that brass pedagogues agreed that tone production is one of the major problems in brass performance.

2. There is general agreement that proper tone production is determined by the following factors: proper posture, correct breathing habits, proper breath support, proper embouchure, a relaxed open throat, correct tongue position, the proper mouthpiece and a high quality instrument.

3. There is some disagreement as to the value of sustained tone practice as an effective means of tone production. However, the majority of brass authorities reviewed agreed that sustained tone practice is an excellent means of developing tone production.

4. There also seems to be some disagreement as to the value of lip buzzing and mouthpiece practice as an aid to tone production. However, most brass authorities recommended lip buzzing and mouthpiece practice as an important aspect of the daily routine. The advantages of mouthpiece practice were as follows: mouthpiece practice is essential to aural sensitivity and discrimination regarding pitch placement; it allows the performer
to concentrate on the lip tension required for different tones; it is an excellent aid for ear training; and it is essential in the determination of a continuous flow of air and lip vibration during execution of all performance tasks.

5. It is apparent that brass pedagogues agreed in regard to the importance of developing aural awareness and a discriminating ear. It can be said that most brass teachers reviewed recommended a concentrated program of intelligent listening in order for the student to develop a mental concept of tone quality and to achieve a better understanding of the elements that constitute artistic performance.

6. It is apparent that several brass pedagogues have attempted to identify and explain the concept of inner body resonance and its effect on tone quality. However, these attempts to explain inner body resonance are largely theoretical and have not been proven scientifically.

7. It has been observed that most brass authorities recommended the practice of lip slurs as an effective means of developing flexibility, tone quality, and embouchure strength. A number of brass authorities emphasized the importance of maintaining a continuous flow of air and lip vibration in achieving a true legato in the execution of lip slurs. In addition, the practice of glissando
slides between the two intervals of a lip slur were recommended as an effective practice technique for the perfection of lip slurs.

8. Recent research projects using modern technology have furnished evidence which proved the importance of proper breath support in maintaining the desired tone quality, range, and endurance on brass instruments.

9. Apparently there is much disagreement among brass pedagogues as to the role of the tongue in brass performance. Recent experimentation utilizing modern technological advances has provided evidence that seems to refute the theory of many brass pedagogues which advocates tongue manipulation in lip slurs and register changes.

10. The results of research projects using cine-fluorographic sound pictures, x-ray, and videofluorographic techniques have provided brass pedagogues with concrete information regarding certain physiological aspects of brass performance. However, due to the limited availability of such sophisticated equipment, the practical utilization of this knowledge was observed to be restricted.

11. The concept of tone center on brass instruments has been objectively and scientifically identified as maximum resonance.
12. The following statements concerning various aspects of brass pedagogy can be made as a result of recent projects: developing an accurate aural concept of tone center is essential; mouthpiece placement affects tone center; tonguing through the lip aperture interferes with a centered tone quality and should be avoided; the air velocity through the lip aperture must be sufficient to enable lip vibration; lip aperture and air velocity are directly proportional to each other in maintaining and producing a centered tone; and lip aperture should be at a maximum in order to produce maximum tone center with minimum effort.

The pedagogical concepts and principles of bel canto have been derived from a review of selected bel canto pedagogical literature. The performance objectives of bel canto have been stated in terms of the following concepts:

1. Demonstrates a beautiful tone at all times.
2. Demonstrates agility and virtuosity in execution of all performance tasks.
3. Demonstrates a smooth, pure legato and a long, sustained, unbroken phrase.
4. Demonstrates perfect intonation as a result of proper tone production.
5. Demonstrates an ability to deliver the demands of musical expression in an unhindered and free fashion.
A review of brass and trumpet pedagogical literature has illustrated the above concepts to be ideal performance objectives for brass performance. Numerous brass pedagogues have emphasized proper tone production as being fundamental to artistic brass performance. Brass pedagogues have stated that proper tone production is dependent upon the coordination and synchronization of all physical factors of brass performance including the following: posture, breath support, embouchure, tongue, throat, mouthpiece, and instrument.

It has been observed that brass authorities have expressed the characteristics of expressive and artistic brass performance in terms of the ability to demonstrate the following: the execution on all tones of the entire range of all dynamic levels and gradations; a full resonant tone quality on all tones of the range; free and expressive movement from one note to another; the production of a variety of musical styles and effects according to the demands of the music; and free execution of the technical demands of the music.

There are an infinite number of references in brass pedagogical literature to the importance of a brass player's ability to demonstrate a smooth, pure legato. Brass authorities have used the analogy of imitating the legato style of an artistic vocalist in executing this performance task. In developing a pure
legato, brass authorities have recommended that the brass performer should perform this style with continuous air flow and lip vibration between tones. Brass authorities have recommended the following practice techniques for developing a pure legato on brass instruments: concentration on the mental image of playing a long sustained tone while actually executing slurs between various tones; practicing slurs of all types on the mouthpiece alone; concentration on anticipating the tension and air support of each tone of the legato passage; and the buzzing of glissandos between the intervals of a slur. It has been observed that many brass authorities recommended using the arched tongue technique in ascending slurs. However, recent research projects have indicated that the use of the tongue in this fashion may be a misnomer.

