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The Aesthetic and Technical Treatment of the Clarinet in Selected Nineteenth-Century French Orchestration Treatises

by

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Dedicated to

Bill and Linda Brannen
whose artistry has allowed me to explore instrumental
color and expression with joy.
ABSTRACT

This thesis investigates the specific treatment of the clarinet family in selected nineteenth-century treatises that were written in Paris, or were influenced by their author’s experience in Paris. Four works by Georges Kastner, Hector Berlioz, and François Gevaert have been selected. These influential treatises were written and revised between the years 1836 and 1885. The primary purpose of these treatises was to serve as instruction manuals for students of musical composition. Demonstrating a strong unity in information they also diverge on various points, reflecting the changing state of instrument manufacture, performance abilities and aesthetic requirements demanded by composers.
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INTRODUCTION

The purpose of any orchestration treatise is to provide information for students of musical composition to aid them in the correct use of the various instruments incorporated in a musical ensemble. The need for such instruction manuals became evident when institutions devoted to the study of music were established. Due to the ever-changing state of instrument manufacture, a number of these treatises have been created. The focus of this thesis is to investigate the specific treatment of the clarinet family in selected nineteenth-century treatises that were either written as instruction manuals for Parisian schools or were influenced by their author's experience in Paris.

Four such works by Georges Kastner, Hector Berlioz, and François-Auguste Gevaert have been selected. These highly visible and influential works appeared from 1836 to 1885. Demonstrating a strong unity in information, they also diverge on various points, reflecting the changing state of instrument manufacture, performance abilities, and aesthetic requirements demanded by the musical consumer.

Paris was the center of musical activity in Europe shortly after the French revolution. The establishment of the Paris Conservatoire in 1795

helped to solidify Parisian dominance in all areas of musical influence. All roads led to Paris—either for composers seeking to have their works performed; virtuosos struggling to establish their careers; performers seeking instruction or employment in the numerous operatic, dramatic, concert-giving or teaching institutions; inventors seeking acceptance of their latest device; and manufacturers wishing to flourish in a densely populated musical community. Travel was expedited, commerce flourished and music became more accessible to every person. The geographical situation of the art was no longer limited to the local environs and the printing industry encouraged composition and performance.

Throughout the preceding eras, music was designed for specific performers or available resources. However, with the increase of public consumption in the early nineteenth century, there came a greater demand for professional performers. The capabilities of the clarinet needed defining since it was the newest established member of the orchestra and had become the backbone of the military band.

Owing to the influences of such educational devices as these treatises, the art of composing for these instruments—the woodwinds in particular—became a preoccupation of the French. There was a "French manner of perceiving sound, originally deriving from the qualities of the singing voice."2 The performer was no longer the "virtuoso" in the deprecatory sense: technique was no longer the sole factor in performance—it went hand in hand with interpretive skill. "The true virtuoso seemed to be rather a magician than an acrobat."3

3. Ibid., 148.
In Paris, composers, performers, and instrument manufacturers worked together to shape the musical world. This thesis will explore the history of these collaborations and how these treatises reflect the different compositional issues that arose from the various developments of the clarinet and in clarinet playing.
CHAPTER ONE
THE CLARINET IN PARIS, 1791-1836

In 1791 Mozart completed his Clarinet Concerto, K. 622, a work that represents the summit of the technical and lyrical abilities of the five-keyed clarinet that had developed over the course of the eighteenth century. In the same year, Jean-Xavier Lefèvre, a Parisian virtuoso, added a sixth key for c-sharp'/g-sharp". This eliminated one of the worst cross-fingerings on the instrument and allowed the clarinetist to play with greater ease in the written major keys of D, A, E-flat, and A-flat.²

Lefèvre was a prominent performer in Paris, holding positions at the Opéra and in the Concerts spirituels, where he took part in the first performances of important works by André Ernest Modeste Grétry, François Joseph Gossec, and others.³ He later served as first clarinetist of Napoleon's court orchestra.⁴ His eminence in the Parisian musical scene was further enhanced when, in 1795, he began teaching at the newly-

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1. Oskar Kroll, The Clarinet, rev. Diethard Richm, trans. Hilda Morris, ed. Anthony Baines (New York: Taplinger, 1968), 22, states that at least one six-key instrument is known to have been made before that of Lefèvre. It is mentioned in Diderot and d'Alembert's Encyclopédie of 1751-1780, but no details of its construction are given. Pamela Weston, Clarinet Virtuosi of the Past (Corby: Fentone Music, 1994), 59, notes that several other French makers added the same c-sharp'/g-sharp" key at nearly the same time as Lefèvre.

2. The relative minors of these keys, especially b and f-sharp, would still have remained difficult, since the mechanism was not yet in place to provide all of the necessary altered scale degrees.


4. Ibid., 64.
founded Conservatoire, where there were nineteen professors charged with teaching a total of 104 clarinet students. The instructors were ranked by class, and Lefèvre, along with Charles Duvernoy and Frédéric Blasius, was among those of the first class. Aided, no doubt, by Lefèvre's prominent position as performer and teacher, the usefulness of the c-sharp'/g-sharp" key was soon recognized and it was quickly adopted as the standard instrument among French performers.

In post-revolutionary France, the use of the clarinet was spreading rapidly. One of the early missions of the Conservatoire was the training of amateurs for general music making both at home and in public. The clarinet was a favorite instrument among amateurs, who valued its wide and flexible range, its low price, and the ease with which it could be learned and played. The proliferation of military bands in the Napoleonic era also helped to increase the demand for proficient performers, with up to twenty clarinetists needed for each of the fifty regimental bands in Napoleon's grande armée. The clarinet was thus so quickly established as a fixture of French musical life that its use among professional orchestras

5. Ibid., 61.

6. In 1801, Lefèvre wrote a widely used clarinet method book expressly for the six-key clarinet.


soon moved beyond the music written expressly for it, prompting one German observer to note in 1803 that

[among the wind instruments, the clarinet is...the favorite of the French and that to such a degree that in symphonies and concertos where the clarinet is not expressly specified, they make it take over the oboe parts.]

Despite Lefèvre's innovation, clarinetists still had difficulties in playing in the more extreme keys since most chromatic notes were still produced by cross fingerings. Manufacturers offered multiple solutions to this problem. The oldest of these solutions was to simply build transposing instruments in a variety of keys (usually in A, B-flat, B, and C) so that the player or composer could select the instrument that would play best in any given sounding key. A newer innovation was the pièce de rechange, which seems to have been particularly popular in France. In this method, rather than changing instruments, the player exchanged one of the clarinet's joints for another that would either lengthen or shorten the overall length of the tube and thus re-tune the fundamental pitch of the instrument. This allowed for the purchase of only two instruments, in C and B-flat, which, with their pièces de rechange, could be retuned to B and A respectively.

While this must have had extraordinary consequences for intonation—changing an entire joint, approximately half the instrument's overall

9. J. G. H. Backofen, Anweisung zur Clarinette [sic], 1803, quoted in Kroll, Clarinet, 49.


11. According to Weston, Clarinet Virtuosi, 61, Lefèvre himself used such a pair of instruments. Kroll, Clarinet, 29, asserts that the pièces de rechange could be used to retune a clarinet in B-flat to C and a clarinet in A to B-flat, although Nicholas Shackleton, The New Grove Dictionary of Music and Musicians (London: Macmillan, 1980), s. v. "Clarinet," has expressed doubt about the ability of pièces de rechange to transpose instruments a whole tone.
length, would drastically alter the relative placement of the tone holes—musicians of the day preferred this method to picking up and playing on cold instruments.

The establishment of the six-key fingering system and the *pièces de rechange* provided French clarinetists with instruments flexible enough to meet most of their needs, although there were still several difficult cross fingerings that produced notes of questionable value. In 1812, an attempt was made to erase these remaining problems when the Russian virtuoso and instrument designer Ivan Müller presented a clarinet with thirteen keys to a jury of professors from the Conservatoire that included such notables as Lefèvre, Eler, Frédérick Duvernoy, Étienne Nicolas Méhul, Luigi Cherubini, Gossec, Bernard Sarrette, and Charles-Simon Catel.12

Müller called his instrument a *clarinette omnitonique*, since its revolutionary design allowed for the use of all major and minor keys with relative ease.13 The design included keys for e/b', f-sharp/c-sharp", f/c", g-sharp/d-sharp", b-flat/f". b/f-sharp"," c-sharp'/g-sharp". e-flat'/b-flat". f'/c". g-sharp'. and a'. as well as a trill key for a'-b' and the register vent.14 The use of key mechanism for notes that had been previously covered by the player’s fingers (such as f/c") allowed Müller to move the tone holes for these notes away from the player’s central hand position and closer to their proper, scientifically discernable placement and size.

On earlier clarinets, holes covered by keys had been sealed by a felt or leather pad glued to the mechanism, a practice that was detrimental to the tone quality of the instrument because such pads rarely sealed the tone hole completely. With the vastly increased number of mechanically covered holes on Müller's clarinet, this situation posed a threat to the viability of the instrument. To solve the problem, Müller created an entirely new pad design of gut stuffed with wool. The wool stuffing gave the pad a convex shape and allowed it to fill the tone hole in a manner similar to the player's finger and provide a better, more reliable seal than previous designs, maintaining the integrity of the instrument's bore, and also softening the noise made by the opening and closing of the keys. Müller himself said of this innovation that

[i]n regard to the keys. I have invented a kind of elastic “ball” and, having used it for several years, I am convinced of its efficacy. There is no risk with these pads that either a moist or a dry atmosphere will make the keys unworkable; they close the holes effectively under all conditions and make no noise.\textsuperscript{15}

Despite the great technological advance represented in Müller's instrument, it was rejected by the jury and never officially adopted by the Conservatoire. The central argument against the new clarinet made by members of the jury—particularly the composers—was one of tone color.

Nos clarinettes, disaient-ils, par leurs différentes proportions produisent différentes caractères de sons; ainsi la clarinette en ut (la moins grande) a le son brillant et vif; la clarinette en si bemoll (plus grande que la précédente) est propre au genre pathétique et majestueux: la clarinette en la (la plus grande de toutes) est propre au genre pastoral. Il est incontestable que la nouvelle clarinette de M. Muller, si elle était exclusivement adoptée, priverait les compositeurs

\textsuperscript{15} From a letter quoted in Kroll, Clarinet, 27.
de la ressource que leur donne l'emploi de ces caractères très-distincts.

Our clarinets, they said, by their different proportions produce different tone characters: such that the clarinet in C (the smallest) has a brilliant and lively sound; the clarinet in B-flat (larger than the preceding) is appropriate for pathetic and majestic genres; the clarinet in A (the largest of all) is appropriate for the pastoral genre. It is incontestable that the new clarinet of Mr. Müller, if it were exclusively adopted, would deprive composers of the resource given in employing these quite distinctive characteristics.  

Other arguments were made against Müller's innovations as well. The wholesale adoption of a new and radically different fingering system would have created a number of difficulties for performers, teachers, and students. Lefèvre, perhaps the most influential member of the jury, felt that the drilling of more tone holes than was absolutely necessary would ruin the tone color of the instrument. It has also been speculated that Lefèvre perhaps felt a bit of jealous rivalry and thus rejected the instrument for less than professional reasons.

That Müller did not receive official recognition placed a major obstacle in his path, since such acceptance by an official body was at the time almost a necessity in France. Within a decade, though, the instrument had gained popularity in Germany and was even being used by some noted

16. From contemporary newspaper accounts quoted in Lavoix, Histoire, 120. Lavoix notes that the same argument continued to be made in favor of older instruments right down to his own time (1878).

17. Interestingly, twenty-five years later, French clarinetists quickly and eagerly took up Hyacinthe Klosé's designs. See below, Chapter 3.


