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Early nineteenth-century orchestration treatises: with a concentration on Augustin Sundelin's Die Instrumentierung fur das Orchester and Ferdinand Gassner's Partiturkenntniss

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EARLY NINETEENTH-CENTURY ORCHESTRATION TREATISES;
WITH A CONCENTRATION ON AUGUSTIN SUNDELIN'S
DIE INSTRUMENTIERUNG FUR DAS ORCHESTER
AND FERDINAND GÄSSNER'S PARTITURKENNTNIS

by

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To Dennis
Abstract
Lisa M. Redpath

Because of the late eighteenth century's developments in the art of orchestration, many music teachers became increasingly concerned with how to instruct their students in this subject. They turned to the instrumental tutors which were quite popular at the turn of the century, and found nothing that discussed timbre or how to combine instruments effectively. In response to a plea for written instruction about orchestration itself, several books that addressed that topic began to appear at the end of the eighteenth century. Within the first four decades of the nineteenth century several orchestration treatises were available. The works of Sundelin, Gaßner, Kastner, Berlioz and others supplied information about orchestration as well as common practices of the time.

Sundelin's *Die Instrumentierung für Militar Musik* (1828) was perhaps the first to discuss the newly invented valve instruments, and it is likely that *Die Instrumentierung für das Orchester* (1828) was the first treatise to comment on instrumental combinations. These works represented the transition between instrumental tutors and orchestration books as we know them today.

Gaßner's *Partiturkenntnisse* (1838) was a thorough examination of the popular instruments of the time, including the voice. Not only did it discuss the effects of different instrumental combination, but it also discussed tone
colors. Partiturkenntnis was the first true orchestration treatise according to the modern definition.

Thus, although Berlioz is often regarded as the pioneer in writing specifically on orchestration, there were several musicians who wrote eloquently on this topic before him. This thesis discusses these other works, and focuses on Gaßner’s Partiturkenntnis and Sundelin’s Die Instrumentierung für das Orchester.
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INTRODUCTION

It is indeed fitting that any discussion concerning orchestration should begin with a quotation from the massive work written by Hector Berlioz in 1844: *Grand traité d'instrumentation et d'orchestration*. In the introduction to his treatise Berlioz states the intention of the work:

... *The object of this work is, therefore, to indicate the range of the instruments and certain features of their mechanism; then to examine the nature of their timbre, their peculiar character and range of expression—matters greatly neglected up to now; and finally to study the best known methods for combining them appropriately...* ¹

The phrase "*matters greatly neglected up to now*" is misleading. Although many of the early orchestration treatises were nothing more than instrumental tutors, Berlioz should not have dismissed some significant works by some of his Parisian predecessors, such as Kastner. Although he was possibly unaware of the orchestration treatises that were being circulated through German-speaking lands, their contribution to the development of orchestration as a subject of study must be acknowledged. Therefore, the purpose of this thesis is to outline the history of orchestration treatises before the advent of Berlioz' *s *Grand traité* and to examine two German treatises that were more than just tutors: Sundelin's *Die

Instrumentierung für das Orchester, 1828, and Gaßner’s Ein Leitfaden zum Selbstunterrichte für angehende Tonsetzer oder solche, welche arrangiren, partiturslesen lernen oder sich zu Dirigenten von Orchestern oder Militärmusiken bilden wollen, 1838.

The early nineteenth-century German orchestration treatises have not been much discussed in the musicological literature. Over sixty years ago, Adam Carse extensively researched the history of orchestration and commented briefly on these and several other pre-Berlioz treatises in his The History of Orchestration and in a later article "Textbooks on Orchestration Before Berlioz." However, there has not been an in-depth study devoted solely to these works. Furthermore, Carse states that the early nineteenth-century treatises, including those by Sundelin and Gaßner "... appear to have been devoted more to the compass and technique of orchestral instruments than to true orchestration, namely, the art of combining, balancing, blending and distributing the tone-colours of the orchestra." Contrary to Carse's assertion, there is much more to be learned

1 Augustin Sundelin, Die Instrumentierung für das Orchester. Berlin: H.Wagenfuhr's Buch und Musik Handling, 1828.
2 Ferdinand Gaßner, Ein Leitfaden zum Selbstunterrichte für angehende Tonsetzer oder solche, welche arrangiren, partiturslesen lernen oder sich zu Dirirenten von Orchestern oder Militärmusiken bilden wollen. Karlsruhe: Christian Theodor Groos, 1838. Also referred to as Partiturkenntnis (A Self-instruction manual for beginning composers, or those who would like to learn to arrange or read a score, or orchestral conductors or those desiring to compose military music.) English translations in this study are mine unless noted otherwise.
4 Adam Carse, "Text-books on Orchestration," Music and Letters, XXII (1941), p.26. It was this article that originally sparked my interest in this subject. Many other early attempts at orchestration treatises are discussed here.
5 Carse, The History of Orchestration, pp.223-224.
from these treatises than the mere technical capacities of instruments. The works of Sundelin and Gaßner fill in an important gap between earlier tutors and the Berlioz *Grand traité*. From them we can learn about effective combinations of instruments, that is orchestration in the modern sense of the word, as well as about ensemble balancing and the proper placement of instruments within chords. Most importantly we can gauge the evolution of orchestration treatises by acknowledging the qualities that make these works different from tutors.

Chapter 1 is devoted to the history of orchestration treatises from their inception as instrumental tutors to their culmination with Berlioz's publication. The first part of Chapter 2 provides an historical outline of the musical affairs in Paris at the turn of the nineteenth century, since Paris was a musical focal point and home for Berlioz, Kastner, and others authors of orchestration treatises. The second half of Chapter 2 is an outline of the music life of Berlin, Sundelin's home and the leading German city following the Napoleonic upheavals. This information provides the necessary backdrop against which the subsequent remarks about specific orchestras and orchestration can be placed.

In chapters 3, 4, and 5 I intend to demonstrate that the works of Sundelin and Gaßner were more than tutors by highlighting key passages that refer to spacing, instrumental combinations and ensemble balance. Many of these excerpts are compared to statements made by Berlioz in his *Grand traité*. We will see that these works contributed to the development of the orchestration treatise, a form of instruction that became especially
popular in the nineteenth century after the advent of Berlioz's *Grand traité*, and that they helped to establish the format that other orchestration treatises followed. *Die Instrumentierung für das Orchester* and *Partiturkenntnis* marked the first generation of this instructional genre, which later included Rimsky-Korsakov's *Osnovi orkestrovki*, Kennan's *The Technique of Orchestration* Read's *Theasurus of Orchestral Devices*, and Piston's *Orchestration*. 
In 1844 Berlioz published his *Grand traité d'instrumentation*, the famous treatise which revolutionized the study of orchestration. This massive work covered all of the instruments that had become fundamental components of the orchestra (strings, woodwinds, brass, percussion) as well as some instruments that have since become obsolete such as the Russian bassoon and the serpent. But as Adam Carse so keenly noted: "Although it forms probably the most important landmark of a long series, Berlioz's famous treatise (1844) was by no means the first to offer instruction in orchestration to musical students."

Many years before Berlioz's monumental work several books dedicated to the study of instruments laid the foundation for the study of orchestration as we know it today. Early works such as Virdung's *Musica getutscht* (1511), Agricola's *Musica instrumentalis deutscb* (1528) and Praetorius's *Syntagma musicum* (1619) offered valuable information about the range and capabilities of instruments. In 1713 Mattheson took a step in a new direction with his *Neu eröffnetes Orchester*, a discourse on the orchestral instruments of his day. Unlike the

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1 Adam Carse, "Text-books on Orchestration," *Music and Letters*, XXII (1941), p.26. It was this article that originally sparked my interest in this subject. Many other early attempts at orchestration treatises are discussed here.
other early works, Mattheson concentrated on the characteristics and use of the instruments rather than on their technique. 2

In the eighteenth century, when the art of orchestration as we know it today began to coalesce, true orchestration treatises began to appear. Louis Joseph Françoeur (1738-1804), a nephew of the composer FrançoisFrançoeur, was a violinist-leader and director at the Paris Opéra. His book, *Diapason général de tous les instruments à vent* (1772), which was concerned only with the wind instruments of the orchestra, aimed to inform those who would write for these instruments without being able to play them.3 Carse feels that Françoeur's was the first true orchestration textbook.4

Example 1 presents the *Tableau General des Unissons, et Etendue de tous les Instrument, et de tous les genres de voir [sic]* as it appears at its end. An interesting aspect of this chart is that it includes six vocal parts that range from bass to soprano. Since the Opéra dominated the Parisian musical scene at the turn of the nineteenth century, the inclusion of the voices in this chart is not unusual. Françoeur states that although the main objective of the treatise was to discuss the wind instruments he felt it necessary to include the voices so that composers could become acquainted with their ranges.5 Also unique is the use of the *Flûte de Tambourin*, an instrument that sounds one octave higher than the piccolo and two octaves higher than the flute.

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Example 1

Francoeur

Diapason général de tous les instruments à vent

Tableau General des Unissons, et Etendue de tous les Instruments, et de tous les genres de voix

<table>
<thead>
<tr>
<th>Veu par streams</th>
<th>1er Octave</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flûte du Landeurin</td>
<td>up a 2nd above the note copied</td>
</tr>
<tr>
<td>Petite Flûte</td>
<td>up a 2nd above the note copied</td>
</tr>
<tr>
<td>grande Flûte</td>
<td>up a 2nd above the note copied</td>
</tr>
<tr>
<td>Hautbois</td>
<td>up a 2nd above the note copied</td>
</tr>
<tr>
<td>Clarinette en C-sol-ut</td>
<td>up a 2nd above the note copied</td>
</tr>
<tr>
<td>Trompette en C-sol-ut</td>
<td>up a 2nd above the note copied</td>
</tr>
<tr>
<td>Cor, qui est pour la sourire du Son</td>
<td>up a 2nd above the note copied</td>
</tr>
<tr>
<td>Cor qui en la copie ordinairement</td>
<td>up a 2nd above the note copied</td>
</tr>
<tr>
<td>Basson</td>
<td>up a 2nd above the note copied</td>
</tr>
<tr>
<td>Serpent Instrument d'Elatie</td>
<td>up a 2nd above the note copied</td>
</tr>
<tr>
<td>Premier Dessus chantant</td>
<td>up a 2nd above the note copied</td>
</tr>
<tr>
<td>Second Dessus chantant</td>
<td>up a 2nd above the note copied</td>
</tr>
<tr>
<td>Haute contre chantante</td>
<td>up a 2nd above the note copied</td>
</tr>
<tr>
<td>Taille chantante</td>
<td>up a 2nd above the note copied</td>
</tr>
<tr>
<td>Basse taille chantante</td>
<td>up a 2nd above the note copied</td>
</tr>
<tr>
<td>Basse contre chantante</td>
<td>up a 2nd above the note copied</td>
</tr>
</tbody>
</table>

Folon |

Alto |

Basse ou Violoncelle |

Contre basse |

Note: "Double Clef" d'Octave remontrant l'instrument entier dans l'Octave au-dessus de la note copiée.
Example 1, continued

Tableau General des Unissons, et Etendue
de tous les Instrumentes, et de tous les genres de voix
Example 1, continued

Tableau General des Unissons, et Etendue
de tous les Instrumens, et de tous les genres de voix
Example 1, continued

Tableau General des Unissons, et Etendue
de tous les Instrumens, et de tous les genres de voix
Françœur explains that this instrument is not ordinarily used, except in very lively pieces such as dances. 6 The term *flûte de tambourin* remains somewhat of a mystery. It is possible that Françœur was referring to the flageolet which was quite popular in the eighteenth century. This instrument, like the so-called *flûte de tambourin*, sounds two octaves above the flute and was used in several works including Rameau's *Platée*. 7 There was also a popular French dance by the name of *tambourin*, the flute's name probably being borrowed from that since Françœur does reserve this instrument for dances.

Three musical examples are included in Françœur's *Diapason*: two by Signor Stamitz8 and one by Signor Gaspard.9 Each calls for two clarinets, two horns and one bassoon. All are simple and short (22, 23, 44 measures without repeats, respectively) but they do reflect the craft of composers who were quite familiar with these instruments and could write idiomatically for them.10

A similar treatise by Othan Vandenbrœck, a Netherlands horn-player then living in Paris, appeared in 1793: *Traité général de tous les instruments à vent à l'usage des compositeurs*. Vandenbrœck presented his work from a point of view of a horn player rather than through that of

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7 Jean Philippe Rameau, *Platée*, Act II, Scene III.
8 See Carse, "Text-books," p. 28, where he is identified as Johann Stamitz of Mannheim who was in Paris from 1754-55.
9 *Ibid*., p. 28. Carse identifies him as Gaspard Procksch, a clarinet player in La Poupliniere's orchestra in the 1850's and 1860's.
10 Françœur, *Diapason*, pp.58-60.
an impartial orchestrator. Although the title of this work included "all the wind instruments" he explained that this method book discusses the range and scales of the horn in all the major and minor keys, in relation to a unison with the violin.¹¹ Of the sixty-five pages of this treatise, forty-three and one-half of them revolve around the horn; the remaining pages are devoted to the clarinet, trumpet, trombone, timpani, oboe, flute, bassoon, and serpent. Vandenbroeck's bias was evident as early as 1789 when in his horn tutor he states that when the orchestra is tuning, the horn naturally gives the A and the rest of the orchestra takes the A from the horn.¹²

Many instrumental tutors were also issued, which, although primarily intended for players, may also have served to give instruction on the range and technique of instruments for the benefit of composers who required such information. Some of these tutors were quite comprehensive including in their scope all the usual orchestral instruments, and Adam Carse reckons them precursors of the later type of text-books on orchestration. Examples include Majer's Neueröffneter Musik-Saal (1732-1741), Eisel's Musikus Autodidaktos (1738) and Lotter's Der sich selbst informirende Musikus (1762).¹³

The first German attempt at an "orchestration treatise" appears to have been Franz Joseph Fröhlich's¹⁴ Vollständige theoretisch-praktische

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¹¹Vandenbroeck, Traité général de tous les instruments à vent à l'usage des compositeurs (Paris: Boyer, 1793), title page.
¹³Carse, "Text-books," p.27.
¹⁴Fröhlich was the professor and director of music at Wurzburg University. More information can be found in Carse, "Text-books," p.29.
Musikschule für alle beym Orchester gebräuchlichen wichtigen Instrumenten which dates from 1810-11. Fröhlich's book thoroughly covers the whole range of string, percussion and wind instruments, including seven pages on the serpent.\textsuperscript{15} Weber and Fröhlich were friends, and it was Fröhlich who carried out Weber's plan for a biography of Vogler.\textsuperscript{16}

In 1828 a book by Augustin Sundelin titled \textit{Die Instrumentierung für das Orchester} appeared in Berlin, together with its companion book \textit{Die Instrumentierung für Sammtliche Militär Musik}. The companion volume is notable as possibly the first to discuss the valved brass instruments, which only a few years before had made their first appearance in Berlin.\textsuperscript{17} More importantly, Sundelin was also one of the first to comment on instrumental combinations. His comments represent a significant contribution in the history of orchestration treatises because they begin to mark a shift from the tutor phase to the actual orchestration treatise in the more modern sense. A detailed account of Sundelin's treatise will be given in Chapter 3.