Good intonation has been stressed as an essential element in all brass performance. Brass authorities agreed that ear training is an important factor in developing good intonation. Recent research has demonstrated the importance of achieving a centered tone quality as a fundamental factor in producing good quality as a fundamental factor in producing good intonation. Brass pedagogues also agreed that the unhindered delivery of musical expression is dependent upon the integration of all aspects of performance and is the supreme goal of all musical performance.
The formulation of the following bel canto pedagogical principles was made possible as a result of a review of selected bel canto pedagogical literature:

1. The Bel Canto Principle of Ear Training.
2. Graded Progression of Exercises and Techniques.
3. Absolute Perfection of Each Level before Progression to the Next.
4. Problem Isolation.
5. Comprehension of the Method and Its Application.

The result of a review of selected brass and trumpet pedagogical literature has demonstrated that the above pedagogical principles are fundamental to effective brass pedagogy. Therefore, it can be said that there is indeed the feasibility of a comparison of bel canto pedagogical concepts and principles to brass and trumpet pedagogical concepts and principles.
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CHAPTER IV

THE APPLICATION OF BEL CANTO PEDAGOGICAL PRINCIPLES
TO TRUMPET PEDAGOGY AND PERFORMANCE
THROUGH PRACTICAL EXERCISES

Bel Canto is a term of nebulous meaning and inconsistent usage. Probably the most comprehensive interpretation of bel canto is an ideal of vocal excellence, a vocal technique, and a style of performance identified with the seventeenth and eighteenth centuries. Recent publications concerning vocal pedagogy and performance practices illustrate an efflorescence of interest in bel canto. The significance of bel canto to contemporary vocal pedagogy has become a topic for theses and dissertations. In view of the revived interest in bel canto and its significance to contemporary vocal pedagogy, it is apparent that the teachings of the old bel canto masters were based on sound pedagogical principles. It is conceivable that these pedagogical principles would have significance for other disciplines as well.

A review of selected primary and secondary sources of bel canto has established a number of concepts and principles upon which bel canto is based. In addition, a
review of selected brass and trumpet literature has established the feasability of a comparison of bel canto pedagogical principles and corresponding principles derived from selected brass and trumpet literature.

It has been established that the ideals of vocal performance sought by the exponents of bel canto were as follows: beautiful tone, agility and virtuosity in performance, a smooth, pure legato and sustained unbroken phrase, perfect intonation, and an unhindered deliverance of musical expression. These performance ideals seem to encompass the performance ideals of all musicians.

The bel canto concepts derived from a review of selected primary and secondary sources and applied to trumpet pedagogy and performance are as follows:

1. Demonstrates a Beautiful Tone at All Times.

   It has been observed that beauty of tone was the ideal sought by bel canto teachers of the seventeenth and eighteenth centuries and by modern pedagogues as well. It has been observed by many investigators that the ability to produce a beautiful tone is dependent upon the proper coordination of all the mechanisms involved in tone production.

2. Demonstrates Agility and Virtuosity in Performance.

   This concept implies the ability to execute with ease and accuracy the following techniques: elaborate fioritura; all dynamics and gradations between, executed
on single tones and in expressive passages; access to high tones when performing in low register; access to low tones when performing in upper register; adequate range for the demands of the music; flexibility to move from one note to the next without loss of musical expression; the capacity to produce a desired musical effect on demand; and the overall capacity to execute the technical demands of the music.

3. Demonstrates a Smooth, Pure Legato and Sustained Unbroken Phrase.

Primary and secondary sources of bel canto seem to agree that a pure legato is the essence of a good musical performance. The ability to sustain an unbroken phrase and execute a pure legato demonstrates an application of the preceding concepts. In other words, without beauty of tone and agility, a pure legato is impossible.

4. Demonstrates Perfect Intonation as a Result of Proper Voice Production.

Again, this concept is a product of the application of the preceding concepts. It is obvious that before perfect intonation can be achieved, the musician must first have mastered the execution of a beautiful tone, agility, and a pure legato. Perfect intonation has been observed to be a goal of virtually all exponents of bel canto.

The observation has been made that some exponents of bel canto consider this concept to be the supreme goal of vocal pedagogy and performance. It is obvious that all bel canto concepts are integrated in this final concept. It is apparent that all exponents of bel canto and brass pedagogues agree that an unhindered deliverance of musical expression is the ultimate goal of all musical performers.

The above concepts provide the motivation for the formulation of the following bel canto principles:


The interpretations of primary sources by contemporary investigators have indicated that ear training for the bel canto pedagogues meant much more than normal interpretation might imply. It has been observed that the first stage in training was devoted to sight-singing and through this study the rudiments of music were learned. However, it has also been noted that the bel canto conception of ear training involved the student's acquisition of the ability to perceive the desired tone quality before emission. Once this ability was developed, the ear became the guide to proper tone production and to the ideal of beautiful tone. In addition, this principle of ear training permeated the entire development and training process. In other words, the ear of both student and teacher guided the way through the execution of every exercise always...
evaluating tone, intonation, vowel purity, rhythmic accuracy, and other sound properties. Various observers have indicated that the acquisition of the properly trained ear was a long and arduous task. The student was not rushed and each lesson was oriented to only as much as the student's ear was capable of grasping.

2. **Graded Progression of Exercises and Techniques.**

Numerous examples have provided evidence that this principle can be considered a fundamental element of bel canto. All primary sources have advocated the gradual progression through graded exercises and techniques. This principle requires the intelligent selection of repertoire to match the student's abilities.