19. Lavoix, Histoire, 120. This seems to be a not unreasonable assertion considering the prestige that Lefèvre gained from his own instrument designs and the fact that his family were proprietors of an instrument manufacturing firm.
French clarinetists of the post-Lefèvre generation, including G. B. Gambaro and Frédéric Berr. Müller himself, though, was the primary force in the recognition of his achievements. He traveled extensively throughout Europe where his performances earned him recognition as a brilliant soloist, and in 1825 he published a method book, in both French and German, written expressly for his clarinet.

Müller is also credited with two other important developments in contemporary clarinet playing. He was one of the first performers to play with the reed against the lower lip. This allowed the player's tongue to control the articulation—rather than using the glottis to control the flow of air—which must have caused a substantial change in the instrument's sound envelope. The placement of the reed below also darkens the overall timbre of the instrument and provides greater control and resonance in the chalumeau register. While some ease of control over the uppermost register was lost with this innovation, the highest notes can still be mastered and the benefits so far outweigh those of the older, reed-on-top method. That it eventually became the standard for clarinetists around the world. Müller also developed the metal ligature tightened by screws in 1817.

20. Rendall, Clarinet, 95. According to Weston in Clarinet Virtuosi, 156. Gambaro's playing on such an instrument at the Théâtre italien “created a sensation” in 1816. Berr was an influential performer and teacher whose most famous student was Klosé.


23. The practice of playing with the reed against the upper lip persisted for some years after Müller. Shackleton, “Clarinet,” states that the Paris Conservatoire did not officially change to Müller's method until 1831, and Kroll in Clarinet, 28, cites evidence of the persistence of the older method throughout the nineteenth century, especially in Spain and Italy.

24. Weston, Clarinet Virtuosi, 156.
This device, quite like the ligatures in use today, allowed the reed to be more responsive, and made changing and adjusting reeds much easier and quicker than with the older method of tying the reed to the mouthpiece with string.

Despite his professional setbacks and peripatetic lifestyle, Ivan Müller changed forever the world of clarinet manufacture and performance, if only because he gave that world a glimpse of the possibilities inherent in the instrument. Although Müller's clarinet did not gain official backing, manufacturers, in collaboration with performers, began experimenting relentlessly, producing a number of different designs that coexisted for several years. Most of the innovations were either based on, or at least inspired by, those of Müller. Even Lefèvre, who had initially rejected Müller's work, began playing in 1824 on an instrument of thirteen keys based on Müller's. It was even made by the Lefèvre family firm.²⁵

Jacques-François Simiot, an instrument builder in Lyons, produced a number of mechanically sophisticated instruments. As early as 1808, he had been the first to add the a'-b' trill key later incorporated into Müller's design.²⁶ He was also the first to move the register vent to the front of the instrument to eliminate the accumulation of water in the tone hole.²⁷ In 1828, he presented to the Académie des Beaux-Arts an instrument with nineteen keys.²⁸

²⁵. Ibid., 65.


²⁸. Ibid., 303.
Although none of Simiot's instruments gained widespread use or official imprimatur, his work is indicative of the times. Paris was the artistic capital of Europe at the time, full of composers demanding ever greater technical capabilities from performers, and performers demanding ever greater technical refinement in their instruments. The city was also home to an increasing number of instrument manufacturers who were always ready to adjust, modify, or even redesign an instrument to one player's specifications. The result was the relatively peaceful co-existence of many different clarinet designs, with none established as standard, although most could trace large portions of their design to Ivan Müller. A sign of Müller's pervasive influence is that nearly all designs had thirteen keys in one configuration or another. In the *Agenda musical* of 1836, Buffet listed prices only for "clarinettes à treize clefs."

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CHAPTER TWO

THE TRAITÉ GÉNÉRAL D’INSTRUMENTATION OF
GEORGES KASTNER, 1837

Born in 1810, Jean Georges Kastner grew up in Strasbourg.¹ He exhibited a love of music from an early age, studying piano at the age of six and playing organ in church for special occasions by the age of ten. His school studies included solfège and singing. He followed his parents’ wishes and pursued major studies in theology, but always maintained a vigorous pursuit of music by continuing his piano lessons and immersing himself in compositional activities.

His fascination with musical composition filled him with the desire to understand all of the instruments that were used in the orchestra. He began a methodical study of the capabilities of each instrument, even to the extent that he learned to play many of them. Between the years of 1826 and 1835, he composed four operas, three symphonies, five overtures, ten wind serenades, a piano concerto, and numerous marches, waltzes and works for chorus.² In 1827, he received his diploma from the Gymnase, and in 1830 he was placed in charge of the Strasbourg National Guard Band.

In an effort to find better venues for presenting his compositions, Kastner applied for and was awarded a stipend from the Strasbourg town council to travel to Paris to study music. He arrived in Paris in 1835 and


². LaMay, “Kastner, Jean-Georges.”
immediately began studying counterpoint and fugue with Antonin Reicha and composition with Henry Berton. During this time he also began work on his *Traité général d'instrumentation* and submitted it to the examination committee of Académie des Beaux-arts. The treatise was enthusiastically accepted—it even received a letter of endorsement from Giacomo Meyerbeer—and was adopted for instruction at the Conservatoire. A supplement to this treatise was added, in 1844, augmenting the first edition with the latest developments in instrument manufacture and performance techniques. Other significant works produced by Kastner in this area include his *Traité de l'instrumentation considérée sous les rapports poétiques et philosophiques*, and his *Grammaire musicale* (written in three parts that covered the main topics of melody, rhythm and harmony), both of which were approved by the Conservatory committee in 1837 and used for classroom instruction.

Other significant works that directly relate to his study of the various instruments included his *Cours d'instrumentation* (1839/1844); twelve elementary method books that he wrote for voice, piano, violin, flageolet, flute, cornet, clarinet, horn, cello, ophicleide, trombone, and oboe; complete method books for saxophone and timpani; and finally his *Manual général de musique militaire à l'usage des armées françaises*, in particular Parts Three and Four, respectively entitled *La Figure et la description des instruments qui la composent, notamment des nouveaux instruments de M. Adolphe Sax*, and *Quelques instructions sur la composition et l'exécution de la musique militaire*. He wrote a large number of other theoretical, historical, and analytical works, and many of his other writings appeared in such periodicals as the *Revue et gazette musicale*, *Le ménestrel*, and *Revue étrangère*. 
Despite his attempts to have his music performed, he met with limited success. He had a particular love for wind music and wrote several works for the saxophone. His music, however, received very little attention and according to a Parisian musician quoted in Fétis,

La composition de M. Kastner réunit l'abondance des idées à la pureté classique, à ce savoir qui tire parti d'une pensée musicale, sans la réduire à la forme exigüe d'une imitation incessamment ramenée, de manière à faire naître l'ennui par la monotonie.

The composition of M. Kastner reunites the abundance of ideas of pure classicism, so that one understands what belongs to a certain musical phrase, without reducing the phrase to an incessant repetition, and subsequently rendering boredom from monotony.³

Still, Kastner was influential in the music world of the time and served as a member of such institutions as the Institut de France, the Royal Academy in Berlin, and the Academy of Saint Cecilia in Rome, among others. His treatise influenced Berlioz and they were good friends—in 1859, Berlioz gave Kastner his autograph manuscript of Roméo et Juliette.⁴ When Kastner died in 1867, he left behind a vast, unfinished project for a musical encyclopedia that he had worked on for over ten years.

In the Traité, Kastner begins his writing on the clarinet by observing that the tone of the instrument is "that which most closely approaches the human voice"⁵ This is an interesting, if indirect, comment on the

³. Fétis, "Kastner".
⁴. LaMay, "Kastner, Jean-Georges."
⁵. Kastner, Traité, 37.
contemporary standards of clarinet performance, and signals a change in the way composers viewed the lyric capabilities of the instrument.

Earlier reactions to the sound of the clarinet were, at best, mixed. It is widely accepted that the instrument's name derives from the Italian clarino, a term used in the seventeenth and eighteenth centuries for the high, clear register of the trumpet. Most earlier commentators noted the similarity in sound between the clarinet and its namesake. Johann Jakob Walther, in 1732, said that it "sounded from afar not unlike a trumpet," and Handel considered the instrument an appropriate substitution for the cornetto. In 1795, J. E. Altenburg called the clarinet "strident and piercing," remarking that "it sounds much better from afar than close to," and as late as 1842, Thomas Carlyle's wife wrote that the "clarionet" sounded like "something between a squeal of agony and the highest tone of a bag-pipe!"

There were, of course, exceptions to the generally poor tone of the clarinet, especially among the virtuosi whose playing elicited great works for the instrument from composers like Mozart and Weber. Anton Stadler, Mozart's clarinetist, had a tone "imitating the human voice. . .so soft and lovely. . .that no one with a heart could resist it," while Heinrich Joseph Baermann, for whom Weber and Mendelssohn wrote their clarinet works,

6. Rendall, Clarinet, I.

7. Shackleton, "Clarinet."


9. From a letter to her husband quoted in Weston, Clarinet Virtuosi, 154.

and Frédéric Berr, professor at the Conservatoire until 1838, were renowned for the "delicacy and beauty of their tone." But even the great Müller, despite his technical brilliance and fiery approach to music making, was often criticized for the lack of refinement in his tone. Kastner, in Paris in the 1830s, would have observed at first hand the work of such players as Isaac-Franco Dacosta, a student of Lefèvre and his successor at the Opéra; Claude François Buteux, Dacosta’s successor at the Opéra; G. B. Gambaro, the first clarinetist at the Théâtre Italien whose tone quality, produced on a Müller instrument, had been well known for many years; and Berr, the aforementioned professor at the Conservatoire. All of these performers were using instruments whose design either reflected or copied Müller's thirteen-keyed instrument of 1812, and thus benefited in tone from the adequate sealing and venting provided by the key and pad mechanism. In addition, they all played with the reed below, another Müller innovation with great benefit to the quality of sound and it was Berr, as the foremost teacher at the Conservatoire, who finally convinced that institution to officially adopt both Müller's clarinet design and the placement of the reed below.

11. Rendall, Clarinet, 97.
14. Ibid.
15. Weston, Clarinet Virtuosi, 156.
16. See above, Chapter 1.
17. Weston, Companion, 18.
Kastner next makes the curious statement that the clarinet is "richer in sounds than the oboe, and most of the other wind instruments" (plus riche en tons que le hautbois, et la plupart des autres instrumens à vent). It is not immediately clear what is meant by this phrase. Kastner may be referring to the fact that the clarinet has a wider range than the other winds. But two other possibilities also present themselves. First, Kastner could be pointing out that there are distinct differences between the sounds of the different registers of the clarinet, caused by changing proportions of overtones in each. Many other writers have commented on this and on the use of these registers by composers of the nineteenth century. Second, this could refer to the clarinet's ability, often remarked by nineteenth-century writers, to embody any number of a wide range of musical affects. Lavoix, for instance, frequently comments on the variety of music for the clarinet by such composers as Mozart, Weber, and Beethoven, who knew well how to utilize "the richness of its timbres" (la richesse de ses timbres).

It is clear that the instrument that Kastner is describing is in some way related to Müller's clarinet, for he mentions the multitude of keys. He gives the complete range of the instrument as spanning three octaves and a minor sixth, from e to c". The comprehensiveness of this statement can be appreciated when one considers that this is identical to or very near the absolute range given in modern sources and available to most present-

19. Shackleton, "Clarinet."
21. Lavoix, Histoire, 370. See also ibid., 321 & 360-61. It is interesting to note in the above quotation that timbres, in reference to the clarinet, is plural.
22 Kastner, Traité, 37.
day performers. Kastner quickly adds, however, that the entire octave from c'' to c''' should be reserved for solos and concertos. He then gives a reduced range, from e to f'', which he says are the limits "one can ordinarily use" (qu'on emploie d'ordinaire). 23 This limit, again very near the current practical limit given in orchestration textbooks, is made necessary by the increasing shrillness of tone and difficulty of fingering in the highest octave.