There was little use for Françœur's book in France after the publication of Georges Kastner's \textit{Traité général d'instrumentation} \textsuperscript{18} (1837). This extensive work was approved by the \textit{Instutut de France} and adopted by the \textit{Conservatoire}, which is also why I feel certain that Berlioz was familiar with it. Kastner's \textit{Traité} covered almost all known musical instruments, past and present, and included the recent numerous

\textsuperscript{15}Carse , "Text-books," p.29.  
\textsuperscript{17}Carse , "Text-books," p.29.  
\textsuperscript{18}Ibid., p.30.
improvements in wind instruments. In addition to the human voice, thirty-one stringed instruments, fifteen types of keyboard instruments, fifty-six wind and fourteen percussion instruments were fully discussed. While the *Traité* was devoted to the compass and technical capabilities of the instruments, their use in combination was discussed in a companion volume named *Cours d'instrumentation considéré sous les rapports poétiques et philosophiques de l'art*. This includes sixty-five pages of full score examples of works by Gluck, Mozart, Haydn, Meyerbeer, Weber, Beethoven, Berlioz and several lesser composers as well as some examples of scoring for military band. Meyerbeer inscribed his own evaluation and praise of the *Traité* [See example 2] that concluded with these words: "The work will be of immense utility to young composers who may consult it. Thus, having before their eyes all the resources of the modern orchestra, they will learn without trouble what in general is only acquired by long experience, and after many unsatisfactory essays." These books must have been of immense use to music students at the time who did not have complete and affordable editions of the classics or handy miniature scores available to them.

Because of the many improvements in the mechanics of wind instruments in the 1840-50's, Kastner had to revise and add to both his *Traité* and his *Cours* within a few years of their first appearance. The improved flute mechanism of Boehm, and all the improvements and

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Example 2

Meyerbeer's evaluation of Kastner's

Cours d'Instrumentation

De traité sur l'Instrumentation que M. Kastner m'a amené p.
qui, me paraît un ouvrage d'une utilité incontestable jusqu'à ce que
soit arrivé un talent de connaissance. Ce traité développera
une remarquable clarté, d'abord l'étude de la partie technique
de chaque Instrument, ses faiblesses, ses limites et puis
en indiquant ce qu'il peut éviter, enseigne aussi les effets
ou on en peut tirer. Toutes ces notions importantes
suiant aux meilleurs ouvrages, il est certainement

Cet ouvrage, loin d'une immense utilité aux
jeunes compositeurs qui le connaîtront, leur
mettant sous leurs yeux toutes les ressources des
orchestres modernes, ils apprendront sans peine,
de qui ordinairement ne récapitule guère
le longue expérience, prestigieuse de l'auteur.

Paris le 2 décembre 1836. Giacomo Meyerbeer
inventions which Adolph Sax was making almost every day in Paris in the early 1840's had to be taken into account. Thus in 1844, just before the release of Berlioz's *Traité d'instrumentation*, a second edition of Kastner's *Traité* with a considerable *Supplément* was issued and some additions were made at the end of the *Cours*. He had just managed to get the saxophones and saxhorns into his *Supplément* when it was suddenly superceded by Berlioz's treatise.\(^{21}\)

In 1838 Gasßner wrote one of the last "Pre-Berlioz" treatises: *Ein Leitfaden zum Selbstuntersschne für angehende Tonsetzer oder solche, welche arrangiren, partiturlesen lernen oder sich zu Dirigenten von Orchestern oder Militärmusiken bilden wollen*. This book demonstrated Gaßner's knowledge of Beethoven and Weber and the whole second volume (157 pages) is devoted to musical examples ranging from Haydn to Meyerbeer. Gaßner was aware of the need for instruction in orchestration and devoted an extensive chapter to the subject.\(^{22}\) This chapter, along with the general observations made by Gaßner, will be discussed more fully in chapters 4 and 5.

Thus, although Berlioz is often regarded as the pioneer in writing specifically about orchestration, several writers made significant efforts to do the same at the turn of the nineteenth century. The following is a list of these works as cited by Carse in *The History of Orchestration*\(^ {23}\)

\(^{21}\)Carse, *Text-books*, p.31.
\(^{22}\)Gaßner, *Instrumentaleffekt*, pp.76-106.
Vandenbrreck. *Traité général de tous les instruments à vent* (1793)

Fröhlich: *Vollständige theoretisch-praktische Musiklehre für alle beym Orchester gebrauchlichen wichtigen Instrumente* (1810-11)

Francoeur: *Diapason général des instruments à vent* (1772)

Francoeur-Choron: *Traité général des voix et des instruments d'orchestre* (1813); an amplification of Francoeur's Diapason

Sundelin. *Die Instrumentierung für das Orchester* (1828)

Catrufo. *Traité des voix et des instruments à cordes, à vent, et à percussion* (1832)

Swoboda. *Instrumentierungslehre* (1832)

Kastner. *Traité général d'instrumentation* (1837; Supplément 1844)

Kastner. *Cours d'instrumentation considéré sous les rapports poétiques et philosophiques de l'art* (1837, and Supplément)

Gaßner. *Ein Leitfaden zum Selbstunterrichte für angehende Tonsetzer oder solche, welche arrangiren, partiturlesen lernen oder sich zu Dirigenten von Orchestern oder Militärmusiken bilden wollen* (1838)

Berlioz. *Grand traité d'instrumentation* (1843-44)

After studying these works, one can clearly note the progression from instrumental tutors, such as Vandenbrreck's *Traité général de tous les instruments à vent*, to Berlioz's monumental *Grand traité*. Although none of these treatises was as sophisticated and comprehensive as Berlioz's work, each represents a stepping stone in the evolutionary path taken by the orchestration treatise. Especially important milestones can be placed at Sundelin's *Die Instrumentierung für das Orchester* and at Gaßner’s *Partiturkenntnis* for the reasons cited above.

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24 Carse says c.1800 but the date 1793 appears in the treatise.

25 In a footnote in the preface, Gaßner mentions another work by Michael Zunken (Erfurt, 1738) but I have been unable to locate any information about it.
CHAPTER II
MUSICAL LIFE IN PARIS AND BERLIN
AT THE TURN OF THE NINETEENTH CENTURY

In the nineteenth century public concerts assumed much of their present character. The upheavals occasioned by the French Revolution and Napoleonic Wars brought about the breakdown of princely and aristocratic patronage, so that public concerts became more numerous and varied. Many orchestras emerged such as the London Philharmonic Society, 1813; Berlin Philharmonic, 1826; Vienna Philharmonic, 1842. Programs began to specialize in orchestral, chamber, or solo recitals. 1

In this chapter I will discuss the musical scene in Paris and Berlin at the turn of the nineteenth century because these are, respectively, the cities in which Berlioz and Sundelin wrote their treatises. It is helpful to have some idea about concert life because the disparity that existed between these two cities indirectly affected the contents of the treatises. Although Gaßner completed his *Partiturkenntniss* in Karlsruhe, this city will not be discussed because it was not a thriving cultural center like Paris and Berlin.

As mentioned above, the Parisian authors included the voice with the orchestral instruments as early as 1772. 2 The voice did not appear in the German literature until Fröhlich's *Vollständige theoretisch-praktische Musiklehre für alle beym Orchester gebräuchlichen wichtigen Instrumente*,

2 Francœur, *Diapason général*.
and even then it was treated individually rather than in conjunction with other orchestral instruments. Also, the inclusion of a wider range of instruments in the opera orchestra probably accounts for the fact that Parisian treatises were initially more comprehensive than the German ones. After the popularity of opera increased in the German areas, the authors there were quick to imitate their French counterparts and include the voice and other non-traditional orchestral instruments in their discussions.

Musical life in Paris at the turn of the nineteenth century was dominated by both the Opéra and political events. It is nearly impossible to separate the power of the Opéra from the Napoleonic regime, for although Napoleon was not especially musical he and Josephine played significant roles in the musical world. Both were wont to interfere with musical affairs, and where their taste tended toward Italian composers. Gasparo Spontini arrived in Paris in 1803 and achieved his first great success with *La vestale* (1807). In 1810 Spontini was made official conductor of the Italian opera in Paris, which was united with the *Comédie Française* at the Odéon Theater, under the title of *Théâtre de l’Impératrice*. However, he held this post only until 1812, when he was succeeded by another Italian, Fernando Paer, who had been Napoleon’s *maître de chapelle* since 1807.

The most important new event in the French operatic world was the success of Rossini’s *Il barbiere de Siviglia* in 1819; and Rossini succeeded Paer at the Théâtre Italian in December 1824.³

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The works of an Italianized Berliner, Jakob (or Giocomo) Meyerbeer, dominated the repertory during the 1830's with those of Fromental Halévy and Daniel Auber. It was Auber's *La muette de Portici* (1828) that, along with *Guillaume Tell*, had provided the model for the spectacular, pageant- and ballet-dominated grand opera that was to remain popular in Paris throughout the Second Empire. In fact this circumstance and the continuing popularity of the *opéra comique*, represented by Boieldieu and Auber produced a situation in which orchestral, choral and chamber music were to a great extent neglected. It was this musical world in which Berlioz made his first appearance.

Paris was thriving with many music schools and organizations which also played decisive roles in its affairs. In 1784 Louis XVI had founded an *École Royale de Chant et de Déclamation* which anticipated the founding of the *Conservatoire de Musique* in 1795. The *Conservatoire* superceded all existing institutions of music education. The great majority of the original staff of the *Conservatoire* was French and in 1800 included, among others, the composers Sarrette (director), Gossec, Méhul, Le Sueur, and the violinist Kreutzer. The only foreigner of distinction was Cherubini who settled in Paris in 1787 and served as an inspector of the Conservatory from 1796, and as its director from 1822-41.

In this environment Georges Kastner wrote his *Traité général* (1837) (*Supplément*, 1844) and his *Cours d'Instrumentation* (1839). The example

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4 General music director at the court in Berlin under Wilhelm IV from 1842.
below outlines Kastner’s concept of the “full orchestra”. If this orchestra list appears to be overblown, one only has to refer to the personnel roster of the 1839 Paris Opéra as cited by Daniel Koury in his dissertation *The Orchestra in the Nineteenth Century*. It appears that large ensembles were not uncommon, and Kastner’s list helps to validate Koury’s assertion that Parisian ensembles customarily included large numbers of musicians.

**KASTNER - Cours d'Instrumentation - Orchestre composé**

- flutes
- piccolo
- oboe
- English horn
- clarinets
- basset horn
- bassoons
- contra-bassoons
- ophicleide or serpent
- horns
- valve horns
- trumpets
- valve trumpets
- keyed trumpets
- trombones
- violins
- violas
- voices
- celli
- organ
- basses
- harp or guitar
- percussion
- voices
- organ
- Total = 79.

Paris Opéra

1839:

- 3 flutes, 2 oboes, English horn, 2 clarinets, 4 bassoons;
- 4 horns, 2 trumpets, keyed bugle, 2 cornets, 3 trombones, ophicleide;
- timpani, percussion, 2 harps;
- 12 first violins, 12 seconds, 8 violas, 10 cellos, 8 basses.
- Total = 79.

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Considering the large numbers of players, it is likely that the wind parts were doubled. This certainly must be the case if we accept the notion that all of the brass players were used simultaneously since in tutti passages the large number of woodwind players would be required to support a balanced sound. As with other Parisian orchestration treatises the voice is included in the discussion, again a reflection of the dominance of the Opéra.

In the late 18th century musical life in Berlin became independent of the local court and churches, and instead became supported by private initiative. Sacred music declined as musicians were increasingly attracted to secular organizations, and choristers joined the opera. The Berliner Singakademie, established on May 24, 1791 by C.F. Fasch, is important in the city's history of choral music. It gave the first performance (St. Mary's, 1791) of sacred music in a Berlin church by a mixed choir; in 1793 it moved into the Akademie der Künste and assumed the name Singakademie. Throughout its history it has been responsible for introducing significant works to the Berlin public. In the 19th century it presented mostly German compositions, giving the first Berlin performances of Mozart's *Requiem* (1800) and Mendelssohn's *St. Paul* (1838). It was particularly important in the Bach revival, giving the first performances after his death of the *St. Matthew Passion* (1829, conducted by Mendelssohn), the *St. John Passion* (1833), the *Mass in B minor* (1834) and the *Christmas Oratorio* (1857). 8 The Singakademie assumed a most important role in the city's concert life when

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the Lutheran Cathedral choir was reorganized by A.H. Neithardt (1843) and directed by Mendelssohn (1843-4) and Otto Nicolai (1847-9).9

At a very early stage political subjects became popular in German opera. The genre of “rescue opera,” which was popularized in France by the works of Grétry, Le Sueur and Cherubini, quickly found enthusiastic support in Germany. Peter von Winter's Das unterbrochene Opferfest was the most popular German opera between Die Zauberflöte and Der Freischütz. Rescue opera reached its apotheosis in Beethoven's Fidelio (first version, 1805). But the shock wave of the French Revolution affected even the youthful Carl Maria von Weber in his Peter Schmoll (1803), with its treatment of the problem of the émigrés; and the association of opera with political events was to be a practice of German Romantic opera for many years.10

Other popular opera themes were to be legends. Weber's Silvana (1810) and Euryanthe (1823) indulged the Romantic wish to escape from a mundane present into a heroic, chivalric past. Silvana was produced in Berlin, with Weber himself conducting, on July 10, 1813; its success was overwhelming.11 On December 23, 1826, Euryanthe was so enthusiastically received in Berlin that Weber was called before the curtain after Act I.12 There was a comparable fascination with escape to the exotic, a legacy of the Turkish operas of the previous generation, manifest in Spohr's Indian Jessonda (1823) and Weber's Turkish Abu Hassan (1811) and

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9 Ibid., p. 565.
12 Ibid., p. 319.
Spanish *Die Drei Pintos* (unfinished). The world premier of Weber's *Der Freischütz* in Berlin, June 18, 1821, and its subsequent success helped Germany to secure its place among in the world of opera.

The royal opera house was closed during the two years of French occupation (1806-07), but the Nationaltheater, no longer dependent on royal subsidy, continued its productions in the Schauspielhaus. In 1807 the royal opera and the Nationaltheater companies merged as the Königliche Schauspiele, but maintained the distinction between the two repertories. All performances were open to the general public. Under the direction of A.W. Iffland (1811-14) German opera was performed more frequently, though the royal opera house repertory was still entirely adapted to the king's wishes. Iffland supervised productions of Spontini's *La vestale* (1811) and *Fernand Cortez* (1814), C.M. von Weber's *Silvana* (1812) and *Abu Hassan* (1813), as well as works by Méhul and Boieldieu. His successor Karl von Brühl was given the task of making the royal theater the finest in Germany, and at first received enthusiastic support from Friedrich Wilhelm III. Scenery and costumes became more realistic and productions more dramatic. Brühl was responsible for the Berlin premiere of Beethoven's *Fidelio* (1815), the world premiere of E.T.A. Hoffmann's *Undine* (1816), as well as revivals of works by Gluck and Meyerbeer. In the decade 1815-25 Rossini's works became the most popular in Berlin. Against the wishes of Brühl, who hoped to secure C.M. von Weber as Kapellmeister, the king engaged Spontini as general music director in 1820. Only five weeks after

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the first performance of Spontini's *Olympia* Bruhl produced the successful world premiere of Weber's *Der Freischütz* under the composer's direction. Whereas the audience of Spontini's work consisted mostly of royalty and nobility, that of Weber's was largely made up of wealthy citizens including Heinrich Heine, Hoffmann and Mendelssohn. A year before his retirement in 1828 Bruhl arranged performances of Spohr's *Jessonda* and Weber's *Euryanthe*, each conducted by the composer.15

Despite Spontini's opposition, Wilhelm von Redern, Bruhl's successor, was able to expand the repertory in both sections of the Königlich Schauspiele, and included more operas by German composers. He was responsible for the successful Berlin premieres of Spohr's *Faust* (1829) and Meyerbeer's *Robert le Diable* (1832), as well as the world premiere of Marschner's *Hans Heiling* (1833). During the 1830's German works performed at the royal opera house remained in the minority, while those by the French (Auber and Méhul), and the Italians (Bellini, Donizetti and especially Rossini) took precedence.16

On the accession of Friedrich Wilhelm IV in 1840, Spontini lost his support at court and was dismissed in 1841. Lortzing, Marschner and Mendelssohn were considered for the position, but after an impressive production of *Les Huguenots* in 1842 Giacomo Meyerbeer was named Spontini's successor. Spontini had enlarged the opera orchestra from 78 to 94 members; Meyerbeer now secured greater financial benefits for the

musicians. Lortzing's *Der Wildschütz* had its Berlin premiere in 1843, as did *Der fliegende Holländer* in 1844, conducted by the composer (the first Wagner opera produced in Berlin). The new opera house, which was reconstructed, modernized with gas lighting and enlarged by C.F. Langhans the younger, opened on December 7, 1844 with Meyerbeer's *Ein Feldlager in Schlesien*, at which Jenny Lind made her Berlin début.