3. **Absolute Perfection of Each Level Before Progression to the Next.**

This principle has been demonstrated as being one of the fundamental principles of bel canto. It implies that strict teaching standard is an innate characteristic of the bel canto pedagogical system. It has become increasingly evident that no matter how much time each stage of development required, the student was not rushed or pushed beyond his abilities.

4. **Problem Isolation.**

This principle implies the isolation of a particular musical or technical problem and its practice to perfection before inclusion in a musical context. The application of
this principle has been illustrated in connection with a number of musical techniques. A sampling of these techniques follows: extension of range, study of dynamics, study of ornaments, intonation, technical passages, and rhythmic problems. This principle has been illustrated as being an intrinsic characteristic of bel canto.

5. Comprehension of the Method and Its Application.

This principle implies that inherent to the pedagogical process of bel canto is the prerequisite of teaching the student the method and its application. This principle was illustrated as being of primary importance for correct practice and for continuation of study. This principle implies that the student should be made aware of what to practice. He should understand exactly how the exercises in a particular lesson are to be executed. The student should understand the reason as to why the lesson is being presented and its significance to the total program of study.

It is of the utmost importance that the teacher or student keep the above concepts and principles in mind at all times during instruction, practice, and throughout the total program of study. The exercises following have been constructed in accordance with bel canto concepts and principles. It is important that the principles described above be adhered to in order to derive the full benefit for which they are intended. Each exercise should
be studied under the guidance of the ear. The execution and practice of each exercise should be constantly evaluated in terms of the sound being emitted. The student should understand the proper execution of the exercise and the desired result of their practice. It must be understood that these exercises have been constructed in a graded progression and that absolute perfection of each is necessary before attempting the next. It is also important to recognize that the majority of these exercises isolate one facet of trumpet performance. Therefore, these exercises do not purport to be a complete method for trumpet. Instead, they are intended to give insight into procedures and techniques which will enable the trumpet performer to solve various facets of trumpet performance. It is suggested that these exercises should be utilized in conjunction with other available pedagogical material for trumpet. In addition, these exercises can be used as practice procedures in solving the various performance problems encountered in trumpet methods, etudes, solo repertoire, band repertoire, and orchestral repertoire.

It has been observed that the bel canto masters began the student's study with the perfection of the middle octave of the vocal range. Once this middle register of the voice was perfected, the student was allowed to begin the extension of his range. For the purpose of applying bel canto pedagogical principles to
trumpet pedagogy, a series of notes was constructed beginning with $g^1$ rewritten for $b$-flat trumpet. This series of notes, which is referred to as Series I, includes all notes from $f$-sharp up to $g^2$. It can be observed that most beginning trumpet methods include these notes. Therefore, it can be said that this series of notes is within the capabilities of most trumpet students after completion of a beginning trumpet method book.

The note $g^1$ was selected as the beginning note because it can be observed to be the middle note of this range. It is important to recognize that the notes of Series I progress away from the initial note by semitones. The first purpose of this progression is to encourage good tone production on each succeeding note of the series as produced on $g^1$. The second purpose of this progression is for the prevention of fatigue which results from sustained playing in one particular register. Series I provides for continual varying of registers in order that fatigue, resulting from sustained practice in one register, will be less likely to occur. As the extreme range might indicate Series II is intended for more advanced players.
Series I
The supreme ideal of bel canto is beautiful tone. However, "beautiful tone quality" is a phrase of nebulous connotation. Therefore, for the purpose of applying bel canto pedagogical principles to trumpet pedagogy, a good trumpet tone must meet the following prerequisites:
a good trumpet tone is a tone that can be executed on all dynamic levels; it is a tone on which the performer can demonstrate clean and precise articulations including single
tonguing, double tonguing, and triple tonguing; and it is a tone that the performer can move to or from without loss of musical expression. For the purpose of developing a tone which meets these prerequisites, the exercises below are suggested for utilization on each note of Series I. Each exercise should be perfected before progression to the next more difficult exercise. In addition, each exercise should be perfected on an individual note of Series I before progression to the next note.

Exercises for Utilization on Each Note of Series I

It has been observed that the exponents of bel canto used the vocal technique of messa di voce for strengthening the tone, joining the registers, and extension of range. It has also been observed that many brass pedagogues advocate the use of long tones for virtually the same purpose in brass pedagogy. Therefore, the exercise below is suggested for each note of Series I. The duration of the long tone should last as long as possible in one breath. It is important that the crescendo and diminuendo be executed gradually and they should be equal in time.

1. Long tone study

\[
\text{\texttt{ppp}} \quad \text{\texttt{fff}} \quad \text{\texttt{ppp}}
\]

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The exercises below should be practiced with the following performance objectives in mind: all tones of an exercise should be executed at the same dynamic level; no tone should be louder or softer than another; no tone should be accented; the pitch and quality of tone should remain the same throughout each exercise; all exercises should be executed with a continual flow of air; the exercises should be executed at all dynamic levels; the tonguing exercises should be executed with no spacing between any tone; and each articulation should be clean and precise.