There are listed a number of figurations and trills that Kastner says should be avoided either completely, as in the case of the trills, or at least reserved for loud orchestral passages, like the figurations. 24

Despite the fact that he has just shown the wide range of the clarinet, Kastner adds, almost as an afterthought, that one should use most often the medium range of the instrument. 25 The lower and higher notes, he says, "can be more agreeably rendered on other instruments" (peuvent être plus convenablement rendus par d'autres instrumens). 26 It is likely that Kastner is implying here that the clarinet should be used as the tenor or alto in passages scored for woodwinds, an admonition to composers based on a combination of practical considerations of the strengths and weaknesses not only of the clarinet, but of its fellow woodwind instruments as well. With the clarinet in its middle register, the bassoon below, and the flute and oboe above, the scoring takes advantage of the best ranges of each instrument,

24. Ibid., 38.
25. Ibid.
26. Ibid.
thus providing the best balance and timbral blending in the woodwind choir.

The clarinet can articulate in much the same fashion as the flute, and Kastner refers the reader to his comments about articulation in his chapter on the flute.\(^{27}\) He states that the use of the tip of the tongue can produce many types of rapid articulation in nearly all of the wind instruments. The facility in articulation demonstrated by Kastner's examples is in no small measure owing to the recent change of playing with the reed against the lower lip and the use of Müller's metal ligature to provide firmer support and more rapid response for the reed.\(^{28}\) Kastner warns the reader, however, that care should be exercised not to fatigue the performer by writing prolonged passages that require continuous use of the tongue. He provides examples that demonstrate technical demands that should be avoided, making the general observation that the composer should avoid assigning trumpet-style articulation to the other wind instruments.

Even with the improved Müller clarinet, certain notes were still weak in quality and difficult to tune. For example, the location of the tenon and socket for the central joint required that the tone hole for c-sharp'/g-sharp" be moved to a position that compromised intonation and made impossible a bore size adequate for good tone quality.\(^ {29}\) In order to avoid this problem, and the difficult fingering problems that he presented

\(^{27}\) Ibid. The section on flute articulations is found on page 30 of the treatise.


\(^{29}\) Rendall, *Clarinet*, 103.
earlier, Kastner advises the primary use of the written keys of F and C major in order to obtain the most "beautiful and true" (beau et véritable) sound on the instrument. This explains the continued need for the three clarinets (in A, B-flat, and C) commonly found in the orchestra despite the existence of an instrument—Müller’s—that would allow the performer to play in virtually any key.

Kastner remarks on the differences in character between these three common instruments. He observes that this is a unique feature of the clarinet, since such instruments as the oboe and flute were not produced in so many sizes. Each instrument provides an overall character to the sound and he identifies the characteristic sound of the A clarinet as "soft" (moelleux), the B-flat clarinet as "sweet" (doux), and the clarinet in C as "hard and bright" (dur et aigu). He recommends that the sharp sound of the clarinets in D, E-flat, and F are best suited for use in military music.

Just as the different clarinets have distinctive characteristic sound qualities, Kastner divides the total range of the clarinet into three distinct registers, each possessing different timbral qualities. These are, in the order of his presentation, the third register, which he calls "acute" (aigu) from d'' to c''''; the second register, the "clarion . . . [with] resonant and brilliant sounds" (clarion . . . sons sonore et brillans [sic]) from b' to c-


31. Ibid., 38. Lavoix, Histoire, 333, quotes Louis Joseph Francoeur, in his Diapason des instruments à vent of 1772, on the fact that clarinet performers were obliged to chose the keys of C and F ("... les musiciens (clarinetists) furent obligés de choisir pour eux les tons les plus simples d'ut et de fa.")

32. Kastner, Traité, 38.

33. Ibid.
sharp’; and finally the chalumeau register from e to b-flat. The term “chalumeau” to describe this lowest range had been used as early as 1738 by J. P. Eisel in his *Musicus Autodidaktos*, and in 1758 J. D. Adlung, a German author, noted that “[t]he clarinet is well known. In the low range it sounds differently from in the high range, and therefore one calls it [the range] chalumeau.” This distinction between ranges developed early in the history of the clarinet and it was not until well into its development that composers like Antonio Vivaldi and Jean-Adam-Joseph Faber used both registers and their distinctive timbres.

Often a composer will chose to have the performer switch clarinets within a composition, either between movements or sometimes in a work when there is a change of key. Kastner warns the reader to avoid requiring an instrument change prior to solo passages, pointing out that when an instrument is not properly warmed up, it will play flat. He suggests that adequate time be allowed for the performer to prepare his instrument so as to avoid a “jarring” (choquant) effect.

The notation of the chalumeau register can require a number of leger lines below the staff and Kastner points out that one method of avoiding this inconvenience is by transposing the notes that are below the staff up an octave, and writing the word *chalumeau* over these notes, which

34. Albert R. Rice, *The Baroque Clarinet*, Early Music Series 13 (Oxford: Clarendon Press, 1992), 93. Rice uses this example to demonstrate how the name *chalumeau* came to be used to describe the low register of the clarinet.


36. Ibid., 96. This distinction is inherent in the physical properties of the clarinet. Notes of the lowest register are almost entirely lacking in even-numbered partials, while those of the second register show a more balanced overtone series. Shackelton, “Clarinet.”

will instruct the player to play the indicated passage down the octave. This practice was one of several attempts by composers to negotiate the wide range of the clarinet in their notation. Vivaldi, for instance, often employed the bass clef when writing notes in the chalumeau register with the understanding that the performer would transpose these notes up the octave.

Instrumental transposition is often an elusive concept for the student of composition, especially if their previous experience has only been with non-transposing instruments. Because of this difficulty, and also owing to the large number of instruments in the clarinet family, Kastner devotes a considerable amount of his writing to the description of the appropriate method for transposing music for the various instruments. With each instrument type he presents the relationship of the instrument's pitch in comparison with the standard in C. In order to further demonstrate the technique of transposing music appropriately for each instrument, he generally provides both musical fragments that indicate the intended key and the transposition that must be used for each instrument in order to play the given passage in the intended key.

Another issue a composer must consider is the appropriate choice of instrument for the specific keys. Owing to the limitations of the mechanism, certain keys are difficult to employ and should be avoided. The clarinets that Kastner discusses in this fashion are the clarinets in C (sounding in unison with the violin), B-flat, A, the high clarinets in F, E-

38. Ibid., 38.


flat, and D and the basset-horn in F and E-flat. Kastner provides musical examples that demonstrate appropriate and inappropriate choices of key for the clarinets in B-flat and A.41 In addition, he provides a list for each instrument that shows the student the best keys to employ when writing for that instrument or, conversely, which instrument to chose when writing in a certain key.42 He also reminds the student to exercise special care when transposing notes that involve accidentals.43 A final interesting observation that Kastner makes is on the combination of instruments in an ensemble.44 He states that the clarinets in B-flat and E-flat sound best together, as do the clarinets in C and F, and the clarinets in A and D. Certainly the key signatures used for these instruments would be closely related, but his statement regarding the best sound may perhaps be best explained in terms of the relationship of the fundamental notes between the two instruments. Because of the relationship in wind instruments of timbre and intonation to the frequency ratios between their elementary modes of vibration, the instruments that are separated in pitch by a fourth will have closer fundamental series relationships than those that are separated by a third, second or semitone.45 One relationship that Kastner does not observe is the combination of the clarinets in B-flat and F. If his observation is based upon the relationship of the fundamentals, this combination would have the closest series interaction (perfect fifth).

41. Ibid.
42. Ibid.
43. Ibid.
44. Ibid., 40.
According to Kastner, the common number of clarinets used in the orchestra is two, a number that had become a standard in France as early as 1756, when Alexander-Jean-Joseph Le Riche de La Pouplinière hired two German clarinettists to play in his orchestra. Kastner presents different methods of using two instruments in combination. Writing for both instruments in unison achieves a fuller sound. One instrument can accompany the other, or they both can serve jointly in the accompanimental passages. Kastner also mentions the use of soft, sustained notes as one effective use of accompanimental writing and states that the entire range of the clarinet can be employed in this fashion. The first clarinet often will reinforce the melodic line even though its range allows it to assume the role of an alto voice, and he points out that the clarinet is more successful than the oboe in the performance of soft, prolonged notes and is much sweeter in sound.

Kastner goes on to describe the role of the clarinet in the military band. He states that there are generally four clarinet parts in band music, and that each part is performed by multiple players. Since the clarinet was

46. Kastner, Traité, 39.

47. The German clarinet players were probably brought to La Pouplinière's orchestra by Johann Stamitz, who had become the director of that orchestra in 1754, Jean Mongrédié, “Paris: the End of the Ancien Régime,” in The Classical Era: from the 1740s to the End of the Eighteenth Century ed. Neal Zaslaw (London: Macmillan, 1989), 72. According to Lavoix, Histoire, 333, Gossec wrote for two clarinets and two horns in a work that was played in 1757, from which the symphony orchestra was given its first model (“Gossec écrivit pour deux clarinettes et deux cors un morceau qui fut joué en 1757, et depuis il compléta, . . . l'orchestre symphonique dont il donna les premiers modèles.”)

48. Another observation made by Lavoix, Histoire, 316, is that “the oboe, which was often used for emotional expression, would be replaced today by the clarinet.” (“et pour l'expression pathétique le hautbois tient souvent un place qui serait remplie aujourd'hui par la clarinette.”)

the lead voice in the band at this time, it was necessary that multiple players served on each part to allow for an alternation of rest when passage work was extended and would fatigue the players in performance. He further points out that the clarinet in B-flat is used in French military music, while German bands often use clarinets in C and A. The clarinet in D, he says, is rarely used in military music, which further supports his observation of the exclusion of the clarinet in A from these bands, and he links the use of the D clarinet with the A clarinet. He reiterates that clarinets in B-flat and C should be used in conjunction with the small clarinets in E-flat and F when writing parts in military music.

Kastner recommends that the composer write primarily in the second register for the small clarinets. While these instruments have the same capabilities as the larger clarinets, they are best used to double the melodic line an octave above, or, if written in marches, they should double the piccolo line.

In concluding his section on the clarinet, Kastner provides a list of method books. The list includes the most influential works of the time by such authors as J. G. H. Backofen, Berr, Blasius, Joseph Froehlich, De Doigté, Hernestaedt, Lefévre, Ivan Müller, Amand Vanderhagen and Fredéric Woldemar. Kastner was active as an author of method books himself, and his inclusion here of such works is perhaps an implicit recommendation that students of orchestration actually learn the

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50. According to Planque, *Agenda musical pour l'année 1836*, 37, there was an average of twelve clarinet players in each of the twelve National Guard bands.


52. Ibid., 40.

53. Ibid.
instruments for which they are writing as he had done himself. He also credits Ivan Müller with the invention of the alto clarinet and the 13-keyed clarinet.54

The only large clarinet that Kastner discusses in this early part of his treatise is the basset horn.55 The basset horn has a narrow bore unlike that of the alto clarinet and therefore has a completely different tone color. The sound is veiled and subdued in comparison with the sound of the clarinet, and Kastner identifies the name of "muted" clarinet as being applied to the useful and unique sound of this instrument. Another name that he mentions is the "bent" horn. The earliest versions of the instrument had a curved shape and resembled the cor anglais of the time. According to Carse,

[a] characteristic of the basset-horn, from the time when it was first known till even the middle of the last century, is the peculiar way in which sufficient tube-length was provided without making the instrument inconveniently long and awkward to hold. At the lower end of the curved tube the air-passage entered a sort of wooden box, wherein it zigzagged up and down before making its exit through the bell, which was attached to the bottom of the box. There were three parallel passages in the box, connected by U-bends similar to that in the butt of a bassoon; thus, the air-passage went first down, then up, and then down again before reaching its outlet in the bell.56

Kastner further describes the sound of the basset-horn as being sweet, full, rounded and appropriate for music that is tender or sentimental.57 This instrument is versatile, and he points out that it is used for solo passages

54. Carse, Musical Wind Instruments, 167, states that Ivan Müller designed an alto clarinet in F with his thirteener-keyed system.