Instrumental music was also popular during the early 19th century in Berlin. Carl Möser's soirées, in which members of the court orchestra played after 1816, introduced Beethoven's symphonies (the Berlin premiere of the Ninth Symphony was in November 1826). From 1801 the court orchestra gave two or three annual public concerts, as did the opera orchestra from 1842 (Mendelssohn was its director in 1843-44). The court musicians Bohrer and Schick organized numerous private subscription concerts as did the Blissner brothers early in the century; G.A. Schneider presented popular *Musikalische Divertissements* (1808-11) and Eduard Reitz founded a Philharmonic Society (1826), an amateur orchestra which participated in the Singakademie concerts.

Although economic recessions of the early 19th century severely limited public musical performances, informal house concerts continued to flourish. In the first half of the century families such as the Mendelssohns arranged private performances.

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17 Ibid., p. 572.
18 Ibid., p. 573.
19 Ibid., p. 567.
20 Ibid., p. 568.
As we have seen, musical developments in Berlin were not as dependent on the opera as they were in Paris. Consequently, the orchestration treatises did not discuss very large ensembles or a wide variety of instruments. Yet, musicians undoubtedly looked to Berlin for guidance since it had become a focal point for the arts after the Napoleonic Wars and the French Occupation of 1806-08. Sundelin's treatise, which was probably the only orchestration treatise readily available in Berlin at that time, attempted to provide guidance and instruction in orchestration in a thorough and systematic manner. With this work, Sundelin contributed to the musical life of Berlin in the first half of the nineteenth century.
CHAPTER III
SUNDELIN'S

_DIE INSTRUMENTIERUNG FÜR DAS ORCHESTER:_
ONE STEP CLOSER TO BERLIOZ
IN THE HISTORY OF ORCHESTRATION TREATISES

In 1828 Augustin Sundelin, a Berliner clarinettist and composer, wrote _Die Instrumentierung für das Orchester_ and its companion volume _Die Instrumentierung für sämtliche Militar- Militar Musik_. Sundelin was a member of the music chamber of the king of Prussia and after 25 years of service he was pensioned by the court, and died September 6, 1842, in Berlin. He was known for the publication of many collections of German dances, waltzes, Lieder, and didactic works. 1 This work was dedicated to Louis Spohr, the Kapellmeister at Kassel, and Bernhard Romberg, the court Kappellmeister in Berlin from 1815-19.

This treatise appears during the period of transition between the instrumental tutors of the eighteenth century and the nineteenth century works that concentrate on orchestration. Sundelin provides many musical examples that resemble technical exercises that can be found in tutors. Yet his comments are about instrumental combinations, which is notable because he was one of the first to make comments of that nature. Thus, the credit for the development of orchestration treatises does not belong solely to Berlioz and other Parisians. Rather, works from German-speaking lands must also be considered. Orchestration treatises progressed from the tutors and were

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developed by Sundelin and Gaßner before reaching an apotheosis with Berlioz's *Grand traité*.

Sundelin discusses all of the instruments that constituted the orchestra in Berlin:

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Instruments</th>
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<tbody>
<tr>
<td>violin (1st &amp; 2nd)</td>
<td>basset horn (1st &amp; 2nd)</td>
</tr>
<tr>
<td>viola</td>
<td>2 bassoons</td>
</tr>
<tr>
<td>cello</td>
<td>2-4 horns</td>
</tr>
<tr>
<td>contra-bass</td>
<td>trumpet (1st &amp; 2nd)</td>
</tr>
<tr>
<td>harp</td>
<td>alto trombone (1)</td>
</tr>
<tr>
<td>guitar</td>
<td>tenor trombone (1)</td>
</tr>
<tr>
<td>flute (1st &amp; 2nd)</td>
<td>bass trombone (1)</td>
</tr>
<tr>
<td>piccolo</td>
<td>2-3 timpani</td>
</tr>
<tr>
<td>oboe (2)</td>
<td>cymbals</td>
</tr>
<tr>
<td>English horn</td>
<td>snare drum</td>
</tr>
<tr>
<td>clarinet (2)</td>
<td>bass drum</td>
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</tbody>
</table>

His treatise does not include as many instruments as those of Kastner, Berlioz, Francœur, and Gaßner. Sundelin also omitted the voice which was included in many Parisian treatises beginning with Francœur in 1772.
A portion of Sundelin's preamble reads as follows:

Durch diese kleine Schrift beabsichtige ich jungen Komponisten einen näheren Begriff beizubringen, sowohl von dem im Orchester zu benutzenden Umfang, als auch von der Eigenthümlichkeit aller daselbst gebräuchlichen Instrumente, so viel dieses in der Kürze möglich ist... Der Umstand, daß es viele recht geschickte Komponisten giebt, die nach einem verunglückten Versuch einer Komposition für das ganze Orchester, woran nur Unkenntniss der Instrumentirung die Schuld war, von ferner Fortschritten abgeschreckt wurden, ist die Veranlassung zu diesem Büchlein, worin ich den genannten Gegenstand so deutlich und zugleich so kurz, als möglich, zu besprechen bedenke.²

In this brief book I intend to present to young composers a better understanding of all of the peculiarities of the usual instruments as well as how the orchestra should be used, insofar as this can be done in a short space... In that there are many quite talented composers, who were deterred from making further progress after an unsuccessful attempt at writing for full orchestra simply because their knowledge was deficient, I was motivated to write this little book, in which I intend to discuss this subject as clearly and as briefly as possible.

²Sundelin, Die Instrumentierung, pp. 1-2.
I will now focus on those parts of Sundelin's treatise that are of most interest to students of orchestration. An excerpt is included here if it does not appear in Berlioz's *Grand traité*, a standard orchestration treatise, or if it provides useful information about numbers of performers. A few other excerpts that fit neither category are also included because of their special interest.

Sundelin frequently makes very specific recommendations about orchestration. Many comments best serve the beginning composer who may require specific instructions on, for example, voicing. However, many of these concepts can be construed from an examination of the excerpts that Berlioz provides or that one may get from the study of other scores.

Sundelin begins by advising that the violin's upper range not exceed f" or at the utmost a" which is only made use of either by *fortissimo* or by a solo passage for a single violin. This recommended range is conservative because by the early nineteenth century it was not unusual for composers to write parts that frequently surpassed these pitches; for example, the first violin in Beethoven's *String Quartet No. 14, Opus 131*, regularly reaches a" and even has several b" pitches. The *Adagio ma non troppo e semplice* has a passage of very exposed high a's (a") on sustained notes. Moreover, the first violin part of Schubert's *Quartet in E Major Opus 125, No. 2*, also extends to b" in several passages. Sundelin continues to say that "he who

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3 It should be noted that a comprehensive study of orchestration would require the student to examine these treatises as well as scores individually; this chapter does not contain all of Sundelin's excellent recommendations and observations.

4 This pitch classification is that which is given in *The New Harvard Dictionary of Music*, p. 640.
wishes to write yet higher is advised to discuss in advance the practicality of the composition with his violinist. It is certainly only masters in composition who become successful in the practical use of the higher notes by *mezza voce* so I advise beginners (for whom this little work is actually written) to be satisfied with the aforementioned range from *g* to that highest *f*, within which very much can be performed. "  

"The first violin usually plays the highest part but in appropriate passages the second can overcome the first." Here, Sundelin also states that a wind instrument is often placed higher than the first violin but does not specify which wind instrument would be suitable. I suspect that he is referring to the flute or perhaps oboe.

Sundelin says that some double and triple stops may be used accordingly, but clearly demonstrates that all of the notes cannot sound simultaneously; rather triple stops actual result in quick arpeggiations. As with the viola, trills are acceptable.

But that range that he recommends for the viola is more limited than that by Berlioz:

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5Sundelin. *Die Instrumentierung*. p.3
Orchestral music of that period did not usually require the violist to be able to perform in the extreme upper register as Berlioz suggests. Berlioz also urges composers to give the viola parts that do not simply reinforce the basses or other instruments. But Sundelin, not as progressive about the viola as Berlioz, does recommend that the viola proceed above the bass in octaves. However he does say that solo passages can be composed for the viola.\textsuperscript{6}

\textsuperscript{6}Ibid., p.6.
In the orchestra the viola usually occupies a weaker voice than that of the violin voice and since its tones are less penetrating one generally gives this instrument the interval of the chord which should not sound too pointedly: for example, the fifth of the triad; the third above the bass or fourth [below] the upper voice in sixth chords, etc. if these are to sound above the second violin—a part-crossing which very frequently occurs.

The cello is treated conservatively as well. Apparently, Sundelin has not yet liberated the cello from doubling the bass line, a carry over from the music of the previous century. But Sundelin's fondness for the cello is apparent from his urging that the cello's tone not be parted from that of the double bass for too long:

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7 Ibid., p.6.
Der im Orchester zu benutzende Umfang ist vom C der großen Oktave bis zum eingestrichene g, höchstens bis zum b. Diese hohen Töne sind meistens alsdann anzuwenden, wenn der Contrabaß zu pausiren hat, oder wenn das Cello ein gesangvolles Solo im nicht gar zu schnellen Tempo vorzutragen hat, und vielleicht dabei mit der Violine in Oktaven geht. . . Arpeggiaturen sind bei diesem Instrument sehr gewöhnlich und nicht zu oft angewendet, von guter Wirkung.

In the orchestra the practical range of the cello is from C to g' or b-flat at the highest. These higher tones are mostly used when the contrabass has paused, or when the cello has to play a melodious solo in a not too quick tempo and perhaps plays in octaves with the violin. . . Arpeggios are very usual for this instrument and, if not too frequently used, produce a good effect.
As is well known the cello has to play the ground-bass in the orchestra and should not stray from it for too long in order to play a middle or solo part because when the contra-bass is left to play alone, the cello's stronger and more penetrating tone is quickly missed.

There is a marked difference between Sundelin's description of the cello and that of the contra-bass. Whereas he describes the tone of the cello along with its technical capabilities, and stresses that its strong tone should not be absent for long stretches, he gives only a bare account of the contra-bass's technique.

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Der Umfang diese Instruments geht vom Kontra E bis zum e, höchstens g der kleinen Oktave. Alle Noten für dasselbe werden aber um eine Oktave höher gesetzt, daher sieht der Umfang durch Noten ausgedrückt so aus wie in

\includegraphics{music.png}

klingt aber beim Spielen um eine Oktave tiefer. Die ganz tiefen und ganz hohen Töne sind seltner anzuwenden, weil die ersteren zu undeutlich klingen und die letzteren zu unbequem zu gießen sind...

The range of this instrument is from E to e', or at the highest g'. But all of its notes are written an octave higher, because the range as expressed by means of notes as in

\includegraphics{music.png}

where they sound one octave lower when played. The very low and high ranges are seldom used because the lower tones sound unclear and the higher ones are too troublesome to execute...
For the most part the contra-bass plays the same part as the cello and reinforces the ground bass, but at an octave lower. The notation itself is therefore like that of the cello, only it must be taken into consideration that because its range extends only to low E, the contra-bass cannot attain the low C that the cello can.

It is interesting that he notices this lack of the low C because it predicts a later reform in bass disposition. According to Anthony Baines, the "more precise requirements of late romantic composers led to a desire for an instrument capable of descending to low C, not only for new effects, but to satisfy the literal outline of the many passages in the concert repertory which go below E with the cellos... The demand has, however, been met, and in two different ways: by the addition of a fifth string tuned a third or fourth below E; or by a mechanism called the 'C string attachment.'" 9

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Die Kontraviolinisten helfen sich zwar, indem sie aus der Violoncello-Stimme spielen, worin die Noten oft bis zum großen C gehen, durch Springen in die höhere Oktave. . . Bei diesem Instrument sind Doppelgriffe nicht gebräuchlich, eben so wenig die Anwendung der Sordinen, dagegen benutzt man auf diesem, wie auch auf der Violino, Viola und auf dem Cello, das sogenannte Pizzicato, welches wohl hinlänglich bekannt ist. Auch sind manchmal Triller anzubringen; aber selten.10

Contra-bassists can help themselves by jumping to the higher octave when playing from a cello part that often goes to C. Double stops and trills are not usual with this instrument; on the other hand the so-called pizzicato is used as with the violin, viola, and cello, which is fairly well known. Occasionally trills are used, but only seldom.

Although most of the information that Sundelin provides about the four orchestral strings can be found in several other instrumental tutors from the period, it is interesting to note that he includes the harp and guitar in his chapters devoted to the string instruments.

Sundelin states that the harp is occasionally used orchestrally for the performance of a Romanze or other similar composition, a quite different situation from the Parisian practice which included the harp in all orchestral

inventories because of its frequent use in the opera. He continues to say that "the art of composition for the harp is very similar to that of the piano and compositions for one of these instruments are often performed on the other. The orchestral composition for the harp is limited to running passages or solo chords. Chromatic notes are controlled by the use of the pedal. . ." Sundelin is apparently describing the pedal harp that was popular before the Erard improvements to the instrument. Sundelin warns of the hazards of composing for this instrument, which precludes certain chromatic passages.

It is difficult to say why Sundelin included the guitar in his discussion of orchestral instruments. It is possible that Sundelin associated it with exoticism which was so popular then or merely wished to discuss all of the instruments that were commonly used in Berlin at that time. A technical description of the guitar is given, stating that "the outermost notes of the guitar are e and e". The notes for this instrument are written an octave higher than they actually sound so the treble clef is used for its notation. The comfortable keys for the guitar are C, G, D and F and their relative minors." Some examples of chords are given here with their fret numberings so that the composer can better understand the capabilities and limitations of the guitar. The excerpt continues: "when writing for solo guitar the composer must make certain that many quick figures and pizzicato are written because the guitar's tone cannot be sustained for a long period." 12

11 Ibid., pp.10-11.
12 Sundelin, Die Instrumentierung, p.13.
As we shall see, Sundelin's coverage of the woodwinds is much more comprehensive than that of the strings. Interestingly, Sundelin begins his discussion of the woodwinds with an explanation of the different kinds of flutes, saying that the D flute is now more common than the C flute. He says that the C flute had been popular in earlier times but it is not frequently used in the orchestra because it has not yet been universally introduced. However, an examination of orchestral parts dating from the 17th and 18th centuries on reveals that C flutes were commonly used throughout Europe. It is possible that Sundelin confused the orchestral flute with a band flute. Flutes of different size flourished mostly in bands as the descendants of the fifes which had been used since military times. The flutes used in these bands were made in a series of sizes, from piccolos even higher than the orchestral instrument down to bass and contra-bass. The normal English names for the instruments are extremely confusing unless one remembers that they are treated as transposing instruments and are named from the note produced by closing the six finger holes of a keyless instrument, which is always written as D. The pitch produced depends on the size of the instrument. Band flutes often lack the two extension keys for C and C-sharp, another reason why their names are taken from the sound of the written D rather than from a non-existent C. Sundelin provides a detailed explanation, with musical examples of the different keys of flutes.