In regard to the trilling exercises, it is important to realize that sometimes in trilling to an upper auxiliary tone the performer is going against the natural tendencies of the trumpet, since the modern trumpet is constructed with a descending mechanical valve system. Therefore, as the valve or valve combination is depressed, the tubing of the instrument is lengthened which results in a tone of a lower pitch. Obviously, for the trumpet to produce a tone of a higher pitch, the performer must make the proper adjustment in air pressure and embouchure tension. In the performance of these trilling exercises, it is important that the sustained tones are executed without change of pitch or tone quality. All of these exercises are intended to develop a centered tone quality. Therefore, it is crucial that they be performed under the scrutiny of a discriminating ear.
2. Articulation exercises (single tonguing)

3. Trilling exercises
In the interest of clarity, the trilling exercises should be practiced on each succeeding note of Series I. For example, the next exercise after Exercise 3 should begin on F-sharp followed by an exercise beginning on A-flat as illustrated below.
Lip Trills

The phrase "lip trill" has been observed to be a misnomer in brass pedagogical parlance. It has been demonstrated that the manipulation of the lips has little to do with the proper execution of this technique. Numerous brass pedagogues have made it apparent that the proper execution of this technique involves the movement of the tongue and proper breath support.

The following exercises should be executed with the same performance objectives enumerated above in connection with the articulation and trilling exercises. It must be emphasized that this is a rather advanced technique and is included as a supplementary study for the more advanced student. It is suggested that the student study "lip trills" according to the note succession in Series I. This series is illustrated with the proper upper auxiliary note for each "lip trill." Following Series I are suggested rhythm patterns for the practice of this technique.

5. Lip trill studies as applied to Series I
It has been stated that one of the most important performance ideals sought by the exponents of **bel canto** was a smooth, pure legato. In addition, a prerequisite for a good trumpet tone was said to be the ability to demonstrate movement to and from a tone without loss of musical expression. The ability of a trumpeter to execute a smooth legato style is an important facet of performance and is of primary importance in an unhindered delivery of musical expression.
For the purpose of this study, slurs as executed on the trumpet can be categorized as follows:

1. **Simple Harmonic Slur.**

   Simple harmonic slurs are defined as those slurs which involve the progression to the adjacent upper or lower tone of a harmonic series. Obviously, there is no valve change involved in the execution of simple harmonic slurs on the trumpet.

2. **Compound Harmonic Slurs.**

   Slurs of this type are defined as those slurs which involve the progression of a tone within a harmonic series other than an adjacent tone to the harmonic series. Again, there is no valve change involved in the execution of compound harmonic slurs.

3. **Slurs from One Harmonic Series to Another.**

   Slurs of this type include chromatic, diatonic, and compound slurs from one series to another in which a valve change is involved.

   **Chromatic Slurs.** Slurs of this type are executed on the trumpet by a valve change resulting in the production of the next lower or upper chromatic tone.

   **Diatonic Slurs.** These slurs are executed on the trumpet by a valve change resulting in the production of the next lower or upper diatonic tone.

   **Compound Slurs from One Harmonic Series to Another.** Slurs of this type include all intervals which involve a valve change other than chromatic and diatonic intervals.
Simple Harmonic Slurs

1(A). Mouthpiece portamento

![Mouthpiece portamento notation]

Portamento is defined as a "gliding gradually from one tone to the next through all the intermediate pitches." Therefore, the proper execution of 1(A) on the trumpet mouthpiece involves the performance of the pitch \( g^1 \) followed by a gradual gliding through all intermediate pitches descending down to \( c^1 \). The portamento should be executed slowly at first and gradually increased in speed paying attention to the intonation of the two written notes. Once this exercise is perfected, the student should attempt a portamento on the trumpet. However, much time should be devoted to the practice of the mouthpiece portamento in that the performer will find this to be a valuable aid in the perfection of a pure legato.

1(B). Trumpet portamento

![Trumpet portamento notation]

In the execution of the trumpet portamento, the performer will find that the natural tendency is to suddenly drop to the pitch of the lower tone. It is recommended that the performer attempt to avoid this sudden drop and execute the portamento with the same
gradual gliding effect as executed on the mouthpiece. It can be determined that the execution of the trumpet portamento in this fashion will contribute to added embouchure control. In addition, this type of practice should enhance the execution of a pure, smooth legato. After the perfection of the slow trumpet portamento, it is recommended that the speed of the portamento be gradually increased until the joining of the two tones assumes the sound of a legitimate lip slur. At this point, it is important that careful attention is paid to intonation in order that the pitch of the two written notes are executed without a trace of portamento.

1(C). Chromatic pattern

Exercise 1(C) is submitted as a supplementary study to aid in the perfection of a pure legato. The chromatic tones should be executed in synchronization with a portamento between the two written notes.

1(D). Legitimate Slur

The execution of the legitimate slur should follow the perfection of the exercises 1(A), 1(B), and 1(C). It
is important to recognize that a legitimate slur is the equivalent of a fast portamento with careful attention to good intonation of the written notes.

The remainder of the exercises should be studied following the four-step procedure outlined above.

1. Continued on lower harmonics

2. Ascending slurs

3(A). Mouthpiece portamento

3(B). Trumpet portamento
3(C). Chromatic pattern

3(D). Legitimate slur

3. Continued on lower harmonics

4(A). Mouthpiece portamento

4(B). Trumpet portamento
4(C). Chromatic pattern

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4(D). Legitimate slur

\[ \begin{array}{c}
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\end{array} \]
Exercises 7 through 25 should be studied on all of the lower harmonic series as above.