55. Kastner, Traité, 40-42.

56. Carse, Musical Wind Instruments, 169.

57. The basset horn was considered an instrument of highly romantic character by E. T. A. Hoffmann, who compares the sound of the instrument to the scent of red carnations in Kreisleriana. Kroll, Clarinet, 108.
and that many performers played concertos and recitals on the instrument.  

The basset-horn extends a third lower than the other members of the clarinet family (down to written c). The early versions of the basset-horn had only five keys, with a basset key for the low c. Kastner credits the Stadler brothers with the addition of the notes c-sharp and e-flat to the lowest range of the basset horn. Kastner warns his reader to write for these notes with caution, since subsequent manufactured versions of the basset horn had not attained the same quality of clear sound and evenness as that of the Stadler's.

Several interesting anecdotes have appeared over the years regarding the manner in which the instrument received its name. Lavoix claims that the instrument was invented in 1777 by a manufacturer named Horn in Passau. In fact, the instrument was designed by Anton and Michael Mayrhofer, who worked in Passau around 1770, and later improved by the instrument maker Theodore Lotz of Pressburg in 1782. Kastner suggests that the name horn is derived from the fact that the notes in the low range sound like those of a horn. Kroll maintains that the name horn was borrowed because the bottom curved shape of the instrument looked like a

58. Indeed, the basset horn was a very popular instrument at the end of the eighteenth and beginning of the nineteenth centuries. A number of performers toured Europe playing the works of Backofen, Carl Baermann, K. F. Baudersach, Aloysius Beerthaller, Anton David, Vincent Springer, Stadler, Franz Tausch, Vanderhagen, Charles Karl Bochsa, Franz Danzi, Rommel, G. A. Schneider—all of whom wrote concertos and sonatas for the basset-horn. Kroll, Clarinet, 109.

59. Kastner, Traité, 41. This is substantiated in Kroll, Clarinet, 108.

60. Kastner, Traité, 40.

61. Lavoix, Histoire, 123.

horn. However, Kastner's explanation for the derivation of the word *basset* is in agreement with Kroll. Kastner observes that it is a smaller version of the bass clarinet and that performers of this instrument can also play the basset horn. The term *basset*—small or high bass—indicates the registral relationship of this instrument to the clarinet and the bass clarinet.64

The basset horn had fallen into disuse by the time that Kastner wrote his treatise.65 He singles out Mozart's use of the instrument in the *Requiem* and several operas. The unique connection between the basset horn and the voice that is found in Mozart's works has been the subject of much discussion,66 and was apparently not lost on Kastner, who wrote a part for the basset horn in his Paris opera *Beatrice* in 1839.67

In order to avoid exposing the instrument's problems of intonation in the low range, Kastner advises the reader to incorporate that range only in loud passages. The notes of the third register should be avoided since the higher clarinets can easily produce these notes with a better quality of sound, and he points out that the best use of the instrument is in simple melodies, sustained notes and simple technical passages.68 Generally when


64. Ibid.

65. Ibid., 108.

66. In a letter to Clara Schumann, Johannes Brahms writes the following. "Second: aria by Mozart, sung by Frau Guhrau with the orchestra. To my great delight, she was accompanied by two basset horns which had been found after some difficulties. I think no instrument adapts itself so closely to the human voice as the basset horn, whose tone is almost midway between a cello and a clarinet." Quoted in Kroll, *Clarinet*, 109.


the basset horn occurs in orchestral writing, he observes that either one or two instruments are required. Only rarely, he points out, is a third instrument used.69

As he had done with the soprano clarinets, Kastner provides instruction in the correct methods for transposition.70 Notation for the lowest notes can be written in the F clef, requiring the performer to transpose those notes up an octave, or in G clef. If the G clef is employed, the method of writing chalumeau over notes transposed up the octave can be employed in order to avoid the excessive numbers of ledger lines below the staff. Kastner provides written examples to demonstrate both of these methods. Fingering difficulties are similar to those of the soprano clarinet, and again Kastner provides a brief demonstration of the combination of notes that the composer should avoid.

In concluding his discussion of the basset-horn, Kastner mentions that while the basset-horn in F is the most common, instruments pitched in G, E, E-flat and D existed.71 He lists existing method books for the basset horn as those written by Vanderhagen, Backofen and Müller.72

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69. The use of multiple basset-horns did occur, as noted in Kroll, Clarinet, 108, where it is reported that the private orchestra of Princess Elizabeth in Freiburg had three basset horns at its disposal in the 1770’s.

70. Kastner, Traité, 41.

71. Kroll, Clarinet, 107, notes that a basset horn in G was the instrument used in Mozart’s first draft for the Clarinet Concerto and that there are exceptional occurrences of a basset-horn in E-flat. Further references to these differently pitched basset-horns are found in Carse, Musical Wind Instruments, 170, which lists sources from Von Gontershausen in 1855 (Basset-horns in G, F, E, E-flat and D) and Antolini in 1813 (Basset-horns in G, F, and E-flat).

72. Kastner, Traité, 42.
He discusses the chalumeau in a brief section that follows the basset horn.\textsuperscript{73} This predecessor of the clarinet (and, he speculates, of the oboe) was no longer employed in the orchestra, but was used primarily as a folk instrument and by shepherds in Austria (Tyrol). The instrument that he describes, hollow cane with six holes and one key, sounded an octave lower than a clarinet of the same length, hence the low range of the clarinet was described as the \textit{chalumeau} register. He additionally points out that the reed for this instrument is identical to the one used on the clarinet, but that the performer must blow with “particular force” (particulière forcée) in order to play the high notes.\textsuperscript{74}

\textsuperscript{73} Ibid.

\textsuperscript{74} The technique of overblowing is described by Rice in \textit{The Baroque Clarinet}, 19, as follows: “This higher register may have been achieved by fingering the lowest note, increasing the wind pressure, and tightening the lips on the reed, thus forcing the air column into a higher frequency.”
CHAPTER THREE

NEW CLARINET DESIGNS IN PARIS, 1837-1844:
ADOLPHE SAX AND HYACINTHE KLOKÉ

Three years before [Berlioz’s published articles in the *Gazette musicale*], a young musician with a scientific turn of mind named Adolphe Sax had come to Paris with thirty frances in his pocket. His plan was to develop systematically the wind choir of the orchestra, and he needed the support of eminent performers and composers to obtain the necessary financial backing.¹

Adophe Sax created a great stir in the Parisian musical world. His arrival was met with a wide range of approval and resistance. This twenty-five-year-old man came to Paris with great ideas and received vigorous encouragement from such notable musicians as François Antoine Habeneck, Meyerbeer, and Jacques-François Fromental Elie Halévy.² He went to Paris in order to visit the 1839 Exposition, and after spending several more years in Brussels working on his inventions, he returned to Paris to promote his new instruments in 1842.

His father was a well-known instrument manufacturer, and the younger Sax began to work in his father’s shop at the age of six. By the age of twelve, he had participated in all facets of the craft and when he was sixteen he exhibited flutes and clarinets at the Brussels Exposition. In 1835, at the age of twenty, he received an honorable mention at the Belgian

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Industrial Exposition for a clarinet with twenty-four keys. He was a virtuoso clarinetist and further developed his reputation when, at the age of twenty-three, he developed his famous bass clarinet and even constructed a contra-bass clarinet.³

Upon his return to Belgium from the Paris Exhibition in 1839, he completely changed the construction of his clarinet. While no details exist as to the specific changes that he implemented, it may be assumed that this was the predecessor of the instruments that he patented in 1840 and 1842.⁴ The presentation of nine instruments of his design in the 1841 Belgian Exposition proved to be a frustrating experience for the young inventor: his instruments were judged worthy of the first prize, but he was not awarded the honor because he was too young.⁵

In 1842 he heeded a letter that he received from Halévy and returned to Paris.⁶ despite requests from other prominent musicians in London and

3. Ibid.


5. Lavignac, “La Vie et l'oeuvre d'Adolphe Sax.”

6. The text of this letter, given in Lavignac, “La Vie et l'oeuvre d'Adolphe Sax,” is as follows: “I am taking advantage of M. Vieuxtemps's trip to Paris and of his departure for Brussels to ask you of the news on the instruments you wished to have me hear, and those which you are perfecting; I hope that you achieve the goal to which you have been striving, and, by your efforts, gain the interest of all composers, you will enlarge the number and the power of the effect of an orchestra, due to your new and excellent combinations of sonorities; we have already approved them at the Conservatoire. They were merely trials, and I do not doubt that your work and your research will continue to augment the spirit of the friends of the art and will respond completely to their waiting. Hasten then to finish your new family of instruments, to fight on the side of the poor composers who are searching for newness, and to the public which demands it, no longer hold back from the world. A thousand compliments, Halévy.” (Je profite du séjour de M. Vieuxtemps à Paris et de son départ pour Bruxelles pour vous demander des nouvelles des instruments que vous avez bien voulu me faire entendre, et que vous vous occupez maintenant à perfectionner; j'espère que vous atteindrez le but que vous vous êtes proposé, et, par vos efforts, dignes de l'intérêt de tous les compositeurs, vous agrandirez le nombre et la puissance des effets d'orchestre, grâce à vos nouvelles et excellentes combinaisons de sonorité; nous avons déjà eu l'occasion de les apprécier au Conservatoire. Ce n'étaient
St. Petersburg. The clarinets that he brought with him could claim a number of innovations. These could play a greater range as he had extended them down a semitone to encompass the written e-flat. This allowed the performer to play the complete E-flat major scale and provided a clearer version of b-flat. This addition would also enable players to transpose parts for clarinet in A without the loss of the lowest tone of that instrument. Cross-fingerings were eliminated, so that the performer would only need to use one instrument instead of the previous three (C, B-flat, and A). The fingering system that he employed retained the former Müller mechanism, but introduced improvements that removed some of the obstacles to fluent playing. He replaced the b/f-sharp' key with an automatic brille key attached to rings for the right hand. He added a speaker key that provided a more secure fourth register (even as far as d" and e"), changed the diameter of the left-hand index finger hole and covered it with a pierced plate in order to facilitate the fifth harmonic series. He also added a covered cup over the open g' hole and extended the length of the upper tenon so that he could reposition the tone hole for c-sharp' to allow for better intonation.

7. Lavignac, "La Vie et l'oeuvre d'Adolphe Sax."

8. Rendall, The Clarinet, 101


10. Kroll, Clarinet, 32. A brille key is one activated to close a tone hole out of the player's reach by the movement of open rings fitted around other tone holes, which are operated by the fingers.

Even with the advantages that this instrument provided, the Sax clarinet in B-flat was never accepted by the clarinetists of Paris. Many of the players believed that the lengthening of the instrument “spoiled the tone.” The inconvenience of transposing A clarinet parts down a semitone was another obstacle. Finally, the loss of the timbral variety provided by the clarinets in C and A was a concern. The improvements of the ring-keys on the lower joint and the lengthened upper tenon survived and influenced the Belgian instrument makers V. C. Mahillon and Eugène J. Albert.

On the other hand, Sax’s bass clarinet outclassed the former Parisian models. The changes that he implemented—particularly the additional speaker-key, changes in hole diameter size and covered finger holes—would have provided a vastly improved instrument in regard to response, range, tone quality, and intonation. At that time, the bass clarinet was more firmly established in Paris than in any other country. As early as 1807, a French instrument maker, Dumas of Sommières, had presented a bass clarinet of thirteen keys to the Paris Conservatoire and also produced a contrabass clarinet the following year. Dumas’s bass clarinet was praised


14. Ibid.

15. Rendall, Clarinet, 101-102. For further information on Mahillon and Albert, see below, Chapter 6.


by the committee that included Méhul, Cherubini, and Catel. However, Dumas was frustrated by his attempts to find a market for his instrument. In 1810, it was rejected by the musicians in the Imperial Guard band who were accustomed to their instruments of six keys and felt that the new instrument would be too difficult to use. The solo clarinetist of the band at that time was Franco Dacosta, and the decision to reject the instrument of Dumas could be seen as contrived by Dacosta, since in 1814 Dacosta improved his own bass clarinet and by 1822 he was playing on a twelve-keyed soprano instrument. Dumas must have been unaware of the subterfuge, if it existed, since he bequeathed his instrument to Dacosta when he died in 1832.