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In this section he makes many suggestions that, interestingly enough, pre-date similar ones made by Berlioz sixteen years later:

Compare, for example, Sundelin's:

"The orchestra has a first and second flute which frequently join together to reinforce tutti sections; they lie rather high in the spacing of the chord and usually move in thirds or sixths." 15

to Berlioz's:

"An effect remarkable for its tenderness can be achieved by two flutes playing successions of thirds in the medium range in the keys of E-flat and A-flat ..." 16

Unfortunately, Sundelin does not further describe this orchestral setting. But later he remarks:

\[\text{References:}\]
Wenn sie in Vernbindung mit andren Blaseinstrumenten aushaltende Töne haben, so ist es gut sie nicht tiefer als das zweigestrichene e oder d zu legen weil die schwachen tieferen Töne von den stärkeren der übrigen Blaseinstrumente ganzlich verdeckt werden, und daher die, durch die esteren beseßen Intervalle gänzlich zu fehlen scheinen.17

Berlioz has different ideas about using the flute in the lower range:

"Compare also the previously quoted example from Weber's Der Freischütz [See example 3] There is something wonderfully dreamy in the low, sustained tones of the two flutes . . .

"The modern masters generally keep the flutes too persistently in the higher ranges. They always seem afraid that they will not be sufficiently clear amidst the mass of the orchestra. Consequently the flutes predominate in the ensemble instead of blending with it . . . " 18

18Berlioz/Strauss, Grand traité, p.235.
Example 3
Weber
Der Freischütz

No. 32. Freischuetz, Act II
Example 3, continued

Weber

*Der Freischütz*

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Example 3, continued

Weber

*Der Freischütz*
Example 3, continued

Weber

*Der Freischütz*
Sundelin says that the flute parts must not be too low, whereas Berlioz says that low flute parts are often very effective. Sundelin is probably describing a different setting than Berlioz, although both descriptions revolve around the flute's use of low pitches. The difference is that in the *Der Freischütz* example, the clarinet moves twice as slowly as the flutes. Also the clarinet sounds in its lower range thus allowing the flutes to be heard. The passages that immediately precede these measures\(^ {19} \) must also be taken into consideration, for without them much of the flute effect would be lost. In both instances the vocal part covers the lower tessitura and the accompaniment is simple, so the transition into this unique flute part is comfortable, and not a surprise for the ear. I find it difficult to believe that Sundelin would not have been quite familiar with *Der Freischütz* because of its huge success in Berlin.

Da sie meistens höher, als die erste Violine, zu stehen kommen, so muß man sich in Acht nehmen, daß sie gegen die Violinstimme keine unangenehme oder verbotene Fortschreitungen, bilden, besonders ist die erste Flöte dem Gehör sehr auffallend.\(^ {20} \)

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\(^{19}\) Measures 1-3 and 27-29.


When the first flute is higher than the violin, one must be careful not to write parts that would create an unpleasant or improper progression with the violin, especially making the first flute too conspicuous to the listener.
Sundelin’s comments about numbers also can be useful for performers. He states:

Es sind im Orchester deren zwei, nämlich: eine erste und eine zweite, welche bei starken Tuttis größentheils ziemlich hoch in der Entfernung von Terzen, Sexten oder dergleichen Intervallen gegeneinander gehen.21

There are two of them [flutes] in the orchestra, namely a first and second, which generally play thirds, sixths or other similar intervals in the upper range to reinforce tuttis.

Sundelin continually refers to the flutes in pairs, even though the roster from 1825 Berlin Opera lists the full orchestra22 whose wind section includes four flutes, five oboes, five clarinets, and five bassoons. However, there is also another important note on the list:

"This is the full orchestra but it seldom plays as such except in Spontini’s operas."23

Some works popular at that time used forces that required less than the numbers cited in the 1825 list. For example, Der Freischutz calls for two flutes, two oboes, two clarinets, two bassoons, four horns, two trumpets, three trombones timpani and strings. However, the very fact that

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21 Ibid., p.14
22Koury, The Orchestra, p.429.
23 Ibid., p.429.
24Carl Maria von Weber, Der Freischutz . Edited from the autograph manuscript by Hermann Abert. (New York: Eulenburg, Ltd).
here a specific number of performers was requested \(^{25}\) presents the possibility that at other times parts had been doubled, and perhaps even tripled, and Weber was simply ensuring that the numbers of performers that he requested be used.

Thus, Sundelin was probably describing the core of orchestral flute forces, but depending on the specifications, if any, that were made by the composer, the actual number could vary greatly. The availability of ripieno players at any given time must also be taken into account. But judging by the instrumentalist rosters and by the fact that Weber found it necessary to specify \textit{two} flutes, et cetera, it must be concluded that often more than one wind player covered each part.

Berlioz offered specific figures for orchestral balance. In his \textit{Grand traité} Berlioz had this to say about the orchestra:

"A distinction should be made between theater and concert orchestras... In the past the number of string instruments in opera orchestras was always in correct proportion to that of the other instruments; but for some years this has no longer been the case. A comic opera orchestra which had only two flutes, two oboes, two clarinets, two French horns, two bassoons, rarely two trumpets, and hardly ever any timpani, was well balanced with nine first violins, eight second violins, six

\(^{25}\textit{Ibid.}, Revisionsbericht.\)
violas, seven violoncellos and six double-basses. Nowadays, however, with four horns, three trombones, two trumpets, a bass drum and timpani, but still with the same number of string instruments, the balance is completely destroyed. The violins are scarcely audible, and the total effect is extremely unsatisfactory."

Although Berlioz’s ultimate point in this passage is that the strings need reinforcing, he does let us know that the brass section had been greatly expanded. Therefore, the possibility exists that the winds were doubled in order to compensate for this change.

Koury points out 26 that Berlioz said the 1843 Berlin orchestra was the one for important performances. 27 Below is the inventory of musicians used in that orchestra:

1843-Opera: (Berlin)

- 4 flutes, 4 oboes, 4 clarinets, 4 bassoons;
- 4 horns, 4 trumpets, 4 trombones;
- 1 timpani, 2 percussion, 2 harps;
- 14 first violins, 14 seconds, 8 violas, 10 cellos, 8 basses.

Total: 87.

26 Koury, The Orchestra, p. 430.
The woodwinds retained the forces for ripieno strength. Because of this report from Berlioz and the 1825 Berlin tally, the possibility of forte doubling cannot be ignored.

As with the flute, the piccolo that is discussed is one that is based on D rather than on C. Sundelin does mention that other types of piccolos (Oktavflöten) are used: the E-flat, and the Oktav-Terzflöte, which he says is seldom used in the orchestra. He provides musical examples of their pitch relationship with the flute. He recommends that the piccolo be used infrequently, because of its piquant sound, and that it need not always proceed in octaves with the flute. He remarks that two are occasionally used but, unfortunately does not specify when to do so. Perhaps he refers to the double piccolo parts in Kaspar’s song, *Hier im ird’schen Jammertal* from *Der Freischütz*, one of the examples that Berlioz cites. By the time Berlioz writes about the piccolo, the fundamental pitch of the instrument has changed to C.

Sundelin does not say nearly as much about the oboe and the English horn as he does about some other instruments, and most of what he says is simply echoed by Berlioz. However, a few comments are unique. For example, the range for the oboe that Sundelin discusses is from c to d‴ or e‴; Berlioz’s oboe is from B to f‴. It is apparent how the instruments changed in a relatively short period.

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28 Sundelin, *Die Instrumentierung*, pp.16-17.
According to Sundelin the English horn is an enlarged oboe that not regularly used in the orchestra. Conversely, Berlioz includes the English horn as a regular member of the orchestra.

The discussions about the clarinet and basset horn are much more extensive. Again, most of the observations in Die Instrumentierung are later echoed in Berlioz in his Grand traité, but a few are not. For example, Sundelin says that although there are many different keys of clarinets, one most often uses the B-flat clarinet: One makes a selection from the different clarinets depending on the key of the composition:

"...when a piece is in E-flat major one takes a Bb clarinet, which must also be indicated in the part. For B-flat major, F major, A-flat major and C major and their relative minor keys, one likewise takes the B-flat clarinet. But when the keys of the piece are A major, D major, E major, B major, or G major then one uses the A-clarinet. The C clarinet is reserved for the keys of C major, G major and F major." 31 He also discusses the differences in the tone qualities of these clarinets.

Although I have been focusing on Sundelin's comments about the orchestra, the following passage about the clarinet from the Militar Musik volume must be noted:

30 Sundelin, Die Instrumentierung, p.20.
31 Ibid., p.22.
Diese erste und zweite Stimme wird aber von mehreren Personen zugleich vorgetragen, deswegen darf man bei längeren Sätzen keine Rücksicht auf die Ermüdung der Bläser nehmen, da sie sich ablösen können, und man ist auch oft zu sehr anhaltenden Sätzen für die Klarinette gezwungen, da sie, wie schon gesagt, die Hauptstimme bildet.  

The first and second voice are conjointly performed by several, hence one need not worry about the players' becoming fatigued in long passages, since the players can relieve one another, and one can often write quite long lines for the clarinet since they, as already stated, should have the main voice. 

Here we discover that clarinetists became fatigued by playing long passages. The clarinet embouchure and reeds had not yet been perfected, and they tired rather than supported the performer. Although orchestral clarinetists were usually not called upon to perform sustained *hauptstimme* passages like the violinists were, it is possible that they became fatigued as well, and therefore required the support of additional clarinetists. This would not be that different from the modern first hornist who uses an assistant for reinforcement of his own part during particularly demanding passages.

Sundelin advises caution when frequently switching between these clarinets in the same piece. "If this is necessary throughout, then before a

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33 Sundelin, *Die Instrumentierung für sämtliche Militär Musik*, p.7. Sundelin likens the clarinet to the orchestra's violin.
solo one must pause as long as time comfortably permits because when the instrument has not been blown for a while it is cold and a little lower in pitch, thus making an unpleasant solo. "34 Sundelin also discusses the clarinet's cousin, the basset horn, but states it is used in the orchestra only on special occasions, and sometimes with a first and second.35

His comments regarding the bassoon are brief, but he does offer recommendations about keys that are well suited for the bassoon, such as E-flat, F, C, G, and A. 36 However, there is one salient comment in this passage; here we find that Sundelin is interested in allowing the bassoon to be independent of the bass-line. Similar notions are expressed a few years later by Gaßner.

"Although the second bassoon, [therefore there are at least two in the orchestra] . . . is naturally lower [than the first] and makes the bass of the wind instruments, it is not always necessary for it to proceed with the cello or contra-bass; there can be a beautiful effect especially when the bassoon has more sustained tones which are executed in the greatest Pianissimo, rather than in figured passages." 37

34 Sundelin, *Die Instrumentierung*, p.23 . . . Ist dieses aber durchaus nothig, so muß man durch Pausen so viel Zeit übrig lassen, daß es mit Bequemlichkeit geschehen kann, auch wo möglich nicht gleich nach dem Umstimmen mit Solo anfangen, denn wenn das Instrument eine Weile nicht geblasen wurde, so ist es kalt, und dadurch in der Stimmung etwas tiefer geworden, welches alsdann beim Solo sehr unangenehm auffällt.
From excerpts like this and others that appeared throughout the woodwind discussion we can see that this treatise is more sophisticated than the instrumental tutors which flourished at the end of the eighteenth century. The recommendations about how the instruments could be used in the context of an orchestral setting, which dynamic level could be most effective, or how different instruments should be spaced within chords were not part of the tutors, which only focused on technical capabilities of the individual instruments. Thus, Sundelin's *Die Instrumentierung für das Orchester* certainly helped to turn the course of these treatises toward the comprehensive orchestration treatises that became popular in the nineteenth and twentieth centuries.

The horn heads Sundelin's discussion about the brass family. He demonstrates that the horn has a theoretically wide range but stresses that the composer can not use this entire range in every piece. The horn Sundelin describes is the natural horn. That he did not discuss the new valve horns by Stölzel seems peculiar because the last page of this treatise contains an advertisement for the new *chromatischen Metal-Blase-Instrument* by Stölzel. 38 These instruments are included in the companion volume on *Militär Musik*.

38See example 6.
According to Charlton there were four horns at the Académie since 1788, and probably before that. Sundelin says that sometimes only two are used in the orchestra, perhaps reflecting a local tradition, but in his concluding paragraph in this chapter he does also say that

Die Hörner sind auch zuweilen im Orchestre vierfach besetzt, wo alsdann ohngefähr zwei die Stimmung in C und die andern in F haben ...

The figures from the 1823 Königlich-Preussische Kapelle show that eight hornists were employed that year, as well as three trumpeters, two flugelhornists and two trombonists. Concurrently it was becoming increasingly common to find orchestral compositions that called for more than two horns. I wonder why eight hornists were employed if only two were sometimes used as Sundelin's description implies. As with the woodwinds, is it possible that even the two horn parts were doubled? Moreover, if we accept the notion that at least occasionally four horns were used (even though eight persons were listed on the roster), along with three trumpeters and two trombones, which would more or less balance the

40Sundelin, Die Instrumentierung, p.27.
41Ibid., p.33.
42For the sake of argument even omit the flugelhorns now.
43I question the accuracy of two trombones; by 1828 many orchestral parts called for three.
brass section, then a large complement of strings would be needed as well. As the table below demonstrates, in 1823 there was a large pool of hired string players from which to draw. If the orchestra consisted of four horns, three trumpets, two trombones, timpani, only twenty violins (only a portion of the strings), six violas, eight celli and five basses, then it would still be musically sound to utilize four (of the five) flutes, four oboes, four clarinets, and four bassoons.

1823- Spontini, first conductor:
5 flutes, 1 piccolo, 5 oboes, 5 clarinets, 5 bassoons;
8 horns, 3 trumpets, 2 keyed flugelhorns, 2 trombones;
1 timpani, 1 harp, 1 piano;
4 concertmasters, 11 first violins, 11 second violins, 7 violas,
10 cellos, 7 basses.

Total=89. 44

Sundelin recommends that in a composition horn parts consist of eighth notes because:

Die als Achtel geschriebenen Noten haben einen hellen und vollen Ton; die als Viertel geschriebenen aber haben fast alle einen dumpfen Ton und sind nur im höchsten Nothfall anzuwenden und zwar im Solo noch eher als beim Tutti. Dieses gilt von allen folgenden Beispielen. 45

44Koury, The Orchestra , p.429.
45Sundelin, Die Instrumentierung, p p.28.
Although not indicated, Sundelin probably intended that the tempo marking for the above example be at least *andante* if not *allegro* because the eighth-notes must be short enough to allow the player to quickly move to the next note. Some of the most brilliant passages produced by brass instruments are those which consists of shorter note values rather than sustained tones. This example is for horn in C; however, Sundelin lists similar excerpts for horn in D, E-flat, E, F, G , A, B-flat alto, and B-flat basso.