7.

8.

9.

10.

11.
Application to Selected Trumpet Pedagogical Books

An exercise similar to the example below may be found in No. 18 of the Schlossberg Daily Drills and Technical Studies. ²
As indicated by the double bar lines in the illustration below, the exercise should be studied by isolating each individual measure. Perfection of each measure should be achieved before progressing to the next.

Each measure of the exercise should be studied in the following manner:

(A) Mouthpiece portamento

(B) Trumpet portamento

(C) Chromatic pattern
(D) Legitimate slur

Once each measure is perfected, then the various measures of the exercise may be combined in groups of two, three, and four measures or executed as originally written.

The following exercises illustrate the application of these techniques to an exercise which resembles Schlossberg's No. 24.³

(A) Mouthpiece portamento

(B) Trumpet portamento
Compound Harmonic Slurs

Compound harmonic slurs, as defined above, constitute the progression to a tone within a harmonic series other than an adjacent tone of the harmonic series. This type of slur is difficult in that there is a strong tendency for the intermediate harmonic tone or tones to sound between the two tones of the slur. For example, in Exercise 1 below, there is a strong tendency for $e$ to sound as the trumpeter slurs to the tone an octave lower. However, it is recommended that the procedures illustrated below be followed in order to facilitate the proper musical execution of such slurs.

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It must be understood that the technique involving compound harmonic slurs is the same as in the slur illustrated below. Increasing the speed of the portamento between the octave slur will eliminate the incorrect sounding of the intermediate harmonic tone.
The remaining exercises in this group have been written in an abridged form. Each exercise—indicated by a double bar line—should be studied as illustrated above. In addition, each exercise is an indication of the first harmonic series. Therefore, each exercise should be practiced on all of the lower harmonic series. For example, the next series to be practiced for Exercise No. 1 begins on b, then b-flat, and so forth, down to f-sharp played with all valves down.

Difficult Compound Harmonic Slurs
The above exercises are only a sample of the numerous possible slurs of this type. Illustrated below are examples of compound and compound-complex slurs similar the those found in various trumpet books. These slurs should be studied using the following procedures: (A) mouthpiece portamento, (B) trumpet portamento, (c) chromatic pattern, and (D) legitimate slur.

The exercises below resemble Schlossberg's No. 23.4

The following exercises resemble No. 11 in The Art of Trumpet Playing by Colin and Broiles.5

The exercise below is similar to No. 15 of Colin and Broiles.6
The following is an exercise which resembles No. 29 in the Brandt 34 Studies for Trumpet.

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Compound Slurs from One Harmonic Series to Another

Below are exercises involving a slur, from one harmonic series to another, in which there is a possibility of the incorrect sounding of intermediate tones of either harmonic series. The incorrect sounding of intermediate tones is, of course, due to the lack of synchronization of valve, embouchure and air pressure. It is recommended that the mouthpiece portamento procedure be used in order to effectively solve these difficulties. As always, in practicing these exercises, the performer is reminded to pay close attention to the intonation of the two written notes while performing on the mouthpiece of the trumpet.

It is important to recognize that these exercises are but a few of the infinite possibilities. These exercises involve the progression to or from tones of the open valve position to tones of all other valve combinations. The double bar lines in the following exercises indicate the individual exercises to be studied.
Scale Studies

Each of the following exercises should be studied as illustrated in examples (A), (B), (C), and (D). Upon being performed as written, each exercise should be executed with no spacing and no accent. It is important that the air stream flows through each exercise without interruption. Each articulation should be executed in a clear and precise fashion. In addition, careful attention should be paid to intonation.

1. (A) Mouthpiece portamento  (B) Trumpet portamento

(C) Legato Slur  (D) As written
Suggested rhythmic patterns for supplementary study

The exercises below consist of the ascending five tones of the scale. These exercises should be studied in all keys according to the order of Series I. Each
exercise should be practiced with the same performance objective as listed in connection with the above descending scale exercises. In addition, each exercise should be studied as illustrated below in example (A), (B), (C), and (C).

2. (A) Mouthpiece portamento  (B) Trumpet portamento

\[\text{\begin{align*}
\text{(C) Legato Slur} & \quad \text{(D) As written}
\end{align*}}\]

Suggested supplementary rhythm patterns for ascending scale exercises

The next group of exercises is a combination of the above descending and ascending scale patterns. These exercises should be studied in all keys according to the order of Series I. These exercises should also be practiced with the above listed performance objectives in mind. It is also recommended that each exercise be studied as illustrated below in examples (A), (B), (C), and (D).
3. (A) Mouthpiece portamento   (B) Trumpet portamento

(C) Legato Slur   (D) As written

Suggested rhythmic patterns for supplementary study

This pattern may be studied as illustrated below before progressing to the octave scale exercises.

The exercises below illustrate the application of bel canto pedagogical techniques to the octave scale. The octave scale should not be attempted until the perfection of the three scale patterns above. It is
recommended that the octave scale be studied as illustrated in examples (A), (B), (C), and (D) below. The scale should be practiced in this fashion in every key following the order as indicated in Series I.