Dacosta was a very prominent performer in Paris who began his career studying at the Paris Conservatoire with Lefèvre in 1796, receiving first prize from the institution in 1798. Among his many positions he served as principal clarinet of the Opéra Comique (1802-07), Théâtre Italian (1807-1817), and the Opéra (1817-1825). In 1825, he stepped down to second clarinet of the Opéra, where he served until 1842. He also played first clarinet for the Société des Concerts from 1828. Upon receiving the


19. Ibid., 80. Only two years later, the Conservatoire rejected Müller's clarinet for the same reason.

20. Weston, More Clarinet Virtuosi of the Past, 80.

21. Ibid., 90.

22. Reports of Dacosta's playing were mixed. Mendelssohn, after attending a performance of the Société des Concerts, writes the following account to his friend, H. J. Baermann: "There are two clarinets, neither of them fit to dust your coat, if tone, execution, mode of playing and ordinary fairness still go for anything in this world. The first one recently, in the minuet of the Pastoral Symphony, began his solo a bar too soon, but went on puffing away as merrily as possible, never observed that it sounded quite infamous, and
bass clarinet from Dumas, he went straight to Louis-Auguste Buffet and in collaboration with him produced an instrument modeled on the Dumas design. This instrument had a straight body and a curved crook to hold the mouthpiece. It is this instrument that most likely was used in the first performance of Meyerbeer's *Les Huguenots.*

During his visit to Paris in 1839, Sax had a meeting with Dacosta to enlist one of the first performers to support the use of his instruments in Paris.

It was announced in the press during 1839 that Dacosta was going to travel abroad to demonstrate the new bass clarinet. This provoked Sax, who had just produced a greatly improved instrument, to journey to Paris to see Dacosta. He went straight to Dacosta's house and insisted on demonstrating the solo from Meyerbeer's *Les Huguenots!* Mme. Dacosta is said to have exclaimed to her husband: "When M. Sax plays, 'your' instrument sounds like a kazoo!"

Dacosta was bound to admit the advantages of Sax's instrument and complimented the young virtuoso on his skill both as performer and inventor. He gave up his projected tour and was not long in acquiring a Sax instrument for himself.

Another encounter, this time with the performer Buteux, provided Sax with further propaganda for his bass clarinet. Buteux replaced Dacosta as principal of the Opéra when Dacosta retired in 1842. He was well-

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that some of the audience, and among them the undersigned, were making dreadful wry faces, and that the director had got stomach-ache; the horn ought then to have come in, but took fright also and played softer and softer, on which the thing every moment became more like a Dutch concert, for they were all out, and only a movement in 3/4 time being close at hand saved them from disgrace of stopping short or beginning all over again...This fellow is a Professeur in the Conservatoire, and, I understand, the best here. I believe his name is Dacosta." Quoted in Weston, *More Clarinet Virtuosi of the Past,* 79-80.

23. Ibid., 80.


25. Weston, *More Clarinet Virtuosi of the Past,* 80. The anecdote is also found in Lavignac, "La Vie et l'oeuvre d'Adolphe Sax."
known as a bass clarinetist and was the performer who premiered the famous solo in *Les Huguenots*. On that occasion, however, he came under much criticism for using a poor instrument. Sax became the subject of intrigue in the following account:

> When Donizetti wrote a special part for Sax’s new bass clarinet in his opera *Dom Sébastien*, Buteux, seeing his pitch queried, wrote a letter to the *Gazette des Théâtres* attacking Sax. Sax was enraged, and... sent a letter to the same paper challenging Buteux to a public contest. Buteux declined to answer the letter, refused to let Sax play the part, and the opera was given its first performance on November 13, 1843 without the instrument which Donizetti had intended.

Composers, on the other hand, received Sax’s bass clarinet with open arms. In his *Supplément*, Kastner indicates that on his arrival in Paris in 1842, Sax played four octaves on his bass clarinet in the presence of Meyerbeer and several other prominent musicians. The noted bass clarinetist E. Duprez used a bass clarinet incorporating Sax’s design and participated in the only performance of *Chant Sacre* by Berlioz, a work written specifically for six of Sax’s instruments. Meyerbeer, Rossini, and Kastner followed with testimonials such that “all instrument makers leagued themselves against Sax.” These testimonials, among others by

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27. Ibid., 62-63. The anecdote is also found in Lavignac, “La Vie et l’oeuvre d’Adolphe Sax.”


Ambroise Thomas, Adolphe-Charles Adam, Michele Carafa, Frederico Ricci, and Halévy, were published in the *Revue et gazette des théâtres.*

The Paris Exhibition of 1839 was a landmark in the history of the clarinet. A new clarinet model produced by two men—Hyacinthe Eléonore Klosé and Louis-Auguste Buffet—was presented. This instrument was named the *clarinette à anneaux mobiles* (clarinet with moveable rings) and was patented in 1844. It is essentially the same instrument as the one used today outside the German-speaking world.

Klosé joined the Paris Conservatoire first as a student in 1831 and later in 1838 as a professor after the death of his teacher, Frédéric Berr. Klosé was a respected performer and was already renowned as a soloist in his teens.\(^{31}\) His career, however, was primarily dedicated to teaching and instrument design, although he did continue to play for the Société des Concerts and was solo clarinetist for the Italian Theater.

The inspiration for this new instrument stemmed from a mechanical innovation initially applied to flute construction by Theobald Boehm. Problems of intonation and sound quality were solved when Boehm discovered that by using a series of ring-keys, he could have a finger close a ring when covering a tone hole and this ring would operate another key

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30. These testimonials are reprinted in Lavignac, "La Vie et l'oeuvre d'Adolphe Sax."

31. Berr dedicated his clarinet tutor of 1836 to Klosé, who was still a pupil. Weston, *More Clarinet Virtuosi of the Past,* 236.
to cover another hole. This second tone hole could be outside the normal reach of the hand position, thus allowing for the proper placement and size of the tone holes, which in turn achieved more accurate intonation. Buffet had been experimenting with similar designs prior to Boehm's final achievement, and other instrument makers had experimented with ring-keys as well.

From 1837 to 1839, Klosé consulted with Buffet about certain methods of improving the popular Müller-style thirteen- and fourteen-keyed clarinets that were in common usage at the time. The instrument that they jointly devised was equipped with twenty-four holes, seventeen keys, and six rings. The keys for the notes lowest on the tube were duplicated on either side of the instrument, and these were operated by the little fingers. These keys were interlocked so that a single key might close more than one tone hole. This allowed for greater flexibility and the production of nearly any fingering combination that had been previously cumbersome on the Müller clarinets. It also freed the left hand little finger to open the c-sharp'/g-sharp" key easily. Ring keys on both joints operated brille key covers. This greatly improved the fingerings and intonation for b, b-flat, f-sharp' and g'. The instrument also had an added closed b key for use by the third finger of the right hand. The length of the upper tenon joint was

32. Brymer, Clarinet, 46.


34. According to Rendall, Clarinet, 102, F. Lefèvre had a ring-key added to his clarinet in 1826. Weston, More Clarinet Virtuosi of the Past, 54, states that this feature was commissioned from Lefèvre by the clarinetist Blève.

35. Weston, More Clarinet Virtuosi of the Past, 236.

36. Carse, Musical Wind Instruments, 64.
extended to allow for a lower placement of the c-sharp'/g-sharp" tone hole, thus improving the intonation. Four trill keys that were manipulated by the first finger of the right hand were added along the side of the top joint, which vastly improved the capability of the instrument to perform trills and rapid connections between the first and second registers that were formerly considered difficult, if not impossible. 37 Finally, the speaker key was moved to the back of the instrument and the closed keys for g-sharp' and a' were provided with an adjusting screw to control venting and smooth operation. 38

In 1844, Klosé published his Méthode for the clarinette à anneux mobiles. It has since become one of the standard method books and is still used today. The prominent players in Paris were quick to adopt this new instrument, 39 and shortly thereafter the instrument was officially recognized by the Conservatoire. 40

37. Rendall, Clarinet, 102.

38. Ibid., 103.

39. Weston, More Clarinet Virtuosi of the Past, 52, gives evidence that the Klosé instrument was not universally adopted. Buffet, for instance, continued to develop different models. At the request of the clarinetist I. V. A. Blancou in 1845, he developed an improved model of Müller's thirteen-keyed instrument that borrowed the rings from the Boehm-influenced instrument of Klosé and was called a "clarinette omnitonique."

40. Carse, Musical Wind Instruments, 165.
CHAPTER FOUR

THE TRAÎTÉ D’INSTRUMENTATION ET D’ORCHESTRATION
OF HECTOR BERLIOZ, 1844

By a careful comparison of the means used with the effects
produced, I perceived the subtle connection which subsists between
musical expression and the special art of instrumentation; but no one
ever pointed this out to me. It was by studying the methods of the
three modern masters, Beethoven, Weber and Spontini; by an
impartial examination of the regular forms of instrumentation and of
the unusual forms and combinations; partly by listening to artists,
and getting them to make experiments for me on their instruments,
and partly by instinct, that I acquired the knowledge I possess.¹

In many ways this man, Louis-Hector Berlioz, single-handedly
represented the Romantic movement. The prototypical Romantic genius, he
struggled throughout his life to create and receive recognition for his
endeavors. Unlike Kastner and Gevaert, he never studied piano. His early
musical instruction consisted of elementary studies with his father on the
flageolet and guitar lessons. He obtained copies of Rameau's Traité
d'harmonie and Catel's work of the same title and studied them himself. At
the age of fourteen, he was composing simple melodies and chamber music,
but he did not hear much music of any sophistication until he reached Paris
at the age of seventeen.

According to his father's wishes, he entered the École de Médecine
in Paris. In his first month of residence in the capital, he attended
performances at the Opéra and heard Iphigénie en Tauride; the music of

¹. Hector Berlioz, Memoirs of Hector Berlioz from 1803 to 1865, rev. Ernest
Gluck’s operas left a deep impression upon him.² He was able to receive an introduction to Jean-François Lesueur and was admitted into his class in 1822. By 1826, he was admitted to the Paris Conservatoire, where he studied composition with Lesueur and counterpoint and fugue with Antoine-Joseph Reicha. It was with the experimental instruction of Lesueur that Berlioz found his first real encouragement in discovering new innovations of instrumentation. Berlioz was the student who was “suddenly summing up all his (Lesueur’s) previous endeavors, and with Beethoven’s works as his basis, boldly attempted to create a new type of French symphony.”³ In March of 1828, Berlioz heard the Third and Fifth Symphonies of Beethoven, and his own Symphonie fantastique “can be seen as a deliberate and conscious attempt to work out dramatic and poetic ideas in the framework of a Beethoven symphony . . . [m]ore important, Berlioz discovered that instrumental music has an expressive and articulative force far more penetrating than vocal setting.”⁴

Students at the Paris Conservatoire were eligible for participation in the competition for the Prix de Rome, and on his fourth entry, in 1830, Berlioz won the competition. His career in the next decade, however, was not a successful one. His music was viewed as “eccentric and incorrect” and

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² Henry Raynor, *The Orchestra* (New York: Scribner’s, 1978), 109, sums up this influence on the young Berlioz who was “neglecting his medical studies for the study of scores, notably those of Gluck, whose operas fascinated him by their combination of intense emotion and classical restraint. Gluck’s orchestra, its eloquent, unhysterical woodwind and its almost statuesque poise, moved him intensely.”


in order to support himself he worked as a music critic. During this period, he wrote for several periodicals, including *L'Europe littéraire, Le rénovateur, Gazette musicale*, and the *Journal des débats*.