As stated above, Sundelin is quite enthusiastic about discussing voicing and voice leading. Here he provides an example of a correct harmonic resolution for the horn.
Wenn ein Horn die Septime der erklingenden Harmonie hat, so läßt man diese Septime häufig springen . . . wie bei

\[ \text{Corni in C} \]

\[ \text{Orchester} \]

wo das C diese springende Septime darstellt, nur ist es alsdann nothig, daß ein anderes Instrument, durch welches diese Septime verdoppelt wurde, dieselbe richtig auflöst, oder daß das h, im zweiten Akkorde durch eine andere Fortschreitung herbeigeschafft wurde, da es, als Terz der Harmonie, nicht ganz fehlen darf.\(^{46}\)

When a horn has the seventh of the resounding harmony, one can allow the seventh to leap . . . as in

where the C brings out this leaping seventh; only it is therefore necessary that another instrument, by which this seventh should be doubled, should be correctly resolved, or that the B in the second chord would create another progression, in which it, as the third of the harmony, would not be entirely missed.

\(^{46}\text{Ibid.}, \text{ pp.32-33.}\)
Charlton feels that there was a certain mystique attached to the horn in France at this period. Not only were more method books published for the horn than for any other instrument, but sections dealing with horn playing in general treatises (for instance, those of Vandenbœck, Choron) are far more extended than any other.47 Sundelin's is no exception because his chapter on the horn is twice as long as any of his other chapters.

In his discussion of the trumpet, Sundelin compares its many different pitches to those of the horn. His discussion includes the C, A, D, E-flat, and F trumpets with thorough range and scale examples for each of them.

Quick notes such as sixteenths, thirty-seconds and the like are easy to play but they must occur seldom because otherwise [the piece] degenerates into sounding too military or even vulgar.

Finally, Sundelin says that the orchestra has two or three timpani which usually play the tonic and dominant of the the chords; he provides a series of tonic/dominant examples in all keys so that the composer may

48 Sundelin, *Die Instrumentierung*, p.36.
understand idiomatic timpani parts as well as the transpositions that the timpanist must make. What I thought was quite interesting was Sundelin's treatment of the timpani in a V-I resolution. He states that "as with the horn and the trumpet, the timpani can leap from the seventh of the V chord, in this case, to the tonic note." 49

It would have been more in keeping with the orchestral literature of the time had Sundelin urged composers to have the timpani play the fifth in the V chord and not the seventh. Another popular nineteenth-century use of the percussion that Sundelin mentions is the triangle and the cymbals in Janissary music. 50 He also says that the snare drum can have a very effective crescendo/decrescendo effect which may be the first reference to this use in an instrumentation treatise. 51

49 Ibid., p. 43.
50 Ibid., p. 44.
51 Ibid., pp. 45-46.
While Sundelin provides a regimented and thorough discussion in the main body of the treatise, he leaves us with what is perhaps the most interesting feature: an advertisement on the last page with a price list of Stölzel's newly-invented valve brass instruments. Here one learns that the chromatic Waldhorn can be had for the mere cost of 40 Reichsmark (about $300.00 by today's scale) and a trumpet in F or E-flat for only 25 Reichsmark. Other instruments have similar prices. Sundelin may have wished that composers would test his orchestration ideas on these instruments that were conveniently for sale at the Lindenstraße shop, not far from Wagenfuhr's Buch und Musik Handlung in Berlin.52

We have seen that Die Instrumentierung für das Orchester is quite different from instrumental tutors that preceded it. Innovative aspects of this work include its recommendations about spacing and placement of instruments, such as assigning the weaker interval of a chord to the viola rather than to the violin, or allowing the flute to play important intervals only when it is playing in its middle or registers. These issues occupy a large portion of the treatise, and we even find a few suggestions for effective instrumental combinations, a topic to become paramount for Gaßner. Other innovative aspects of this treatise include the references to dynamic levels in conjunction with orchestral settings. All of these features make this work, which Sundelin humbly referred to as "this little book," 53 of greater significance than it might first appear.

52 Ibid., p.48.
53 Ibid., p. 2.
During the years that surrounded the appearance of Sundelin's *Die Instrumentierung*, several other similar textbooks became available to assist musicians in the study of orchestration. As we have seen in Sundelin's treatise, the study of orchestration became coupled with the study of technical abilities of various instruments. Within a few years many musicians began to add yet another element to this framework of study: the aural effects that different instrumental combinations produced. In other words, commentators realized that not only could some instrumental combinations be more effective than others because several instruments could be juxtaposed without either losing its individual quality; rather, they went one step further, in considering the sound produced by the combination to be a sound quality unto itself. Again, student and teacher alike searched for guidance in this new field. It was to this need that Gähner so aptly responded with his *Partiturkenntnis* in 1838. Gähner, too, expressed an urgent need for instrumentation instruction:
Das Studium von Partituren ist unerläßliche Bedingung für den an gehenden Tonseßer; derselbe muß sich also die Fähigkeit erwerben, jede Gattung von Partituren lesen zu können! Dazu gehört eine Anleitung, welche man aber in den meisten Lehrbücher der Composition entweder gar nicht, oder nur oberflächlich behandelt findet. Diejenigen Kunstjünger also... nehmen ihre Zuflucht zu der musikalischen Literatur und finden--Nichts--weil das wenige über diesen so wichtigen Gegenstand Er schiene ne, in verschiedenen Werken vereinzelt--keine eigentliche Anleitung dazu geschrieben ist. ¹

The study of scores is an essential prerequisite for a young composer; he must also acquire the ability to read each family [of instruments] from the score! This requires instruction, which is either completely ignored or only treated superficially in most instruction books in composition. The young composer thus... turns to the musical literature and finds--nothing--because this ever so important subject appears only sporadically in various works--there is no actual instruction written about it.

¹Ferdinand Gaßner, Partiturkenntnis. Vorrede, p.V.
Like Sundelin, Gaßner systematically discusses all of the common instruments of the period. Although many of Gaßner's notions can be found in Sundelin's 1828 treatise, Gaßner's coverage is much more comprehensive. The first chapter discusses the string instruments, and in order to emphasize that this is actually an orchestration treatise, Gaßner explains that his treatise is not for someone who has never seen or heard a string instrument. Nor is it intended for someone to learn to play an instrument. Rather, it is for the composer who must learn about character, tone quality, range and the like. The significance of the words "character" and "tone quality" cannot be underestimated because this may have been the first time that these issues, in conjunction with the topic of instrumental combinations, were actually discussed in print. The printed study of orchestration had begun with instrumental tutors and progressed to discussions of instrumental combinations. Gaßner made two further steps, and focused not only on instrumental combinations, but the tone quality of the instruments, individually and in combination. In doing this he supplied all the ingredients necessary to create what we now think of as a complete orchestration treatise. By including Gaßner in the history of orchestration treatises, we can actually see the progression which culminated with Berlioz's in 1844. This chapter and that which follows will focus on Gaßner's discussions about the individual instruments and to the chapter titled "Instrumentaleffekt."
Another notable passage from the opening pages of the *Partiturkenntnifs* deals with the status of the voice in German musical circles. It is actually embedded in the discussion about the strings. Gaßner’s description of the string section concurs with modern opinion on most points: the strings (first and second violins, viola, celli and basses) may play either independently of other instruments, as accompaniment or in alternation with wind instruments. The first violin plays either a specific melody, or perhaps doubles a singer or wind line. Gaßner mentions nothing about operatic settings, yet he pairs the violin with the voice. German opera had become so popular that the voice came to be treated like another instrument, and, thus it is only natural that it should be included in orchestration discussions. From that point the voice was regularly included in musical discussions other than those that focused on the Paris opera. In fact, the excerpt used to demonstrate the first violin’s accompanimental capability is Inea’s aria from Winter’s *Unterbrochenem Opferfest*.

The very next excerpt serves to illustrate the second violin’s relation to the first. It is not coincidental that it is another operatic excerpt: Donna Anna’s opening phrase, “Non sperar, se non m’uccidi, ch’io ti lasci fuggir mai” from Mozart’s *Don Giovanni*. Gaßner includes this excerpt to juxtapose the first and second violins, as well as to show how the violins can be used as accompaniment. There were many other purely instrumental works that could also have demonstrated this, but the fact that it was an operatic excerpt supports the notion that in Germany, as in Paris,

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4 W.A. Mozart, *Don Giovanni*, “Introduzione.”
Example 4

Mozart
Don Giovanni
"Non sperar, se non m’uccidi, ch’io ti lasci fuggir mai"

Example 5

Boieldieu
Calife von Bagdad Overture
opera and hence the voice secured a prominent role in the orchestra, or
that the opera orchestra was considered to be the principal orchestral body.

Continuing with his discussion of the strings, Gaßner provides
information that could perhaps be useful when researching nineteenth
century orchestral sizes. He says that there are six first and six second
violins, four violas, three celli and two or three basses, of course depending
on the size of the orchestra. This treatise was written in 1838 in Karlsruhe;
it is interesting to compare these figures with those of other European
orchestras at that time. The Paris opera orchestra had twelve first violins,
twelve second violins, eight violas, ten celli and eight basses in 1839; the
Odéon Theatre in 1840 had thirty violins (fifteen each), ten violas, twelve
celli and nine basses. The Court Opera at Berlin in the 1830's and 1840's
had similar figures: (1830) twenty-four violins, twelve violas, six celli, six
basses; (1843) twenty-eight violins, eight violas, ten celli and eight basses.
As we saw in Chapter 3, Berlioz had much to say about string numbers:

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5 Gaßner, Partiturkenntniß, p. 7.
7 Ibid., pp. 457-8.
8 Ibid., p. 429.
9 Ibid., p. 430.
... the finest concert orchestra-for a hall scarcely larger than that of the Conservatoire, the most complete, the richest in shadings and tone colors, the most majestic the most powerful and at the same time the most mellow, would be composed as follows:

21 first violins, 20 second violins, 18 violas, 8 first violoncellos, 7 second violoncellos, 10 doublebasses, 4 harps, 2 small flutes, 2 large flutes, 2 oboes, 1 English horn, 2 clarinets, 1 bassett-horn or 1 bass clarinet, 4 bassoons, 4 valve horns, 2 valve trumpets, 2 cornets with pistons (or cylinders), 3 trombones (1 alto, 2 tenor or 3 tenor) 1 bass trombone, 1 ophicleide or 1 bass tuba, 2 pairs of kettledrums with 4 drummers, 1 bass drum and 1 pair cymbals. 10

It is difficult to say why the figures that Gaßner gives vary so much from those cited by Koury and described by Berlioz. Information about sizes of ensemble from Karlsruhe is limited and it is possible that the ensembles in that city were smaller due to the nature of the establishment there. Since it was not a cultural focal point like Paris or Berlin, there was possibly not enough revenue to support very large ensembles. The numbers of strings that he does give are proportionally sound within themselves and it would be easy to multiply them by two and add winds. It is unfortunate that Gaßner

10Berlioz/Strauss, Grand traité, pp. 406-407
did not seize this opportunity to present a specific tally of both the wind and string forces of the local orchestra.

Gaßner proceeds from the general comments about the strings to a quite detailed discussion of the individual instruments. He follows this format for all of the subsequent chapters. His predilection for the violin is apparent from the start when he says that is is the most perfect and favorite of the string instruments. It is strung with four gut strings, which become relatively weaker; the lowest is coated with silver wire and is the strongest. Gaßner says that only the g string is silver coated. Most modern violinists uses aluminum-covered middle strings and a plain or wound steel E string which produces a clear sound. Later Gaßner states that the viola has 4 gut strings, of which the 2 lowest are covered with silver. The cello's strings are likewise four gut strings, of which the two lowest are also covered with silver. The string sound familiar to Gaßner is somewhat different from the one familiar to the twentieth century audience. Thus, Gaßner was listening to a much darker, softer sounding Mozart and Beethoven than we are today. Gaßner refers to the E-string as the quinte and both Berlioz and Gaßner call the E string the chanterelle.

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11 Gaßner has made an error here. He identifies the g string as being g' and it is g.
12 Gaßner, Partiturkenntnis, p. 9.
13 Ibid., p. 9. Sie ist mit vier Darmsaiten, welche verhältnismäßig dünner werden, bezogen; die tiefste ist deshalb als die stärkste zu betrachten, weil sie mit Silberdraht überzogen ist.
14 Gaßner identifies them as c', g', d', and a' but viola strings are tuned c, g, d, and a.
15 Gaßner, Partiturkenntnis, p. 9.
16 Berlioz/Strauss, Grand traité, p. 2.
Berlioz and Gaßner concur that the uppermost "safe" note on the violin is a''; however, Berlioz says that it is possible to extend the upper range by another octave. Sundelin conservatively suggests that f'' be the uppermost note, but such a limited range would preclude many works including Beethoven's string quartets and symphonies and a great deal of Mozart's chamber music.

As for the second violin, Gaßner warns that just because the part is labeled "second" that does not mean that it is any easier to play. In fact, he warns that often the second part is much more difficult to perform than the first and composers as well as performers must not fall prey to the notion that second parts may be handled by second rate players. To illustrate this point Gaßner presents an excerpt from Boieldieu's Calife von Bagdad Overture in which the second violin plays a series of sixteenth notes at an allegro tempo marking, while the first violin has a less demanding eighth and quarter note passage. [See example 5] Berlioz, interestingly enough, mentions nothing about the relative difficulty of first and second violin parts.

Gaßner cites several composers whose works provide excellent examples of solo/ripieno parts; these composers include Mozart, Haydn, Beethoven, Spohr, Fresca, and Onslow. Unfortunately the pieces are not specified. In this passage Gaßner uses the word "Tondichtungen" instead of "Kompositionen." Apparently "Tondichtung" did not have the meaning of

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17 Ibid., p.2.  
18Gaßner, Partiturkenntniss, p.6.  
19 Ibid., p.8n.
symphonic poem; rather, it had the generic meaning of composition. Later, Gaßner has another interesting use of the term:

In den neueren Tondichtungen erscheint das Violoncell oft ganz anders, als der Contrabaß, durchaus nicht als Grund-sondern als Mittel-oder gesangführende Stimme. In new compositions the cello often functions entirely differently than the contra-bass- not at all as a ground [i.e.bass] voice but rather as a middle or a melodic voice.

In this excerpt from Robert le Diable the cello plays a vital role in the accompaniment. While the other strings provide the block chords, the cello's simple arpeggiations fill in under the flute. This demonstrates the cello's new independence from the bass line.

Regarding the bass, Gaßner boldly states that the good contra-bassist is the heart of the orchestra:

\[\text{Der gute Contra-bassist ist die Seele des Orchesters; wenn er es versteht, der Direktor desselben . . . }\]

Such a designation points to the conception of the orchestra, as formulated from the bass up. This perception manifested itself in the nearly gravitational pull toward the lower sounding instruments that dominated in

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\(^{20}\) A Dictionary of the English and German Languages, Friedrich Kohler, ed. (Boston: S. R. Urbino), 1869, p. 465.

\(^{21}\) Gaßner, Partiturkenntnisse, p. 12.

\(^{22}\) Ibid., p. 13. The good contra-bassist is the heart of the orchestra; when he understands that, he is the director himself.
symphonic music for much of the nineteenth century. Some twentieth century composers, such as Debussy in *De l'Aube*, liberated the orchestra from this grounding by placing the focal point of the orchestra in its center.\(^{23}\)

Gaßner continues with an outline of the contra-bass tuning saying that it is seldom strung with five, frequently with three, and usually and best with four gut strings, which are tuned in fourths, and are namely E, A, d and g. The pitches of the three stringed basses are A, d and g. The five string bass would be in F, A, d, f\(^\#\), and a.\(^{24}\)

Gaßner states that the sound of the bass can be distinct, depending of the school from which the bassist came. He concludes the two chapters on strings by mentioning the bass virtuosi dall’Occa and Hindle\(^{25}\) as well as a bass Concerto by Max Eberwein,\(^{26}\) which, in Gaßner’s opinion, Kohler\(^{27}\) excellently performed.\(^{28}\)


\(^{24}\)The *New Harvard Dictionary of Music*, pp. 240-241, states that “some instruments have a fifth string tuned C1, and in orchestras the E string of the four-stringed instrument is often fitted with an extension that, by means of levers along the fingerboard permits playing down to C1.... As late as the eighteenth century the most common instrument of this general type in use in Austria seems to have been one with five strings, tuned F1, A1, D F\(^\#\), A and with frets, though writers of this period also mention four- and three-stringed instruments without frets. Three-stringed instruments... were well known in the 18th century and common throughout Europe in the 19th century, persisting into the 20th.”