4. Octave scale

(A) Mouthpiece portamento

(B) Trumpet portamento

(C) Legato slur

(D) As Written
Interval Studies

It is important to observe that the interval study below is constructed according to the note order of Series I. These intervals should be practiced in the same fashion on each tone of Series I. In studying these intervals it is important to listen carefully in order to develop good intonation. It is also important to attempt the execution of each interval with no spacing and no accent. It is recommended that the portamento practice technique be used on the wide intervals in order to facilitate the proper joining of the two tones. These exercises are intended for the purpose of ear training as well as the technical facility of each interval.

min. 2nd maj. 2nd min. 3rd maj. 3rd

perf. 4th aug. 4th perf. 5th

min. 6th maj. 6th min. 7th maj. 7th
Suggested practice patterns for interval study

These are but a few of the many possible variations.

It is common knowledge that each interval has its corresponding inversion. Therefore, the following exercises are submitted in order that the trumpet student may study this concept. These exercises are constructed on the first note of Series I. It is recommended that the exercises be studied on each tone of the series. The portamento technique should be utilized on the wider intervals.
Arpeggio Study

Below are examples of arpeggio exercises with a corresponding illustration of the proper means by which they are to be studied. These exercises are to be practiced in every key. It is also recommended that all minor, diminished, and augmented forms of the arpeggio be studied in a similar fashion.

Exercises similar to the one below can be found in numerous trumpet methods including the Arban's Complete Method for Trumpet. 8
Chromatics

Below is an example of the proper procedure for the study of chromatics. The exercise should be practiced first as a portamento on the mouthpiece before attempted as written. It is also recommended that the fingering positions of the exercise be studied in an isolated fashion by practicing fingering positions only. Once the fingers are moving with precision and accuracy, then the entire exercise can be executed on the trumpet as written. Such exercises should be practiced following the note...
order as suggested in Series I. Of course, upon master of such studies the student should advance to more difficult exercises.

Exercises similar to the example below may be found in the Clarke's Technical Studies for the Cornet.⁹

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The exercises below illustrate the application of bel canto pedagogical techniques to various exercises in the trumpet repertoire. It is recommended that these exercises be studied in accordance with the procedures illustrated. It is also recommended that the exercises be subjected to more extensive problem isolation. In other words, individual tones of each exercise could be practiced using any of the tonguing or trilling patterns as indicated in connection with Series I. In addition, the exercise can be isolated in two note patterns and practiced as indicated in the slurring or interval exercises above.

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The exercise below is similar to Schlossberg's No. 28.¹⁰

(A) Mouthpiece portamento

(B) Trumpet portamento

(C) Chromatic pattern

(D) As written

An exercise of a similar contour may be found in No. 30 of Brandt's 34 Studies for Trumpet.¹¹
It is recommended that this study be practiced as illustrated below before the execution of the study as written. Beginning on the initial tone--performing on the mouthpiece only--the performer should portamento to each pitch level as illustrated. Once this is perfected with good intonation on the pitches indicated, the study should then be executed with a legato slur. After the perfection of both exercises, the study should be practiced as originally written.

The following exercise is similar to Werner's No. 10.12
It is recommended that this exercise be studied as illustrated below before the execution of the exercise as originally written. After the portamento is perfected on the mouthpiece, the exercise should be executed with a legato slur through the arpeggio. Once the slur is perfected, the exercise can be practiced in the style originally intended. It is advisable to isolate the first four notes of the exercise in order to solve any fingering problems. It is also advisable to isolate the g-octave. This interval can be practiced in any of the patterns suggested in the Interval Studies above. As always, good intonation and a centered tone quality are important performance objectives in the execution of this study.

![Music notation](image)

**Authentic and Substantiation To Current Practices in Brass Pedagogy**

In order to authenticate and substantiate the application of bel canto pedagogical concepts and principles to current practices in brass pedagogy, a number of respected brass teachers and performers were asked to critique Chapter IV of this report. A questionnaire was designed and mailed to twelve brass authorities. Five questionnaires were completed and returned by the following participants: Armando Ghitalla - a member of the
Boston Symphony Orchestra for twenty-eight years, currently teaching at the University of Michigan; Vincent Cichowicz - Chicago Symphony Orchestra (1952-1974), currently Professor of Trumpet at Northwestern University; Jack Holland - first trumpet of the Boston Pops Orchestra, Houston Symphony, Casals Festival, and free-lance performances in ballet, symphony, opera, Broadway musicals, and recording in New York City, currently trumpet teacher at Blair Academy of Music and Vanderbilt University; Dr. Robert Weatherly - first trumpet of the Radio City Hall Symphony, St. Louis Symphony Orchestra, and U.S. Air Force Band, currently affiliated with Southeastern Louisiana University; Thomas Robinson - free lance performances in jazz, recording, and orchestra for twenty years, currently teaching in the Hauppauge Public Schools, New York.

These trumpet teachers and performers were asked to evaluate the study with the following questions in mind:

1. Is the theoretical basis of these exercises in accord with current brass pedagogical theory?

2. Could these exercises be effective in solving the particular facets of trumpet performance for which they were designed?

3. Could these exercises be beneficial to serious students and instructors of the trumpet?

4. Could these exercises and the procedures by which they are to be studied, supplement or compliment current materials used by brass instructors?

5. Could the exercises by applicable to the various stages of student development?
6. What levels of development could these exercises be applicable?