During the 1830s, he continued to compose consistently, but in the 1840s, there was a period of five years when he did not compose a single work. It was at this time that he began to publish portions of a comprehensive study of orchestration in the *Revue et gazette musicale*, and in 1843 he published this collection of articles as the *Grand traité d'instrumentation et d'orchestration modernes*. In this treatise, he describes not only his ideal orchestra, but also the practical technical matters facing an orchestral composer. A revision was released in 1855. The only significant treatise that preceded this was that of Kastner.

For the next twenty years, Berlioz traveled throughout Europe, conducting his works and studying the orchestral playing in the many cities that he visited. His opinions continued to be presented to Paris through his immense literary contributions, which included three collections of criticism, *Les soirées de l'orchestre* (1852), *Les grotesques de la musique* (1859), and *À travers chant* (1862) in addition to his *Voyage musicale*. He reviewed most of the concerts of the Société des Concerts, wrote of new instruments, of his own impressions of music abroad, and of important musicians visiting France. His authority on instruments and orchestration was known throughout Europe: in 1851, during his travels to England, he

5. Ibid.
6. Ibid.
was a member of the international jury to examine musical instruments at the Great Exhibition.

The influence of his orchestration has been immense, directly upon Liszt, Wagner, the Russians, Strauss and Mahler, but more profoundly by his emancipation of the procedure of orchestration. For Berlioz it was intrinsic to composition, not something applied to finished music. Berlioz also disregarded the 18th-century conception of orchestration as similar to part-writing for voices; in his hands timbre became something that could be used in free combinations as an artist might use his palette, without bowing to the demands of line, and this led to the rich orchestral resource of Debussy and Ravel.7

In the treatise, Berlioz begins his section on the clarinet by contrasting it with the oboe.8 The relationship between the clarinet and the oboe, he states, is not as close as might be supposed since the clarinet belongs to the family of instruments that use a single reed. Perhaps some of the confusion that he wanted to dispel came from the fact that the clarinet was the newest addition to the orchestra, a fact also mentioned in his Memoires:

An entire orchestra is brought together, complete in all its parts. There are stringed instruments, two flutes, two oboes, two clarinets. (To tell the truth this important section has only been completed recently. When the Grand Prix rose above my horizon, there was only one clarinet and a half, for the old man who played the first

7. Ibid.
8. Berlioz, Traité, 134.
clarinet from time immemorial, having but one tooth left, was only able to produce about half the notes from his asthmatic instrument.\(^9\)

Early documentation of the addition of the clarinet to the orchestra indicates that the instrument was often performed by other wind players, in particular the oboist. One Johann Peter Spitz is known to have played the oboe, clarinet, and viola in the court orchestra of Coblenz from 1734 through 1785, and the oboist Carl Barbandt doubled on clarinet in the court of Hanover from 1735 through 1752, and later traveled to London to perform in 1760.\(^{10}\) In the autograph score for Rameau's last work, Les Boréades, a tragédie en musique from 1764, there are various indications for “clarinettes ou hautbois,” “hautbois et clarinettes,” “h.b. et cl,” and “sans h.b. ni clar” even though there are no separate clarinet parts extant. This and other similar evidence implies that the wind players in the orchestra—in this case the oboe players—would double on clarinet.\(^{11}\)

Among the many accounts of orchestral performers that played both instruments or examples of performers using the instruments interchangeably, two other such accounts are provided by Kroll.\(^{12}\) Berlioz may have felt compelled to clearly delineate the differences between these instruments since their interchange had been common practice at one time, even though it was becoming less common in his own day. There is also the simple fact that to the untrained eye, the instruments often closely resemble one another owing to their similar shape and the manner in which they are held when played.

\(^{9}\) Berlioz, Memoirs, 48.

\(^{10}\) Rice, The Baroque Clarinet, 151.

\(^{11}\) Ibid., 114.

\(^{12}\) Kroll, The Clarinet, 49.
Berlioz contrasts the clarinet sound with that of the oboe, describing the sound of the clarinet as full, clear and pure, excepting the uppermost register, which mimics the loud sound of the oboe, and the lowest notes, which can approximate the rough sound of certain notes on the bassoon; the double-reed instruments have qualities of tartness and harshness.\(^{13}\)

Berlioz extends the upward range of the clarinet to d'\(^{14}\), describing the instrument as having a range of three and a half octaves or more. He defines four registers with the names grave (e - e'), chalumeau (f' - b-flat'), medium (b' - c''), and acute (d'' - d''''). It is odd that he would chose the term *chalumeau* as the name for his second register since both Kastner and Gevaert (and everyone since) use the term to describe the low register on the clarinet. Perhaps this word was selected in error, since one could hardly believe that he would use this term to describe the "dull or muffled" tones of the second register.\(^{15}\)

At the time of Berlioz's treatise, the clarinets most used by performers in Paris were of the thirteen- or fourteen-keyed design of

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14. Ibid. At the time Berlioz was writing, Sax was in Paris, and perhaps during one of their many encounters Berlioz witnessed Sax demonstrating notes upward to d'\(^{14}\). See Rendall, *The Clarinet*, 101.

15. According to Nicholas Shackleton, "Clarinet," "[t]he compass of the clarinet has long been commonly divided into four registers: chalumeau, throat, clarinet and extreme. The chalumeau register corresponds roughly to the range of the former chalumeau, from the lowest note of the instruments to about g'... The Chalumeau and clarinet registers are separated by a region of slightly less interesting timbre, the throat register (also called the 'break' or 'intermediate'). The chalumeau register is tonally the most distinctive, being characterized by a marked predominance of odd-numbered partials in tone, which is often described as 'hollow'."
Müller. In order to demonstrate the various fingering combinations that were difficult for the performer, Berlioz provided a series of examples that illustrate diatonic and arpeggiated figurations that should be avoided or which should only be required of the performer in a slow tempo. The difficulties these examples contain are eliminated by use of the Klosé and Sax mechanisms. These exercises demonstrate a mechanism that was still limited by the lack of articulated keys for both right and left hands for the notes found at the lowest end of the bore, and the necessity for some cross fingerings. Thus, alternation between notes that employed either keys or cross fingerings—let alone a combination of the two—must be carefully considered. Berlioz points out that these difficulties will be eliminated once the instruments designed by Sax are adopted.

In order to complete his methodical presentation of the technical capabilities and limitations of the clarinet, Berlioz provides a table of all possible and impossible whole- and half-step trills that might be required of clarinetists. This complete list is further demonstration of the fact that a thirteen-keyed clarinet is the subject of this treatise: the instrument indicated cannot trill between e and f-sharp, since on the Müller clarinet this is impossible because both of those keys must be played by the same little finger; the same problem exists for the trill between f-sharp and g-sharp. Berlioz notes that “difficult” trills included the alternation of a-sharp and g-sharp, b and a, and b and a-sharp, which were all likewise problematic on the Müller clarinet because of the awkward cross-fingering

16. Even though Klosé wrote his tutor in 1843 and Sax had patented his clarinet mechanism in 1840 and 1842, these Müller instruments would not have been replaced by the time of Berlioz’s treatise. This is evident in the final section in which Berlioz comments—separately—on improvements made to the clarinet by Sax, Berlioz Traité, 150.

17. See above, Chapter 3.
for b and the separate key that needed to be opened for the a-sharp. Further difficult trill fingering combinations include those between c-sharp' and b, d-sharp' and c-sharp' (both of which remained difficult on the Klosé instrument); trills between f'/e-flat', g-sharp'/f-sharp', a'/g-sharp', a-sharp'/g', b'/a', c''/b-flat'; and finally the impossible fingering of c-flat''/ b-flat'. These indicate that the upper-joint side trill keys that Klosé and Sax added to their instruments in order to facilitate the production of these trills were not yet found on most instruments.

Berlioz stresses that the best key signatures for the clarinet include the major keys of C, F, and G, B-flat, E-flat, A-flat and D along with their relative minors. Clarinetists generally have four instruments pitched E-flat, C, B-flat, and A and composers can therefore avoid writing in such keys as A, E, B, D-flat, and G-flat majors and their relative minors.

Berlioz provides a brief description of the small clarinet in E-flat. He states that the range of the instrument should not exceed three octaves and a minor third (e through g'') and demonstrates the transposition of the instrument with a brief musical excerpt that reproduces both the written and sounding pitch. He also demonstrates the transposition techniques for the clarinets in C, B-flat, and A by transposing three brief musical passages to various keys as examples of good, passable, bad, and very bad key areas for the three instruments. For the clarinet in C, for example, (written) C and B-flat majors represent good key areas, D and A majors are passable, and D-flat major is very bad. Passages in D, C, and E-flat are transposed for the B-flat clarinet and represent good writing, and E major is presented as bad and B major as very bad. Finally, the clarinet in A is good for the keys of E-flat, F, and C major, bad for E major, and very bad in D-flat major. Berlioz allows the use of the keys of A and E, but recommends that
they be incorporated mainly in simple and slow passages. Through his
demonstration of the best keys to use, Berlioz has further shown how the
composer can avoid the difficult fingering combinations that plagued the
performer using a thirteen-keyed clarinet.

Berlioz acknowledges the infrequent use of the clarinets in D and B
and expresses his regret at this situation, stating that these instruments
could be used advantageously in many instances. However, he somewhat
contradicts his desire to use the clarinet family to its fullest when he
observes that the clarinet in F, a now-obsolete instrument (used primarily
for military bands), is better replaced by the E-flat clarinet. He describes
the sound of the clarinet in F as “screamy”, (criarde) and considers the
lower pitched instrument a better choice. The clarinet in E-flat has a
penetrating sound and is useful when writing melodies that “parody and
degrade.”18 Berlioz observes that by omitting the higher notes from music,
the character of the entire work would be affected.19 He describes the
clarinet in C as an instrument that sounds hard and less charming than the
clarinet in B-flat. In his opinion, clarinets lose purity, sweetness and
nobility in sound the higher the instrument is raised above B-flat, and
obtain a veiled and melancholy character the lower the instrument is
pitched.20

18. Berlioz, Traité, 137.

19. Elsewhere, Berlioz makes the following statement: “the almost total omission of
the shrill notes of the piccolos, oboes and clarinets—all impart to the orchestration of
Spontini’s masterpieces a tone of grandeur, an incomparable energy and power, often a
mood of poetic melancholy.” Hector Berlioz, Evenings with the Orchestra, trans. and ed.

20. Berlioz, Traité, 137. Also in Evenings with the Orchestra, Berlioz describes the
following observation of an Italian opera orchestra: “the sole object of the orchestra being
to produce noises capable of drowning out from time to time the tumult in the theater, the
small clarinets and piccolos emit sounds far shriller than oboes . . .” Ibid., 267.
Berlioz strongly denounces the practice by certain virtuosos who played everything on the B-flat clarinet, maintaining like others before and since that composers write for the characteristic sound of each instrument. The best evidence of this point is his incorporation of the clarinets in B-flat, A, C, and E-flat in his *Symphonie Fantastique*. Henry Raynor writes,

The B-flat Clarinets are the richest in tone and tend to be melancholy in their lower register while cheerfully perky towards the top of their range, and Berlioz always uses them in the register which serves his expressive purposes. Clarinets in A tend to be rougher in tone but more consistent in mood throughout their register. Clarinets in E-flat are stridently shrill and impudent at the top of their range, and Berlioz chooses them to introduce the distorted, parodied version of the symphony's "idée fixe."  

And in addition to the sacrifice of tone, a performer who substitutes the B-flat clarinet for the A clarinet loses the ability to produce the low c-sharp (written e) that is available only on the A clarinet. Of transposing this low e up an octave on a B-flat clarinet Berlioz could only say that it was intolerable (c'est intolérable).