\(^{25}\)Féits, *Biographie*, vol. 5, pp. 165. Jean Hindle was an extremely talented contrabassist, born in Vienna in 1792.

\(^{26}\)According to Gaynor G. Jones, *New Grove Dictionary*, vol. 5, p. 816. Maximilian Eberwein (1814-75) was a child prodigy first taught by his father and later by Hummel; after a successful career as a pianist and composer in Berlin and Paris, he settled in Dresden as a music teacher, where Hans von Bulow was among his pupils.

\(^{27}\)I was unable to discover information about Kohler and dall’Occa.

As with the strings, Gaßner makes several remarks about the winds that foreshadow those found in Berlioz's *Grand traité* and other works from later periods. One such example is from the discussion of the piccolo. By 1838 the piccolo was commonly included as an orchestral instrument. The early nineteenth-century piccolo was difficult to play because of the close proximity of the finger holes which hadn't yet been covered and controlled by keys. Additionally, as with modern piccolos, a great deal of endurance is required by the piccolo player because the small lip plate quickly strains the embouchure. Gaßner warns of these hazards, and to my knowledge, he was the first to do so. He also says that piccolo passages should not be studied from the new Italian scores because misuse rather than proper use would be learned in them. Unfortunately Gaßner did not specify which Italian scores he meant, but he was probably referring to those by Rossini which challenge the piccolo players with numerous rapid run of sixteenth and even thirty-second notes.

Like Sundelin, Gaßner lists the flute's lowest pitch as d', rather than c'. According to Howard Mayer Brown, some eighteenth century flute makers extended the range of the flute a whole step downwards by adding c' and c#' keys to the foot joint. Apparently these innovations had not become commonplace in Berlin and Karlsruhe, where Sundelin and Gaßner were concerned with instrumental ranges.

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28 Ibid., p.16.
29Gaßner, pp.16-17. *Das Studium des Piccolos'ches mache man aber ja nicht in den neueren italienischen Partituren, wo man es statt zu gebrauchen, nur mißbrauchen lernen würde.*
This also is true for the oboe, whose range actually extended at least down to b, and occasionally down to b-flat if the performer had the proper extension on his instrument. However, both Gaßner and Sundelin begin the oboe’s range with c’. 31 Other than these range discrepancies Gaßner’s observations and recommendations about the treatment of the piccolo, flute and oboe are traditional.

But the English horn is quite another matter. Gaßner’s description of the English horn is most unusual; it seems that he is describing an entirely different instrument!

Es ist nicht gerade (wie die Oboe), sondern die beiden Theile, aus welchen das Englische Horn besteht, bilden beinahe einen Halbcirkel und sind mit leder überzogen. 32

It is not straight (like the oboe); rather both parts from which it is made form a half circle and are covered with leather.

31Gaßner, Partiturkenntnis, p. 18.
32Ibid., p.19.
Berlioz and Sundelin make no mention of this leather coating and both accurately describe the English horn that is familiar to us today. Moreover, in his article "The English Horn in Classic and Early Romantic Music," R.M. Longyear says that "the English horn was least known in Germany. Several articles on the oboe of the time contain no mention of its alto sister... Not until 1829 (a review by A.B. Marx of Berlioz's Huit scènes de Faust) are English horns mentioned in a German publication. As late as 1843, Berlioz discovered that English horns in Germany were rare; in most cases, they were either nonexistent or in extremely poor condition."33

Finally, the New Harvard Dictionary of Music states that "the late eighteenth century instruments, which seem to be descended from the oboe da caccia, are curved and usually covered with leather."34 It would appear that Gaßner has confused the English horn with the oboe da caccia. He goes on to cite works that supposedly include the English horn, but this only confirms his confusion:

The effect of the English horns in the proper character is shown in Mozart's *Titus*, Meyerbeer's *Robert le Diable*, and Bellini's *Il Pirata*...

In Mozart's *Titus*, Mayerbeer's *Robert der Teufel und Bellinis Seeräuber* zeigt sich die Wirkung des englischen Hornes ganz in dem richtigen Charakter... 35

None of the three works cited call for the English horn or an oboe da caccia. *La Clemenza di Tito* uses a basset horn but that is an entirely different instrument. Gaßner is obviously unfamiliar with the English horn.

Gaßner has more to say about the tone qualities of instruments than any of his predecessors. He uses a host of adjectives that range from sweet, and gentle to harsh and shrieking. Throughout the entire treatise he makes suggestions about instrumental combinations and attempts to verbalize the sounds that each unique combination produces. But all of his descriptions ultimately refer to the tone quality of the human voice, which for him is "the most interesting musical instrument." 36 Gaßner ascribes a "natural charm" 37 to the voice and uses it as the standard of comparison for the other instruments. This notion recurs throughout the chapter on instrumental effect (which will be discussed in Chapter 6) but it occasionally appears during the sections about the individual instruments. For example, he likens the clarinet to a woman's voice:

Ihr Ton, welchen man zur höchsten Kraft anwachsen und zum leisesten piano verschwinden lassen kann, gleicht einer vollen, runden Frauenstimme. Kein anderes Instrument läßt eine so täuschende Ähnlichkeit mit der weiblichen Stimme hervor-bringen.38

Though he concentrates on the three orchestral clarinets (C, B-flat, and A), he mentions clarinets in other keys as well. The C clarinet is remarkably able to combine strength with sweetness and clarity. 39 Gaßner’s criteria for selecting the most suitable clarinet greatly differ from Sundelin’s, who selects his clarinet according to the key of the composition rather than the sound of the instrument. This is another example of the conceptual advances made in the development of orchestration treatises between Die Instrumentierung (1828) and Partiturkenntniss (1838). Partiturkenntniss analyzes in detail the different ranges of the clarinets and the effect that they produce, as are the idiomatic keys for the clarinet. Gaßner even provides a description of Ivan Müller’s new clarinet. 40

38 Ibid., p. 20.
39 Ibid., p. 21.
40 Ibid., p. 99.
Like the cross between the English horn and the oboe da caccia, Gaßner has also confused the bassethorn, krumhorn and the bass clarinet. The heading for the unit about these instruments and the first sentence are:

"Bassethorn, Krumhorn, Bassclarinette
(Corno diBassetto)
is actually only a bigger clarinet."  

The so-called extended clarinet that Mozart and Stadler used was also referred to as the baßclarinette. Gaßner then describes the form of this instrument as one that is "a little curved" and "usually has a brass bell... The [sounding] range extends from F to e'." 42 "Baßclarinette" is used throughout this entire section as an umbrella term for all three instruments. However, the bass clarinet sounds a full octave lower than the standard (B-flat) clarinet, and not only a fifth lower as Gaßner would have us believe. It is the bassethorn that sounds a fifth below the C-clarinet. And the krumhorn is a double reed instrument that appears in various sizes and keys. As for the musical examples cited, Mozart's *Le Nozze di Figaro* uses none of these instruments; *La Clemenza di Tito* and the *Requiem* use basset horns.

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The concluding section on the woodwinds focuses on the bassoon and seems to describe the standard orchestral instrument. Gaßner encourages composers to liberate the bassoon from its routine of playing only the bass line, claiming that it can be "either a solo, middle or bass voice."44 This section is filled with recommendations for instruments that effectively combine with the bassoon, as well as ideas about voicing. For instance:

Wenn zwei Fagotte bei einer Harmonie geseßt [sic] sind, und nicht in gleicher Lage oder auch in der Octave die Bästimmten haben, so wird der erste Fagott als Mittelstimme, der zweite als Grundbästimmten behandelt. . . . Bei vollem Orchester, wo die Grundbästimmten in den Cellos und Contrabassen liegt, können beide Fagotten, wenn sie nicht als Verstärkung mit diesen gehen- als Mittelstimmen auftreten. 45

When two bassoons are part of the harmony and there is not a bass voice in the same range or octave, then the first bassoon would be treated as the middle voice and the second bassoon would be treated as the ground voice. . . . With a full orchestra, where the groundvoice lies with the celli and contrabasses and the bassoons are not reinforcing them, then both bassoons can sound as middle voices.

Here we can also find many words that refer to the tone quality of the bassoon. Gaßner boasts of the versatility and unique character that make it well suited for various settings.

44 Ibid., p. 25.
The woodwind chapters can be most useful to the composition student because effective combinations are both discussed fully and demonstrated by numerous excerpts from popular works of the time. These chapters refer to the orchestra, but very short examples of smaller ensembles are included as well. It is likely that Gaßner himself composed some of these smaller pieces because, unlike most of the others, no one else is given credit for them. These additional examples include a clarinet/horn/bassoon trio, a woodwind quintet and a string quintet also. The chapters devoted to the brass are just as comprehensive as those of the woodwinds and strings.

As for the brass in general, which include the trombone, a relative latecomer to the symphony orchestra but not the opera orchestra, he states that in combination they make an impressive effect.

Gaßner, like Sundelin, Vandenbroeck, and others, devotes several pages to the horn. Although the valved horn is omitted from the unit, he must have been aware of it because he mentions contemporary improvements to the instrument in a footnote. Yet the natural horn, with all of its difficulties, holds a prominent position in the orchestra:

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46 Ibid., No. 62a.
47 Ibid., No. 62b.
48 Ibid., No. 115b.
Diese dankbarste, vollständigste der Blechinstrumente ist auch in dem Orchester das wichtigste, am meisten gebrauchte... Paarweise- in neuerer Zeit auch häufig zu Viert- füllen die Hörner als Mittelstimmen die Harmonieen aus. 50

This most useful, most complete of the brass instruments, is also the most often employed and most important brass instrument in the orchestra... When used in pairs - in modern times frequently in groups of four- the horns fill in the middle voices of the harmony.

What can be useful to the composition student as well as to the hornist himself is a chart that clearly lists the pitches that can comfortably be produced from the various horns. For example, the pitches d, e, f#, g, a, b, c# and d will easily speak from a horn in D. All of the different horns are listed along with their idiomatic pitches. By referring to the list, the composer and performer can ascertain which crook[s] is required for the piece. 51 Most of this chapter revolves around the different pitches of the horns; since there are so many of them the discussion cannot help but be lengthy. However, several comments about the bright and energetic tone of the horn are also included. Below is an example in which the horns in C, on which these pitches will naturally sound bright, are coupled with a bassoon, an

50 Ibid., pp. 26-27.
51 Ibid., p.28.
instrument whose warmer sound can make the horn seem even more brilliant.

Since several of the bassoon's notes in this example are higher than the second horn, thus making a few second inversion chords, Gaßner may have intended this to be only part of a larger setting. Because this lower register of the second horn overlaps with the higher register of the bassoon, these two instruments blend to make a new sonority. The first horn is pitched high enough that its tones do not mix with the lower instruments, and its brightness, therefore, predominates.
The trumpet unit which, although very brief, discusses the different types of trumpets and their suitable keys. Like the horn, the information regarding the valve trumpet and keyed trumpet is reserved for another part of the treatise. It does appear that Gaßner’s concept of the versatility of the horn and the trumpet is limited to fanfare figures and marchlike passages. All of the excerpts used as examples are similar in character to the following:

These instruments had not yet realized their full potential as melodic instruments.

The study of the trombone was one of the most interesting aspects of my study of the orchestration treatises. While Sundelin, Gaßner and Berlioz do agree on many issues, none of their statements have so much potential influence on contemporary performers as do the trombone. It is significant that they are included in these works because trombones did not play a standard role in the symphonic literature until the middle of the nineteenth century. As with the voice chart in Franceour’s Diapason this is perhaps reflective of the opera orchestra, which began to use the trombone
in the seventeenth century after Monteverdi used it to depict the underworld in *Orfeo*. In the eighteenth century it was used for supernatural associations.

At the very beginning Sundelin makes an excellent recommendation to the novice:

"If one wishes to compose a piece or section for brass instruments, and the scoring calls for two horns, two trumpets, three trombones, he must be sure that all of the trombones do not play the same notes that the horns and trumpets have. He must also be certain than the trombones do not play the full chord because they would overpower the other instruments since they are so noticeable." 51

Both Sundelin and Gaßner divide the trombone chapter into three sections: the alto, tenor, and bass trombones with range examples for each of them. They concur on most points and most of what is said can be applied to modern trombone composition. What is remarkable is the difference between the ranges that they give for the alto trombone:

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Although neither author mentions that the alto trombone is a transposing instrument pitched in E-flat, it is possible that Gaßner was citing the sounding pitches and Sundelin was citing the written pitches.

In the scores of the popular works at that time, the top parts appear to have been written for the alto trombone itself, and are not simply parts in the alto range. Not only could many of the notes be more easily played on the alto trombone, but parts themselves were frequently written in the alto clef with the tenor trombone on the same stave. Even the scores were labeled "alto, tenore and basso tromboni." Examples of such works include Schubert's *Great C Major* and *Unfinished* symphonies. \(^{51}\)

Another example is the alto trombone part in *Der Freischütz* \(^{52}\) which frequently reaches the C one octave above middle C. Even for an accomplished trombonist, playing in this range for long periods can be challenging.

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\(^{51}\)Franz Schubert, *Kritische Gesamtausgabe*, (Leipzig: Breitkopf and Hartel.), vol. 1. Hereafter referred to as the *Symphony, Number 9*.

Let us for a few moments return to the *Symphony Number 9* of Schubert. [See example 6] Since the alto trombone was quite popular in Germany at the beginning of the nineteenth century it is likely that this symphony was conceived with it in mind. An examination of the trombone parts will hopefully demonstrate that modern performers should use the alto trombone in this symphony and in others from that period. The high notes on alto trombone are brilliant and clear, but are not as piercing as those of the tenor trombone. Perhaps more importantly, it is much easier to execute these upper notes because of the harmonics of the instrument. In example 6 (measures 134-156) from the first movement of the symphony, the woodwinds are to stand out and the horns and trombones supply alternating pulses in the background. These pulses are marked *piano* and are not meant to overwhelm the woodwinds. The e' that is to be played by the upper trombonist will not overwhelm the woodwinds if played on an alto trombone instead of on a tenor. The tenor trombone rests throughout this entire passage and does not return for twenty measures; when it does return it plays a full octave lower than the alto does. These two trombones do not unite on the same pitch until the arrival of the *fortissimo* [See example 7, measure 186] which enables the tenor trombonist to reach the d' with little risk of error. Conversely, when there has been a shift in woodwind sound a few minutes later, Schubert assigned the "pulse" note to the tenor trombone.
Example 6

Schubert

*Symphony Number 9*

Movement 1

Measures 134-156
Example 6, continued

Schubert

Symphony Number 9

Movement 1

Measures 134-156
Example 7

Schubert
*Symphony Number 9*
Movement 1
Measures 182-197
There are numerous other passages in this symphony, such as the *Finale* which has several b', [measures 266-269] that would no doubt encourage modern trombonists to use the alto trombone more often.\(^{55}\) Berlioz recommends the use of the alto trombone and laments its disappearance from French orchestras.\(^{56}\)

It is interesting to note the bass trombone's solo-like passages in the second movement of the same symphony. [See example 8] Especially interesting is the passage at two and six measures before E in which the bass moves in eighth notes against the quarter notes in the woodwinds. Passages such as these help to explain Gaßner's comment about the bass trombone:

> **Als Solo-Concertinstrument verwendet man gewöhnlich die Baßposaune.**\(^ {57}\) Unfortunately he does not elaborate on the comment, nor does he present any musical examples.