In addition, each participant was encouraged to make additional comments at his own discretion.

All participants in this evaluation answered the six questions of the questionnaire with a positive response. Ghitalla qualified his answer concerning the effectiveness of these exercises in solving the facets of performance for which they were designed as follows: "Some informative data on use of air and embouchure would definitely increase the percentage of success." Ghitalla made the following comments in his critique:

An excellent paper.
There is a need to define "a beautiful tone." Some remarks on resonance, aural and physical sensations and a written description of the qualities a preferred trumpet sound other than 'full' - 'sustained' - 'same throughout registers' would be welcome. There is a definite relationship between creating certain singing tones and applying these tone production techniques to playing the trumpet--particularly to this very important 'bel canto' approach. The 'discriminating ear' on page 11 is, in my opinion, 99% necessary to form and nurture the concept of sound and bel canto for the student.

Jack Holland made the following comments in his evaluation:

These exercises are similar to the ones I have used since beginning the trumpet. They are also in agreement with the way I teach and coach my students. I believe that they are most important for developing an artistic and musical player. The concept for "Portamento" is the single most important factor in trumpet playing in my opinion.

Robinson said in his critique that the exercises
could not only solve the problems for which they were
designed but could very well solve problems other than
those for which they were designed. Robinson concluded
his critique with the following statements:

Mr. Beauchamp obviously has done a thorough
job with this subject. I find it very interesting
and useful to the teachers of trumpet and look
forward to using his method with my students.

Cichowicz stated in his evaluation that the
principles and goals of the study were indeed a sound
basis for trumpet performance. He also said that these
were the standards and processes that he used for many
years. However, Cichowicz took exception to the concept
of "trumpet portamento." As he said,

Unlike the voice we are "locked" into a tube
which has a definite harmonic series and our
desire is to get the "purest" tone that is pos­
sible in these harmonic series points. In other
words, we should always strive to arrive at the
"center" and focus on the sound as determined
by the harmonic series of each valve combination.
It seems to me that the "trumpet portamento"
works against this ideal. I would say that the
practice of "portamento" on the mouthpiece would
be very beneficial, since it is not "locked" into
a harmonic series as is the trumpet.

Cichowicz concluded the critique by stating that the
goals and methods of achieving them were presented in an
interesting way. In addition, he said the bel canto
ideal is what all brass performers should attempt to
achieve.

Dr. Weatherly confined his evaluation to the
following brief statements:
There is usually more than one way to attain a particular goal. These exercises should be effective as they are intended, but I see nothing unique in the approach or in the materials.

The remainder of Dr. Weatherly's statements were concerned with minor correction of various musical examples presented in the report.

Overall, the consensus of the participants in the evaluation of the report was as follows: (1) the theoretical basis of the study was in accord with current brass pedagogical theory; (2) the exercises were thought to be effective in solving the facets of performance for which they were designed; (3) the exercises were thought to be beneficial to serious instructors and students of the trumpet; (4) the exercises and procedures in the report were considered as being supplementary and complimentary to existing brass materials; and (5) the exercises were considered to be applicable to all levels of student development.

Due to the international reputation of Armando Ghitalla, his critique can be considered as one of the most valuable. In a personal note, he included the following comments which seemed to summarize his opinion of the study: "It is an excellent piece of work. Finally something new and not a rehash."

Conclusions

In conclusion, it must be recognized that the
purpose of these practical exercises is not to provide a daily practice routine. It is not recommended that the student begin with the first study and play through the entire series of exercises. Instead, the proper utilization of these exercises is in conjunction with a total program of study including the available trumpet method books, etudes, solo repertoire, band repertoire, and orchestral repertoire. It is also intended that the above practical exercises be utilized at any level of trumpet study. It must be emphasized that the transference of bel canto pedagogical concepts and principles to trumpet pedagogy through the above practical exercises does not purport to establish either a new or a complete method for trumpet. On the contrary, the purpose of this study is to provide insight into pedagogical techniques and a philosophy that, hopefully, facilitates the solution of certain facets of trumpet performance.
NOTES


3Ibid., p. 6.

4Ibid., p. 7.


6Ibid.


10Schlossberg, p. 7.

11Brandt, p. 30.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The first purpose of this study was to establish the significant pedagogical concepts and principles of bel canto. In order to establish these concepts and principles, a review of selected literature by proponents of bel canto was implemented. The result of this research established a number of significant bel canto pedagogical concepts and principles. In addition, a better understanding of these concepts and principles was effectuated. The ideal performance concepts and objectives of bel canto derived from the literature were as follows:

1. Demonstrates a beautiful tone quality at all times.
2. Demonstrates agility and virtuosity in performance.
3. Demonstrates a smooth, pure legato and sustained unbroken phrase.
4. Demonstrates perfect intonation as a result of proper tone production.
5. Demonstrates an unhindered deliverance of musical expression.