Just as each clarinet has its own distinct sound, so each register of the clarinet has its own unique character and Berlioz describes them. The piercing quality of the fourth register is recommended for loud moments in orchestral music and for dramatic events in solo writing. But he also adds that the register can be used for soft dynamics if properly prepared and demonstrates this with an an excerpt that has the clarinet sustaining the notes g", a", and b-flat" at soft dynamics through interruptions from fortissimo string tremolando: since the articulation of these notes tends to be sudden, he suggests this as an adequate method of smoothing the initial


entry of each note and thus giving the performer a way of hiding the attack and establishing a firm and clear sound. According to Berlioz, both lyrical and florid styles can be negotiated very successfully in the second and third registers. For the first register, Weber is a major source of inspiration for Berlioz. It is pointed out that the composer of Der Freischütz was the first to demonstrate the use of sustained notes in the low register to create the effect of threat, cold, and quiet rage.

Berlioz considers the third register capable of the greatest expressive detail. What follows is perhaps one of the most poetic descriptions of the clarinet and one of the most quoted excerpts from the treatise:

The character of the tones of the medium register is imbued with loftiness tempered by a noble tenderness, appropriate for the expression of the most poetic feelings and ideas. Only the expression of frivolous gaiety and even of artless joy seems to be denied to the instrument. The character of the clarinet is epic rather than idyllic—like that of the horns, trumpets and trombones. Its voice is that of heroic love; and if the mass of brass instruments in grand military symphonies suggests the idea of warriors covered with glittering armor, marching to glory or to death, so do numerous clarinets playing in unison seem to represent loving women who, with proud glances and deep affection, exalted by the sound of arms, sing during the battle, crowning the victors or dying with the vanquished. I have never been able to hear military music from afar without being profoundly moved by that feminine quality of tone present in the clarinets; it has always left me with impressions similar to those received when reading ancient epic poems. This beautiful instrumental soprano, so resonant, so rich in penetrating accents when employed in masses, gains as a solo instrument in delicacy what

23. Berlioz himself acknowledged his debt to Weber’s orchestration and several others have since reiterated it: “He [Berlioz] endeavored, moreover, to discover new technical and tonal qualities in every instrument and new possibilities for combining them. The contemporary from whom he took the most examples and to whom he always accorded enthusiastic admiration was the German Weber.” Bekker, Story of the Orchestra, 147.

24. Berlioz, Traité, 137.
it loses in power and brilliance. Nothing is so virginal and pure as the tinge given to certain melodies by the tone of a clarinet in the medium register, if played by a master of the instrument.  

And he continues to describe the clarinet’s expressive abilities as he prepares the reader for his first musical example, taken from Weber’s Overture to Der Freischütz:

There is no other wind instrument which can produce a tone, let it swell, decrease and die away as beautifully as the clarinet. Hence its invaluable ability to render distant sounds, an echo, the reverberation of an echo, or the charm of the twilight. I know no more admirable example of such shading than the dreamy melody of the clarinet, accompanied by the tremolo of the strings, in the Allegro of the “Freischuetz” overture. Is this not the lonely maiden, the blond betrothed of the huntsman, with her eyes raised to heaven uttering her tender plaint, amidst the rustling noise of the deep forest shaken by the storm?--O Weber!

The excerpt that follows features the clarinet in an extended lyrical solo that Weber marks con molto passione and that employs the clarinet’s third register as its primary voice: only once does this solo drop into the second register. It begins with a bravura entrance of a sustained fortissimo a", and the excerpt as a whole demonstrates Weber's skill in utilizing the character of the third register and creating a natural phrase shape by creatively using registral contrasts on the instrument.

For his second musical example of the clarinet’s third register, Berlioz chooses an excerpt from his own Lélio that uses only that register of the instrument. The phrasing creates the effect of a recitative, and the clarinet in A is accompanied by string tremolo, harp arpeggios, and pizzicati from the low strings. Berlioz instructs the clarinetist to drape the

25. Ibid., 138.

26. Ibid.
end of the instrument with a leather bag in order to mute the sound, providing an enhanced echo-like sound in the solo that is marked dolcissimo and ppp. “This shadow-like music creates a somber sadness and tends to provoke tears—beyond the power of the most dolorous tones; it has a melancholy similar to the trembling harmonies of the aeolian harp.”  

Berlioz mentions other works that effectively use the clarinet’s third register. These include solos from the second movement of Beethoven’s Seventh Symphony, an aria from Gluck’s Alceste, and a brief passage from Sacchini’s opera Oedipe. Beethoven uses the second register of the clarinet in A to provide a “melancholy, noble character in order to bring out all its inherent painful plaintiveness.”  

Berlioz describes the excerpt from a ritornello in Gluck’s opera as a theme that is redolent of desolation and mournful grandeur. Sacchini uses two clarinets, softly descending in thirds to provide a musical effect of love and purity: the dramatic stage action here involves two lovers exchanging glances and Berlioz exclaims that “one almost sees Eryphile modestly casting down her eyes. It is truly admirable!” Berlioz points out that only the clarinets can provide the necessary tone color that makes this passage successful—in his opinion, two oboes would destroy the effect.

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27. Ibid., 143.

28. Berlioz elsewhere describes this solo as follows: “But a gleam of hope has just appeared; these agonizing accents are followed by an airy melody: pure, simple, soft, and resigned—patience smiling at grief. Only the basses continue their inexorable rhythm under this rainbow of melody; and it seems, if I may borrow a quotation from English poetry, like: ‘One fatal remembrance, one sorrow, that throws / Its black shade alike o’er our joys and our woes.’” Hector Berlioz, Beethoven by Berlioz, comp. and trans. Ralph DeSola (Boston: Crescendo, 1975), 37.

29. Berlioz, Traité, 147.
To complete his presentation of the appropriate use of the different clarinet registers, Berlioz states that Mozart was the first composer to fully utilize the low notes of the instrument, referring the reader to the trio of masks in Don Giovanni, since neither Antonio Sacchini nor Gluck used this register in their compositions. He further points out that the somber character of this register was exploited by Weber, who wrote frequent sustained chordal passages for the clarinets in this range. In order to demonstrate that this effect is amplified when a number of clarinets play multiple notes in the low register, Berlioz provides a musical example that is scored for two clarinets in C, clarinet in A, and bass clarinet in B flat. These instruments play a diminished seventh chord of sustained notes in their respective first registers. Berlioz claims that if the instruments are scored in this demonstrated fashion, the combined timbres will create an effect that is dark and ominous.  

The section dedicated to the alto clarinet is very brief. Berlioz says that this instrument, pitched in F or E-flat is not used in a “well-constituted orchestra.” Examples of transposed pitch and actual pitch are provided and Berlioz uses his notation of the range of the instruments as the example to demonstrate the correct method of transposition. Like most other members of the clarinet family, the range of this instrument is given by Berlioz as extending from e to g
d.

Regarding the bass clarinet, Berlioz remarks in his Memoirs,

But now that Adolphe Sax has perfected the Bass Clarinet to the point where it can perform everything that lies within the range of the Basset-horn and more (it can play a minor third lower), and

30. Ibid.
31. Ibid.
since its timbre is similar to the Basset-horn’s but even more beautiful, the Bass Clarinet should be studied in Conservatories alongside the soprano clarinet and the smaller clarinets in E-flat, F and high A-flat.\textsuperscript{32}

The bass clarinet in B-flat was by then the common instrument in the low clarinet family, although Berlioz acknowledges the existence of the same instrument pitched in C. He observes that the instrument has the range of e through g" and that it is best used in the first register since its reed is weaker and provides a more covered sound. One particularly effective use of the instrument that Berlioz presents is the method of combining the ordinary clarinet with the bass clarinet, which plays the same line an octave lower. He also cautions the reader to avoid writing for the bass clarinet in the upper registers if ordinary clarinets are available, since this would be merely redundant.

Berlioz uses the monologue from the fifth act of Meyerbeer’s Les Huguenots to demonstrate the capabilities of the bass clarinet.\textsuperscript{33} This excerpt—as given by Berlioz—illustrates the use of the bass in the first, second, and third registers in dramatic juxtaposition with the voice, but the representation of the ascending arpeggio in the fifth bar is erroneously transposed by Berlioz: the top of the run should reach a g"", and not a g" as Berlioz has indicated, so it thus is actually an example that encompasses all four registers of the instrument.\textsuperscript{34} The use of the g"" is appropriate and


\textsuperscript{33} As Bekker observes in Story of the Orchestra, 158, “Berlioz esteemed Meyerbeer highly and quoted many examples from his works in the Traité . . . the distinguishing characteristic of Meyerbeer’s orchestration is not the abundance of the instruments but his use of the them in soloistic and concertante style and in combination with the singing voice.”
logical for the dramatic expression of the moment, but it is also a striking example of the increasing virtuosity that composers could rely upon at the time—Berlioz is not alone in miscopying this solo: its range is so astounding for a bass clarinet, even today, that many assume that Meyerbeer's original is in error.

Berlioz states that the low register of the bass clarinet can assume either the wild character of the low notes of the soprano clarinet, or can impart "the calm, solemn expression of certain organ registers."\(^{35}\) He points out that these qualities are easily attainable if the performer is skilled. A final observation describes the use of four or five instruments employed in unison in order to create "an excellent devotional sonority to the basses of the wind instruments."\(^{36}\) In Berlioz's perfect orchestra—he speaks of the ideal ensemble of 465 instrumentists—this indeed would be possible!\(^{37}\)

The state of neglect that the basset horn experienced was lamented by Berlioz, who stated that "[t]he omission of the basset horn from the syllabus of students of clarinet was until recently a serious error, for it meant that a great deal of Mozart's music could not be performed properly in France—an absurd state of affairs."\(^{38}\) The final member of the clarinet family that Berlioz deals with is just this instrument, which, as he states, is different from either the alto clarinet in E-flat or F in the fact that it has an added

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34. Rendall points out that the solo in Act V of *Les Huguenots* does indeed employ the range of written c to g". He observes that Berlioz presents the ascending arpeggio as ending on g", an octave lower than Meyerbeer's score. Rendall says "No doubt the composer (Berlioz) found the extreme notes of less value than the lower." Rendall, *Clarinet*, 153.


36. Ibid.


brass bell on the bottom of the instrument that allows the instrument to extend down chromatically to a written c. He provides a written example of the entire range of the basset-horn and its transposition and indicates that its total range is from that same low c up through g". The student is recommended to use the low register predominantly since the upper notes of the basset horn are not as pure as those of the ordinary clarinet. The low range is best employed with care when extending below e, and these notes should be written slowly and detached. Berlioz provides an example of inappropriate use of these notes—essentially a slurred melodic passage in running eighth notes involving c, c-sharp, d, d-sharp, and e. He briefly mentions that Mozart uses two basset-horns in the Requiem to darken the harmonic color, and he refers to the “important” basset horn solos in La Clemenza di Tito.

Sax lived in Paris at the time that Berlioz was writing his treatise and it is clear that they worked together—Sax played his experimental saxophone in the only performance of the Chant Sacre by Berlioz, who conducted the performance. Berlioz devotes the final section of his clarinet chapter to the improvements that Sax had introduced to the construction of the clarinet, although he makes no mention of Klosé. He credits Sax with providing several modifications to the clarinet that improved sound, intonation, range, facility, and evenness. Those specifically singled out by Berlioz include the lengthening of the clarinet

39. Berlioz, Traité, 150.

40. David Pino, The Clarinet and Clarinet Playing (New York: Dover, 1980), 210. This work, scored for the astounding combination of trumpet, cornet, flügelhorn, clarinet, bass clarinet, and saxophone, is unfortunately lost.