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\(^{55}\)The *Finale* has several that call for b’, measures 266-269, for example.

\(^{56}\)Berlioz/ Strauss, *Grand traité*, p.298.

\(^{57}\)Gaßner, *Partiturkenntniß*, p.33. One customarily uses the bass trombone as a concerto instrument.
Example 8

Schubert

*Symphony Number 9*

Movement 2
Example 8, continued

Schubert
Symphony Number 9
Movement 2
Gaßner has much more to say about the trombone family. He states that the bass trombone is often used without the tenor and alto and that it is often used to reinforce the bassline. He cites a passage from Robert le Diable in which the bass trombone part is marked Trombone Basso col Violona.

Before his chapter on instrumental effect, Gaßner goes on to discuss several instruments that are not traditionally part of the orchestra such as the post horn and other military instruments. These instruments do not fall within the scope of this study which has concentrated only on the traditional orchestral instruments.

We have seen that Gaßner's Partiturkenntnis aptly demonstrates the progress made in orchestration treatises during the first half of the nineteenth century. Ten years passed between the appearance of Sundelin's Die Instrumentierung and this treatise, and in that relatively short time this form of musical instruction apparently became increasingly popular, as witnessed by the increased number of such publications. Gaßner's Partiturkenntnis is significant because it gave instructions and examples of how to use instruments accompanimentally as well as melodically. Other notable features of this treatise include Gaßner's analogy of instruments to the human voice and descriptions of tone qualities of various instruments. But perhaps most important is Gaßner's use of musical examples to elucidate the manner in which stronger instruments should not overpower softer and

\[56\text{Ibid.}, \ p.32\]
weaker sounding instruments, unless, of course, a special effect is desired. Whereas Berlioz's *Grand traité* is perhaps more sophisticated than the *Partiturenkenntnisse*, it is by no means more informative. Rather, as shown in this chapter, Gaßner made a few astute observations that even Berlioz missed.
Chapter V

INSTRUMENTAL EFFECT:
ITS MEANING TO THE COMPOSER AND PERFORMER

In the course of my examination of early orchestration treatises I discovered that most authors usually concurred on the technical capabilities and physical descriptions of various instruments. While the books evolved into the type of orchestration treatise we know today, they naturally became more detailed and comprehensive. Gaßner’s Partiturkenntnis fit comfortably into the evolutionary path on all accounts except one: the subject of instrumental combination. The remarkable feature of this treatise, unlike the others from its period, is its focus on instruction in instrumental combination rather than on physical descriptions alone. In the very beginning of the instrumentation portion of the Partiturkenntnis, Gaßner refers to instrumental effects; from the preliminary description of the string instruments to the concluding paragraphs about the winds Gaßner includes several suggestions for effective combinations. Also, for most suggestions he has included orchestral excerpts as illustrations.

In addition, Gaßner devotes a full thirty pages to a separate chapter entitled Instrumentaleffekt. This concept is quite progressive for its time; not even Berlioz devoted a particular chapter to this subject. But what exactly is meant by instrumental effect? It appears that Gaßner had no word for orchestration as we know it today and thus was forced to invent a phrase that adequately expressed it; thus the phrase Instrumentaleffekt.
The *New Harvard Dictionary of Music* defines orchestration in the following manner:

The art of employing instruments in various combinations, most notably the orchestra. Orchestration includes the concept of instrumentation—the study of the properties and capabilities of individual instruments...¹

According to the standards set by this definition Gaßner's Chapters 1-17 supply instruction in instrumentation as well as orchestration, while Chapter 18 focuses on instruction in orchestration alone.

Of course, orchestrational skills can be gleaned from a book and improved by a talented composer, but the gift for orchestration is innate and no amount of discussion or printed instruction will bestow this skill upon the uncreative composer. What I hope to present in this chapter is a clear exegesis of what Gaßner feels are some of the most effective instrumental effects, and how these effects manifest themselves in early nineteenth-century symphonic literature.

The first thing Gaßner does is display the nature of the instrumental interrelationships in large charts, not unlike those which Francœur includes in his *Diapason*. Each family of instruments has a chart that clearly juxtaposes chromatic scales of the ranges of the individual instruments

within each family: woodwinds, brass, strings and voice. There are also two charts included for the benefit of the copyist who must know how to fit individual instruments in the proper ranges. However, such tables do not constitute advice on instrumentation.

It must be remembered that any study of orchestration will be unsuccessful if the individual characteristics of the instruments are overlooked or slighted, so the composer must learn about the individual instruments before learning about combining them. For that reason Gaßner thoroughly explained the executive capabilities of the instruments in the opening chapters.

\footnote{Gaßner explains that since limited space did not permit all instruments to be listed, the reader should proceed from the main instrument of the family. For example, since the English horn sounds a fifth lower than the oboe, the reader is instructed to count down from the oboe's low c to f. This pitch is indicated by a cross under the corresponding f in the bassoon line.}
Concertirt ein Instrument mit andern, so sind die Ideen so zu bringen, das der Contrast der Tonfarben der abwechselnden Instrumente recht bemerkbar wird. Um nun die bisher benannten Rücksichten, den Charakter und die Eigenthümlichkeit der verscheiden Instrument betreffend, nehmen zu können, ist unumgänglich nöthig, auch den mechanischen Theil derselben möglich genau zu kennen. Je großer die Vertrautheit des Componisten mit denselben ist, um so richtiger, zweckmäßiger und effektvoller wird er zu schreiben im Stande sein.³

When instruments sound together, ideas must be presented so that the contrasting tone colors of the alternating instruments are perceptible. In order to be able to take up the considerations already alluded to, concerning the character and idiosyncrasies of the different instruments, it is absolutely necessary to familiarize oneself as much as possible with the mechanics of the instruments. The better the familiarity that the composer has with them the better he will be able to compose purposefully and effectively.

Gaßner continues by acknowledging that each instrument has idiosyncrasies and the student must be cognizant of them:

³Gaßner, p.89.
Each musical instrument appears in different guises and demands individual treatment from the instrumentalist as well as the composer. It will never deny its specific character, depending on the surroundings it is in, or on its actually designated sphere of activity. Given its distinguishing characteristics, it will stand out, sometimes more sometimes less.

Having finished his preliminary remarks, Gaßner proceeds to analyze several families of instruments in terms of their effectiveness. One of the most interesting passages sets up the voice as the backdrop against which to gauge the musical euphony of orchestral instruments. Perhaps the reason that the human voice appeals to us is its status as the most natural of all instruments, as the instrument with which everyone has at least some familiarity; and as I stated earlier, it was most unusual to find the voice included in German orchestral discussions.

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4 Ibid., p.88.
Mit den verschiedenen Singstimmen correspondiren und contrastiren die Instrumente... Die Ähnlichkeit in der Tonfarbe jedoch ist schon sehr schwer zu bestimmen! Im Allgemeinen sind mit der Sopran oder Altstimme Flöte, Hoboe, Clarinette und Violine, mit Tenor- und Baßstimme aber Horn, Fagott und Violoncell ähnlich, so ferne sie weder für die eine zu hoch, noch für die andere zu tief sind.5

The instruments correspond and contrast with the different singing voices. The similarity with the tone colors is certainly very difficult to define! In general the flute, oboe, clarinet 6 and violin resemble the soprano or alto voice, and the horn, bassoon and cello resemble the tenor and bass voice, so far as they are neither too high for one, nor too low for the other.

What is truly surprising is Gaßner's selection of the voice as the most beautiful instrument:

5 Ibid., p.89
6 Gaßner refers to the new clarinet by Ivan Müller, which can play in all key signatures and therefore allows the clarinetist to perform orchestral music on one clarinet. See Gaßner, p.99, for a detailed description of this instrument.

The most interesting musical instrument whose tones are the most directly appealing to us, is without doubt the human voice. The natural charm and attractiveness of musical instruments appear to stand in relation to their tone's resemblance to the human voice- it goes without saying a clear, pleasant-sounding voice. Although the human voice, as a natural phenomenon, doesn't normally count as an instrument but is rather distinct from artificially invented tone producing instruments; still we will consider it indeed as an instrument.

7 Ibid. , p.80  
8 Ibid. , p. 80n.
Included is an excerpt from Haydn's *Die Schöpfung* to demonstrate how the voice fits in with the orchestra, as well as a choral work by Graun. ¹⁰

There is a distinct stylistic change between the chapters on the families of instruments and this chapter. Here we find an abundance of adjectives that focus on clarity and beauty of tone, and color and strength of character. Although musicians of previous generations were concerned with these qualities, they did not so eloquently express them! When it comes to the woodwinds Gaßner attempts to express the intangibility of sounds with a profusion of adjectives. Note the following description of the fife where the text becomes a little melodramatic:

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¹⁰ The composer’s first name was not given. Perhaps this piece is by Johann Gottlieb or Karl Heinrich Graun.
Die Pfeife, wohl eines der ältesten Instruments, hat gewöhnlich einen leichten, dünnen Ton, der zu stark angegeben, schneidend wird, und dann heftig, leidenschaftliche Zustand anzugeben fähig ist, außerdem aber die Phantasie mehr auf leichten Sinn und harmloses Spiel hinführt. In langgezogenen Noten, mit der feierlichen Pauke oder dumpfen Trommel verbunden, tönt sie wie Klaggesang und erweckt Trauerempfindungen. Sie hat nur den geringen Umfang des hohen Sopran. Allein thut sie wenig Wirkung, nur in Verbindung mit anderen tieferen und volltönenden Instrumenten kann die bisweilen mit Effekt gebraucht werden, besonders in der romantischen Musik.¹¹

The fife, one of the oldest instruments, usually has a light, thin tone, which if applied too intensely becomes piercing and can then produce violent, passionate conditions; besides, the imagination tends more [to expect] a lighter and more harmless manner of playing. When brought together with the timpani or muffled drum in long drawn-out notes, it sounds like a lamentation and arouses feelings of sorrow. It possesses only the limited range of the high soprano. Alone, it is ineffectual; only together with other low and full sounding instruments can it occasionally be used effectively, particularly in Romantic music.

¹¹Gaßner, Partituranntn, p. 82.
Not only does this passage demonstrate that Gaßner was concerned with music's affective capabilities, but more importantly it also reveals Gaßner's musical creativity. I know of no nineteenth-century orchestral passage that calls for just piccolo and timpani, but had the combination been properly used it would certainly have produced a dramatic effect.  

It is not a great surprise that Gaßner also pairs the trumpet with the timpani because the ancestors of these instruments had been used in combination for centuries. Military bands were quite popular in the German speaking lands at that time and Gaßner even devotes several small units to the instruments that were used in these bands.

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12 A twentieth century example of this combination appears in Orff's Carmina Burana.
Die Trompete ... ist eigentlich ein acht kriegerisches Instrument. Uebrigens wird sie wirksam gebraucht, die festliche Pracht, den blendenden Glanz der Musik zu erhöhen, und verbindet sich dazu sehr glücklich mit den feierlichen Pauken. 13

The trumpet ... is actually a genuine instrument of war. Furthermore it is effectively used to enhance the festive splendor and brilliant luster of the music, and combines extremely well with the solemn timpani.

A passage that immediately comes to mind is the Tuba Mirum from Berlioz's Requiem in which the brass and timpani predominate. The popularity of this combination is still strong as shown by the Fanfare de La Peri by Dukas. This majestic brass and timpani fanfare still excites audiences seventy years after its completion.

What is it about this combination that stirs the listener? It is easy to understand how a drum can be effective in this manner because the reverberations can interrupt a person's calm state. But the brass instruments are another matter, because their reverberations are not strong enough to be consciously felt by the listener. It must be their concentrated, energetic sound that allows them to be so effective. The timpani and brass work well together for two reasons. First, because of its assertive, full tone, each instrument retains its unique sound quality. Obviously if a trumpet were paired with a flute or violin for instance, the chances of the second

13 Ibid., p 85.
instrument loosing its individuality are great indeed. Secondly, the tone
good quality of the brass and the tone quality of the timpani do not actually blend
and form a new tone, because they are so strikingly different. The ear then
is left to simultaneously synthesize two very different tone qualities. This
could be the reason why this combination has such an unsettling effect on
the listener.

Later Gaßner states that the horn, trumpet and trombone do not
present that same differences in tone color as do the flute, oboe and
bassoon.¹⁴ The reason for this is that the horn, trumpet and trombone are all
made of brass and no matter how distinct the shapes of these instruments
may be, their tone production will be similar. However the woodwinds have
individual tone qualities because they are made of various materials. The
flute's metal (nickel, silver, gold) gives it a cooler sound than that of the
oboe, bassoon and clarinet. The presence of the double reed makes for a
sound different than the single reed. So the composer has much more
flexibility when dealing with the woodwinds.

The discussion of the flute family continues. Gaßner discourses on the
different types of flute ¹⁵, namely the Hirtentöne (Syrinx), which he says
resembles the Papagenopfeife; the Querflöte, the German flute, and the
piccolo; he proposes a few settings in which the flute would be appropriate:

¹⁴ Ibid., p.126.
¹⁵ Ibid., p.82. Gaßner states that the names for flutes and fifes are often interchanged.
Zum Ausdruck heuerer Ruhe oder scherzenden Spiels und süßer Zartlichkeit eignet sich die Flöte vorzüglich; sie kann auch sanft ruhend klagen; aber zum heftigen Affekt, zur wilden Leidenschaft sollte sie nicht verwendet werden; denn sie hat gleichsam einen weiblichen oder doch jugendlichen Character, und diesem steht der Ausdruck tosender Gemuthsbewegungen übel an. Bei Blasinstrumenten wird uns diese Heftigkeit und Wildheit vermutlich auch darum wildriger, als bei der andern Instrumenten, weil der Musiker, um diesen Ausdruck hervorzubringen, selbst in Innersten eine gewisse Heftigkeit annehmen und seine Lunge in eine gewaltsame Bewegung setzen muß, während Saiteninstrumente nicht in dem Grade den ganzen innern Organismus anzugreifen scheinen.16

The flute is particularly suitable for expression of serene peace and sweet tenderness. It can also lament movingly and gently. However, for a violent emotional state or wild passion it should not be applied, because it has simultaneously a feminine and yet youthful character and this is not compatible with expression of stormy agitation. This violence and wildness of the wind instruments will seem even more unpleasant to us than it does with other instruments because the musician himself has to apply a certain force in order to set his lung in a powerful motion, whereas the string instruments do not require that the entire organism be involved to the same degree.

16 Ibid., p.83.
Gaßner cites another passage from Haydn's *Die Schöpfung*, this one calling for three flutes to play simultaneously. 17 Although the excerpt is only three measures long, we can see how the flute can sound sweet as described above.

It is nearly impossible for words to express the timbre and effects of instruments to students who do not possess an innate, basic understanding of them. To bring this subject a little closer to his students Gaßner interprets tone color literally and figuratively in the following passage. The analogy can perhaps help the music student to move from the painting, where he can actually see colors and shapes, into the intangible world of musical sound, where color is heard. The passage concludes with a reference to the senses, since it is their stimulation that is the ultimate goal of a composition, at least according to what was in Gaßner's day the aesthetic commonplace.