These five bel canto concepts of performance provided motivation for the formulation of the following bel canto pedagogical principles:
1. The Bel Canto Principle of Ear Training.
2. A Graded Progression of Exercises and Techniques.
3. The Absolute Perfection of Each Level Before Progression to the Next.
4. Problem Isolation.
5. The Comprehension of the Method and Its Application

The second purpose of this study was to establish the feasibility of a comparison of bel canto pedagogical concepts and principles to corresponding pedagogical concepts and principles derived from brass and trumpet literature. In order to accomplish this purpose, a review of selected books, dissertations, theses, and periodical articles concerning brass pedagogy was implemented. The results of this review of selected brass and trumpet literature demonstrated that the derived concepts and principles of bel canto were also fundamental to effective brass pedagogy. Therefore, it was determined that there was indeed the feasibility of a comparison of bel canto pedagogical concepts and principles to brass and trumpet pedagogy.

The final purpose of the study was to apply bel canto pedagogical concepts and principles to trumpet pedagogy and performance. This purpose was accomplished through a series of practical musical exercises for trumpet. These practical exercises for trumpet were designed in order to benefit serious trumpet students and
instructors in solving various performance problems. The practicality of the exercises was demonstrated through their application to selected existing trumpet studies. The exercises were accompanied by a text which indicated the proper utilization of the exercises within a total program of trumpet study. In order to authenticate and substantiate the application of bel canto pedagogical concepts and principles to current brass pedagogical practices, a number of brass authorities were asked to evaluate the study. The result of these critiques illustrated the significance of applying bel canto pedagogical concepts and principles to trumpet pedagogy and performance as follows:

1. The theoretical basis of the study was said to be in accord with current brass pedagogical theory.

2. The exercises were said to be effective in solving the particular facets of trumpet performance for which they were designed.

3. The exercises were said to be beneficial to serious students and instructors of the trumpet.

4. The exercises and procedures by which they are to be studied were determined to be supplementary and complimentary to current materials used by brass instructors.

5. The exercises were said to be applicable to the various stages of student development.

A review of brass and trumpet pedagogical literature has determined that there are many areas of disagreement regarding various aspects of brass pedagogy and performance.
The need for further research in the following areas has been made apparent: the role of the tongue in brass performance; the significance of inner body resonance to brass tone production; the implications of the utilization of such modern technological advances as x-ray, video-fluorography, and cinefluorography to brass pedagogy; and the significance of utilizing electronic sound spectrograph, the oscilloscope, and electronic tone analysis for brass pedagogy and performance. In addition, the application of bel canto concepts and principles to trumpet pedagogy and performance resulted in the formulation of a series of practical exercises for trumpet. There is a definite need for future acoustical research to determine the significance of these exercises in the achievement of tone center on the trumpet. Additionally, an experimental research project utilizing a parallel-group design could provide information as to the effectiveness of bel canto concepts and principles in the achievement of artistic and expressive trumpet performance.

The transference of bel canto pedagogical principles to trumpet pedagogy through practical exercises does not purport to establish either a new or a complete method for trumpet. On the contrary, the purpose of this study was to provide insight into pedagogical techniques and a philosophy that facilitates the solution of certain facets of trumpet performance through solution of musical problems.
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Dissertations


APPENDIX

QUESTIONNAIRE

Name:

Brief statement of performance experience:

With what academic institution are you affiliated?

Below are questions which pertain to the material included. Please review the material and answer the questions by checking the appropriate column. The 3rd column under "See Remarks" is provided in case you prefer answering the questions with your remarks or if you wish to qualify any answer. In addition, space is provided following the question to make any remarks pertaining to the material as a whole.

1. Is the theoretical basis of these exercises in accord with current brass pedagogical theory? Yes No Remarks ( ) ( ) ( )

Remarks:

2. Could these exercises be effective in solving the particular facets of trumpet performance for which they were designed? Yes No Remarks ( ) ( ) ( )

Remarks:

277
3. Could these exercises be beneficial to serious students and instructors of the trumpet?  

 Remarks:  

4. Could these exercises and the procedures by which they are to be studied, supplement or compliment current materials used by brass instructors?  

 Remarks:  

5. Could the exercises be applicable to the various stages of student development?  

 Remarks:  

6. What levels of development could these exercises be applicable?  

 Remarks:  

You are invited to make any additional comments at your discretion:
VITA

Malcolm Eugene Beauchamp was born in Baton Rouge, Louisiana, on October 27, 1944. He holds the degrees of Bachelor of Music (1966) and Master of Music (1969) from George Peabody College for Teachers, Nashville, Tennessee. He attended the C. W. Post Center of Long Island University in order to complete teacher certification requirements in New York State. He has studied trumpet with Jack Holland - New York City and Armando Ghitalla - Boston Symphony Orchestra. Mr. Beauchamp is a member of Phi Mu Alpha Sinfonia, the Music Educators National Conference, and New York Local 802 of the American Federation of Musicians. He has performed with the Nashville Symphony, the Huntsville Alabama Orchestra and Chorus, the Westbury Music Fair Orchestra, the Oceanside Orchestra, and as a free-lance trumpeter in the New York City area. He is presently employed as a teacher with the South Huntington Public Schools.
EXAMINATION AND THESIS REPORT

Candidate: Malcolm E. Beauchamp

Major Field: Music

Title of Thesis: The Application of Bel Canto Concepts and Principles to Trumpet Pedagogy and Performance

Approved:

Robert F. Schuman
Major Professor and Chairman

James E. Frangakis
Dean of the Graduate School

EXAMINING COMMITTEE:

Paul Lewis Abel

Kenneth Blume

George Fese

Malcolm Hallow

Date of Examination:

April 28, 1980