Tiefer eindringend, inniger als der Flotenton, ist der Ton der Clarinette und Hoboe. Beide bringen gleichsam ein noch lebhafteres, reizenderes Colorit in die musikalische Darstellung, als die Flöte. Beide Instrumente sind durch ihren vollen, hohen, schwebenden Ton geeignet, interessante Melodien hervorzuheben, oder gewisse Accordes, vorzüglich in schönen Bindungen, klar und innig fühlbar zu machen. Die Verschwendung dieser, so wie der meisten Blasinstrumente, dass aber in der Musik eine ähnliche Wirkung, als die zu große Haufung und das zu starke Auftragen vieler abstechender Farben in einem Gemälde. Die Sinne werden dadurch wohl gereizt, aber die Phantasie wird beschränkt, die schöne Form verdeckt oder verdunkelt. 18

The tone of the clarinet and oboe are much deeper, penetrating and intimate than that of the flute. Both are capable of bringing a much more lively and charming coloring to the musical presentation than the flute. Both instruments are characterized by a full, clear floating tone, for bringing out interesting melodies or for making chords clear. Above all, they are deeply felt in combination. But the overuse of these, as with most wind instruments, produces an effect that is similar to the over-accumulation of overly contrasted colors in a painting. The senses will thereby be stimulated but the imagination restricted and the beauty of the form hidden or darkened.

18 Ibid., p 34.
Regarding the bassethorn, Gaßner states that it is very similar to the clarinet but does not expound upon the description of its form as he did in previous chapters. Considering the following passage in conjunction with those made earlier about its orchestral participation, it seems likely that Gaßner correctly identified the bassethorn, but not the krumhorn or alto clarinet.

...Biß jeßt ist es in allen bekannten Compositionen, selbst wenn es doppelt geseßt wurde, wie z.B. in Mozart's Requiem, nur als besonders effektuierendes Soloinstrument, nicht aber im Ensemble als nur die Harmonie verstäkende Ripienstimme erscheinen. ...  

...Up to now it has appeared in all renown compositions (even if it is doubled, like, for example in Mozart's Requiem) only for special effect as a solo instrument, but not in an ensemble even as a ripieno instrument to strengthen the harmony...

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19 Ibid., p 100. Gaßner mentions that some orchestras do not have three oboists or three clarinetists, and the English horn and basset horn parts must be covered by whatever oboist or clarinetist is in the orchestra. This confirms that at least on some occasions there were more than two performers of each instrument in the orchestra.  
20 Gaßner, pp. 84-85.
Gaßner urges the composer to remember that the woodwinds have individual character and concludes with the bassoon, contrabassoon, serpent and ophicleide which are "to the woodwinds what the cello and bass are to the strings." This is not as much a reflection of their tone quality as of the relationship between soprano and bass instruments. Gaßner does not mean that the bassoon should assume the role of the bass line because he hopes that the bassoon can be used for melodic passages and frequently refers to it:

"As a solo instrument it follows the melody alone or plays with another part: the voice, flute, oboe, clarinet or horn, or also in unison with the violin, viola, or bass..." 22

When the bassoon plays a melody with one or more of the winds cited above, its rich, warm tone enhances the tones of the other instruments. Schubert was very much aware of the beauty of this instrument and frequently used it to play the melody instead of confining it to bass lines. Mozart often doubled the violin and bassoon at the octave; such as in "Se a caso madama la notte" from Le Nozze di Figaro. Although Gaßner was not an accomplished composer himself, he was able to see how effective many 'new' instrumental combinations could be and passed these ideas on to students.

As noted earlier, it appears that many people had much to recommend about the horn. Although Gaßner's comments are not nearly as lengthy as

\[21\text{Ibid.}, \ p.85. \ . . \ . \text{da sie unter den Blasinstrumenten das sind, was Violoncello und}\]
those of others, what he does say is remarkable. Aware of the versatility of the horn, he credits it with having a sweet, vocal quality. In spite of his earlier assertion that it is a portrays an aggressive, biting passage very well, too. Moreover, Berlioz is often credited with pioneering the use of stopped horn tones but Gaßner mentions them in 1838, six years before Berlioz's *Grand traité*:

Diese dankbarste, vollständigste der Blechinstrumente ist auch in dem Orchester das wichtigste, am meisten gebrauchte. Es eignet sich durch seinen sanften, der menschlichen Stimme und dem Fagott ähnlichen, lebhafter aber übertreffenden Tone, zum Vortrage das Gemüt hief ergreifender Gesangstellen und ist auch unter geschickten Händen (und Lippen) bei zweckmäßigen Saße ein gutes Concertinstrument. 23

This most worthwhile, most integral of the brass instruments is also the most important in the orchestra, and the most used. It is characterized by its gentle, vocal tone which resembles but excels that of the bassoon; in the execution of a stirring passage it's tone will overcome those of the bassoon, and it is also a good solo concert instrument in the appropriate passage if controlled by a skillful hand and lip.

22 Ibid. p. 25.
23 Ibid. p. 27.
Seltener und gewöhnlich nur in **forte** werden die gestopsten Töne geschieben, weil sie im **piano** stumpf, mattsähnlich werden können; stark aber nur forciert hervorgebracht werden können, sich also hauptsächlich nur für starke Stellen eignen.  

Seldom, and usually in a **forte**, stopped tones will be written, because they sound dull and weak in a **piano**, and can only be well brought out by forcing, so that they are employed principally in loud passages.

These stopped tones should not be confused with the tones that are somewhat muffled by the hand when played on a natural horn. Rather, they produce a more brassy and biting tone, as composers such as Berlioz, Wagner and Tchaikovsky would soon discover.

It is not my intention to include all of the useful bits of information that Gaßner has about the horn and other instruments. However, one final observation must be made before leaving the horn discussion. Because the valve horns had not yet secured a place in the orchestra at that time, Gaßner refers to natural horns which came in various sizes and pitches. He was so concerned with the tone quality of the horn when used as a solo instrument that he recommended which horn to use for solo passages:

\[24 \text{Ibid.}, \text{p. 29.}\]
Die hohen C-Hörner sind, wie alle höheren Horngattungen, zu grell, die tiefen C-Hörner zu tief für bedeutendere Solis. Eben so G, As und A Horn. 25

The higher C horns are, like all higher pitched horns, too brilliant and the lower C horn is too dark for important solos. So there are the G, A-flat and A horns.

It is true that the C-horns are not conducive to solo playing because the majority of the partials that speak the easiest are either too high or too low for the hornist and quickly tire him. The natural A and A-flat horns are much easier to play than the C horns, but the G and F are even easier and many modern performers of early music resort to these instruments instead.

Regarding the brass instruments in general, when "combined they make an impressive result. If used with caution, one can bring about a magnificent contrast and can gradually increase the strength to the utmost." 26 However, this is not to say that the more instruments combined the better. As Gaßner astutely points out:

Betrachten wir die Kraft, welche in vielen alteren Werken von Handel, Gluck, Graun, Mozart, Haydn, u. bei oft ganz geringen Effectmitteln (Stimmen oder Instrumenten) liegt, und blicken wir auf die Anhäufung von Instrumenten in vielen neueren Partituren, ohne daß wir nur dieselbe, viel weniger eine große Wirkung als bei der berührten kleineren Besetzung finden, so haben wir den Beweis, daß die Kraft und Wirkung in den Gedanken-in der musikalischen Idee- und richtiger zweckmäßiger Benützung, nicht aber in der Quantität der Effektmittel liegt. Vergleichen wir z.B. das erste Finale von Mozart's Don Juan (ohne vier Horner, drei Posaunen, Ophiclyde, große und kleine Trommel, u.) mit manchen neueren Opernfinalen, welche äußerst stark beseit sind, ob der Effekt nur derselbe, viel weniger größer ist?27

If we examine the skill which lies in many old works by Handel, Gluck, Graun, Mozart, and Haydn who often had very small forces (voice or instrumental), and then we glance at the accumulation of instruments in many new scores and find a better result in the corresponding smaller settings, then we have proof that the strength and effect lie in the conception-in the musical idea—and correct practical use and not in the quantity of the forces. We need only compare, for example the first finale from Mozart's Don Giovanni (without four horns, three trombones, ophicleide, various drums, et cetera) with many newer opera finales which are set more forcefully, and ask whether the effect of the latter is indeed less great.

Gaßner is not opposed to experimentation in orchestration, since experimentation has propelled music through its different periods! He simply urges composers to consider instrumental effects while composing.

Unter unpassender Zusammenstellung ist jedoch nicht gerade die Vereinigung solcher Instrumente zu verstehen, welche eine heterogene Wirkung machen, wie etwa: Piccolo, Contrabaß und Guitarre u. dergl. m., denn es wäre wohl möglich, daß man gerade durch eine solch Zusammenstellung eine bizarre Wirkung beabsichtigte, und solglich [sic] auch seine Idee darnach einrichten wurde; sondern jene, wo ein Instrument, welches nach der Absicht des Componisten untergeordnet erscheinen, sollte, durch seine Tonqualität ein anderes (von welchem man beabsichtig, die Hauptidee ausgeben zu lassen) verdunkelte. 28

The combination of some instruments, to make a heterogeneous effect, such as the piccolo, contrabass and guitar, et cetera, cannot be understood as an unsuitable combination because it could well be possible that by virtue of such a combination for which the composer intended a bizarre effect, he for which he contrived an appropriate idea. Rather, an unsuitable combination results where an instrument is intended to be subordinate but by virtue of its tonal quality obscures another (which was intended to bring out the main idea.)

28 Ibid., p. 91.
28 Ibid., p. 91.
The most interesting passage in this treatise is that which shows how instruments from different families of instruments work together. He employs a series of different settings of the same melody, each setting calling for a completely different group of instruments. [See example 9] These excerpts demonstrate several points, including that certain keys are more idiomatic than others for different instruments; for example, trombonists can easily play in the key of E-flat. In excerpt 114b we can also see how the clarinet and oboe will be more effective than the flute when combined with brass instruments; in this excerpt, if the flute alone had been used in measures 2-3 or 6-8 the melody would not be heard over the brass. However, excerpt 114bb includes the flute with the clarinet and oboe for the same measures; this time the flute makes a contribution to the overall sound because it adds a slight shimmer above the clarinet and oboe sound.

In Excerpt 115a we have the same melody in a powerful brass setting, while 115b is a gentler setting for strings, showing that a composition can have more than one effective result depending on the instruments selected.

Although Gassner does not describe each setting, he does state that the many combinations are possible and the composer must make a choice. What must be considered are the size of the ensemble, and whether or not different families of instruments will be juxtaposed. 29 No specific suggestions for combinations are given in the written portion of the treatise. But he does state that contrary to the string or woodwind instruments, the

Example 9

Gaßner
Excerpt 114a
Example 9, continued

Gaßner
Excerpt 114a
Example 9, continued

Gaßner
Excerpt 114b

No. 114.b
Example 9, continued

Gaßner
Excerpt 114b
Example 9, continued

Gaßner
Excerpt 114b
Example 9, continued

Gaßner
Excerpt 114b
Example 9, continued

Gaßner
Excerpt 114bb

Andante.
Flauto
terzo.

No. 114 bb.
Example 9, continued

Gaßner
Excerpt 114bb
Example 9, continued

Gaßner
Excerpt 114bb
Example 9, continued

Gaßner
Excerpt 114bb
Example 9, continued

Gaßner
Excerpt 115a

Andante.
Es
Flügelhorn.
B.
Flügelhorn.
As
Posthorn.
Clarino Es.
Clarino Es.
Clarino Es.
Corui Es.
Trombone Alto.
Tromboni 2 & 3.
Ophicleide.
Example 9, continued

Gaßner
Excerpt 115a
Example 9, continued

Gaßner
Excerpt 115a
Example 9, continued

Gaßner
Excerpt 115a
Example 9, continued

Gaßner
Excerpt 115a
Example 9, continued

Gaßner
Excerpt 115a
Example 9, continued

Gaßner
Excerpt 115b
Example 9, continued

Gaßner

Excerpt 115b
Example 9, continued

Gaßner
Excerpt 115b
Example 9, continued

Gaßner
Excerpt 115b
individual brass instruments do not present striking differences in tone color and one must keep that in mind when composing.\textsuperscript{30}

No one is capable of analyzing all of the possible instrumental combinations and teaching their effects to students. That is not Gaßner's, Berlioz's or any one else's intention. Rather, the examination of a few can help the young composer better to understand that each combination produces a certain effect which must be considered along with the melody, harmony, and form of each piece. Gaßner's comments merely verbalize established practices easily found in orchestral, operatic and chamber music from all periods.

\textsuperscript{30}Ibid., p. 126.
CONCLUSION

In response to the late eighteenth century's developments in the art of orchestration, several books that offered instruction on that subject began to appear in the last decade of the eighteenth century. Although the early treatises were not much more than expanded tutors, by the first decades of the nineteenth century several full-fledged orchestration treatises became available. The works of Sundelin, Gaßner, Kastner, Berlioz and others supplied information about orchestration as well as common musical practices of the time. While it is true that the Berlioz *Grand traité d'instrumentation* overshadowed the work done by Sundelin, Kastner, Gaßner, Fröhlich, Francœur and others, these latter works must have been somewhat successful in their own right since many were widely circulated.

Sundelin's *Instrumentierung für Samtlliche Militar Musik* was perhaps the first to discuss the newly invented valve instruments, and it is likely that his *Instrumentierung für das Orchester* was the first treatise to comment on instrumental combinations. Although his two volumes were not comprehensive, they represented the transition between instrumental tutors and orchestrational instruction books. Young composers can also find a great deal of instruction about instrumental spacing in Sundelin's *Instrumentierung für das Orchester*. In numerous passages he gives specific advice on how to place certain instruments in the harmony, and demonstrates it through musical examples.
Gaßner's *Partiturkenntniß*, which appeared in Karlsruhe ten years after Sundelin's treatises had in Berlin, was a thorough examination of the instruments popular at that time, including the voice. The remarkable aspect of this work is that it treated orchestration as a separate subject, unlike its predecessors which forced their readers to infer information about orchestration from the technical descriptions of the instruments. By discussing effective instrumental combinations, Gaßner established the prototype of the modern orchestration treatise. With the exception of Sundelin's *Die Instrumentierung für das Orchester*, no other treatise of that transitional period discussed instrumental combinations, and Gaßner's *Partiturkenntniß* was the first to discuss their effects. An extensive written discussion constitutes the first volume of *Partiturkenntniß*, while the entire second volume is devoted to musical examples that range from Haydn to Meyerbeer. These features allow us to designate Gaßner's *Partiturkenntniß* as the first true orchestration treatise. In addition to information about orchestration, the author explains how the copyist should present music, and even lists other books that teach musicians how to play.

Any modern musician can learn much from all of these works for they are quite extensive in explaining the technique of various instruments, performance practice, and orchestration; Berlioz even discussed seating and conducting. One of the most important types of information that can be gathered from these treatises regards orchestral numbers. For example, this information, in conjunction with personnel rosters from various nineteenth century European cities, supports the notion that the woodwind parts were frequently played by more than one person. We can
conclude that the woodwinds then played an even more prominent role in the orchestra than they do today.

In conclusion, although Berlioz is often regarded as the pioneer in writing specifically on orchestration, there were several musicians who wrote eloquently on this topic before him. The serious composition student would be wise to consult not only Berlioz's *Grand traité*, but also Sundelin's *Die Instrumentierung für das Orchester* and Gaßner's *Partiturkenntnisse*. These works were critical stepping stones on the path to the modern orchestration treatise. Sundelin's *Die Instrumentierung* can be noted as probably being the first to discuss instrumental combinations. Gaßner's *Partiturkenntnisse* was the first extensively to discuss instrumental combinations and the first to discuss their effectiveness, thus establishing the genre of the orchestration treatise that is familiar to us today, and whose contemporary representatives are the texts by Piston, Kennan, Adler and Read.
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