41. See above, Chapter 3.
in order to lower the clarinet range to e-flat that also gained the improved
b-flat’ and allowed the clarinetist to easily trill from b-flat’ to c-flat" or
c". Other improvements allowed for more facile trills between a' and b', f-
sharp' and e' in addition to vastly improving the octave jump between f
and f". Berlioz points out that Sax's mechanism accomplishes these
improvements without making the performer have to learn a new fingering
system, since these improvements were applied to the Müller system.
Berlioz notes that the fourth register was improved by moving the register
vent further up the back of the instrument, and that this placement allowed
the register to speak more freely ("one can attack pianissimo with less
danger"), sound clearer and more mellow, and play softer than other
instruments. A final improvement, Berlioz notes, is the use of a metal
mouthpiece so that the player can avoid the problems encountered with the
mouthpieces made of wood.

Finally, Berlioz enthusiastically mentions Sax's bass clarinet in B-flat
as an instrument superior to the other instruments used in France at that
time. He states that Sax had perfected the intonation and sound quality,
achieved more equal temperament throughout the chromatic scale, and
increased the instrument's dynamic range. His description of the instrument
states that it had twenty-two keys and was fitted with a concave metal
reflector, attached to the bottom of the instrument, that served to direct the
sound and increase its volume.
CHAPTER FIVE

THE SUPPLÉMENT AU TRAITÉ GÉNÉRAL D'INSTRUMENTATION
OF GEORGES KASTNER, 1844

Kastner wrote the Supplément au traité d'instrumentation for two purposes. First, it provides additional information that concerns the development of the orchestral instruments since the publication in 1837 of the Traité. Second, the new work is more detailed in its presentation of certain areas, suggesting perhaps that the pedagogical use of the Traité at the Conservatoire had made clarification necessary. Each specific point that Kastner makes is given a reference to a page and line number of the treatise to indicate what, exactly, is being supplemented; the new work is rather like a study guide for the first, but it also includes much new information. The section of the Supplément devoted to the clarinet deals largely with the developments of Sax and Klosé. Kastner also introduces different varieties of alto and bass clarinets that were omitted from his treatise and refers the student to new method books that had been published in the interval.

Kastner's initial point is that the upper range of the clarinet was extended by Sax as far as d'" and even e". He remarks that this

1. Georges Kastner, Supplément au traité général d'instrumentation, comprenant les propriétés et l'usage de chaque instrument, précédé d'un résumé sur les voix, à l'usage des jeunes compositeurs (N. p.: n. p., 1844).

2. Rendall, Clarinet, 101, states that the addition of the a second speaker key allowed Sax to "provide easier emission and greater security to the acute register as far as c'" and even to d and e beyond."

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accomplishment had never been previously encountered. In the next section, as he addresses the general range of the clarinet, he maintains his previous definition of the compass and includes only the notes between e and c"". An important modification is that he redefines the number of distinct registers on the clarinet: there are now four registers instead of his previous designation of three. Influenced by Frédéric Berr, who in his method book had divided the clarinet into four registers, Kastner presents the range of f-sharp' through b-flat' as a register distinct from the chalumeau since the notes of this small segment have a muted quality that sets them apart from the richer lower range. His new divisions and names for the clarinet registers are: chalumeau (e - f'), intermédiaire (f-sharp' - b-flat'), clarion (b' - c""), and aigu (c-sharp"" - c""").

The various technical improvements provided by the Klosé clarinet comprise the next section of the supplement. Kastner observes that this system provided the clarinet with an easier and more natural fingering system, an even quality of sound between the notes, a significant improvement in the accuracy of pitch throughout the entire range of the instrument and a fingering system that eliminated the problems encountered on the clarinets with thirteen keys. He provides twenty-five examples that demonstrate the improvements in fingering that Klosé provided on his instrument in comparison with the thirteen-keyed clarinet. Former difficulties with trills are also eliminated on the Klosé clarinet, and


4. Berr's Traité complète de la clarinette à quatorze clefs, was published in 1836 by Duverger. See Weston, More Clarinet Virtuosi of the Past, 50.

5. Kastner, Supplément, 23.
Kastner provides twelve different cadential trills that can be employed with ease on this instrument.

Sax is the subject of the next section of additions that Kastner discusses. First, Kastner points out that Sax's extension of the bottom of the range down to written e-flat provided the clarinet with a vastly improved b-flat', turning the weakest note on the clarinet into one of the most brilliant and beautiful notes. Other improvements that he details are the new fingering for b/f-sharp' and the new-found ease of trills from b-flat' to either b' or c'', a'to b', and e'' to f-sharp". He also indicates that combinations in passage work of f', f-sharp', and c-sharp' are no longer necessary to avoid.6

The fourth (aigu) register was vastly improved with Sax's second register key. Kastner observes that the notes from f"" through e"" became easier to play and were given a more graceful sound with the use of the new key. He points to further advantages since this key enabled the performer to achieve a softer sound quality, better dynamic control, and smoother attack in the fourth register. To replace the older, wooden mouthpieces, Sax introduced a metal mouthpiece that avoided the former problems that the performer experienced with changes in humidity, and Kastner applauds the mouthpiece for improving timbral clarity.7 Kastner concludes the section by pointing out that Sax had improved the range, intonation, sound quality, and fingering on the clarinet without radically

6. Ibid., 24.

7. According to Kroll, The Clarinet, 29, many players and manufacturers were experimenting with mouthpiece construction during this time. The particular problems of excessive humidity and dryness often caused the wooden mouthpiece to split or to cause the lay to warp. Experimenters used various materials thought to be unaffected by moisture—including glass, china, marble, ivory and metal.
changing the fingering system of the Müller clarinet, further adding that Sax's instrument performs equally to Klosé's in both ease and accuracy. Kastner adds another twenty-three examples that are "examples of poor or nearly impossible passages on the old clarinet of thirteen keys that are now performed with ease on both clarinets by Klosé and Sax" (exemples mauvais ou presque inexécutables sur l'ancienne clarinette à treize clefs et qu'on peut donner avec facilité et justesse sur la clarinette Klosé et la clarinette Sax). These are examples of various arpeggiated and tremolo combinations that incorporate the combinations that were problematic for the Müller clarinet.⁸

Finally, Kastner suggests that the student read Klosé's method book that is specifically written to instruct students using the clarinet with moveable rings. In his opinion this is one of the best instruction books for the clarinetist and the composer writing for this new instrument.⁹

The rest of the supplement is dedicated to instruments that did not appear in the treatise. Kastner attributes the invention of the bass clarinet to Gottlieb Streitwolf in the town of Göttingue (Göttingen) in 1828.¹⁰ Rendall further describes Streitwolf's instruments as being first pitched in C, then in B-flat, made of boxwood, and having either seventeen, eighteen, or nineteen keys.¹¹ The contrabass clarinet was invented the next year (1829),

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⁸ Kastner, Supplément, 24.
⁹ Ibid.
¹⁰ Both Kroll, Clarinet, 113 and Carse, Musical Wind Instruments, 171, attribute the invention of the bass clarinet to Gilles Lot in Paris in 1772. Additional developments of the bass clarinet were made in 1793 by Heinrich Grenser in Dresden, in 1807 by Desfontenelles in Lisieux and Dumas in Paris and finally in 1812 by François Sautermeister in Lyons.
¹¹ Rendall, Clarinet, 151.
and Kastner states that the instrument is presented in the *Gazette Musicale de Berlin* of 1830 as being an instrument that surpasses all bass instruments in strength and size.\(^{12}\) Lavoix writes that this instrument, too, was invented by Streitwolf, and could play two and a half octaves from f to b-flat' (sounding an octave below the bass clarinet).\(^{13}\)

The early bass clarinets presented a number of problems to instrument manufacturers since the length of the instrument made it cumbersome to hold, and the makers were forced to experiment in various ways of doubling and bending the instrument to overcome this awkward situation. Tone holes did not lie within the normal stretch of the hand if they were bored with correct placement for intonation and sound quality. Kastner discusses the improvements that Sax made on the bass clarinet, claiming that this instrument was perfectly in tune, even in tone-quality, and possessing a *timbre magnifique*.\(^{14}\) He points out that Sax could put his tone holes in the their proper places because he covered all of the holes with keys. Sax added the additional speaker key mechanism that he devised for his soprano clarinet and Kastner says that this provides the high register with the same facility of response and beauty as that of the low register. Although the range of the bass clarinet is basically the same as the soprano clarinet (e - g''\(^{\prime}\)), Kastner advises that the best registers to use are the first and third. Kastner recounts an event that took place before an audience assembled at the home of Meyerbeer: Sax accomplished the astounding feat of playing a chromatic scale on his bass clarinet that

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13. Lavoix, *Histoire*, 124. However Kroll, *Clarinet*, 110 writes that this instrument was a *Kontra-Altsklarinet* in E-flat, an octave below the alto clarinet.

encompassed four full octaves, thus convincing many influential musicians of the efficacy of his designs.\textsuperscript{15}

One further instrument is mentioned as a relative of the bass clarinet. Klosé had encountered the \textit{glici-baryphone} and communicated the details to Kastner: it was a bass clarinet that was invented in Milan and played very loud. Indeed, this instrument, invented by Catterino Catterini of Padua would have received more attention if it had been an easier instrument to maintain. It was made of a single block of boxwood about twenty-three inches long with two parallel bores similar to the bassoon, a brass crook to hold the mouthpiece, and a wide-flared bell made of wood. The twenty-four keys covered the tone holes in their correct positions. The large bore allowed the instrument to produce a vigorous sound, but keeping the bore dry, however, was a difficult feat and the instrument encountered many practical problems due to excess moisture.\textsuperscript{16}

Yet again, it was Sax who was responsible for providing improvements to the alto clarinet, an instrument whose invention is earlier attributed by Kastner to Müller.\textsuperscript{17} Kastner expresses regret that neither the alto clarinet in E-flat nor that in F are used except in military music, in which it often substitutes for the third and fourth clarinets in order to fill out the harmony. The range of the instruments are presented in transposed and real form and have the same compass as the bass clarinet (e - g\textsuperscript{"}').\textsuperscript{18}

\textsuperscript{15} Ibid., 25.

\textsuperscript{16} Rendall, \textit{Clarinet}, 152.

\textsuperscript{17} Kastner, \textit{Supplément}, 40.

\textsuperscript{18} According to Kroll, \textit{Clarinet}, 110, "[t]he alto clarinet is pitched sometimes in F, but usually in E-flat . . . It sounds stronger and fuller than the basset-horn and responds more surely. (E-flat alto clarinets extending to d, sounding F, are also made, for the purpose of playing basset-horn parts.)"
In order to complete the new additions to the clarinet family, Kastner concludes by briefly introducing the contrabass clarinets in E-flat, F and B-flat. Kastner demonstrates the range of each instrument (e - g"") and the correct method of transposition by contrasting the written pitch and sounding pitch. These instruments, which sound an octave below the alto clarinets (E-flat and F) and bass clarinets (B-flat), provide a rich sound to the clarinet family, and Kastner advises that they are best used when performing sustained notes instead of rapid passage work. He also mentions the *clarinette bourdon*, Sax's version of the contrabass clarinet in B-flat, claiming that Sax improved this instrument so that it played with a richer sound, although apparently few of these instruments were made since Sax did not even possess one in his collection that was sold in 1877.

Kastner provides further details regarding the improvements that Sax provided for the lowest members of the clarinet family. He mentions the upturned, concave metal reflector at the lower end of the instrument that enabled the instrument to produce a strong sound and which, by adjusting the reflector, enabled the performer to direct the lowest notes in any desired direction. The number of keys on Sax's bass clarinet were twenty-two; his soprano instruments had anywhere from thirteen to seventeen keys.

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21. "Or, if required, a curved bell could be fitted extending the downward range to low c. The four additional notes were located on the long neck of the bell. A modification was available for military use, having a shortened body and elongated bell brought well up in the front. This was know as *Clarinette basse recourbée à pavillon de cuivre.*" Rendall, *Clarinet*, 153.

Kastner's final amendments involve a brief discussion of the dynamic capabilities of the clarinet. He maintains that, more than any other instrument, the clarinet can create the effect of an echo since it can weaken the sound to create the illusion of distance. On the other hand, he demonstrates the effect of strong, grand, and energetic power that can be created when combining several clarinets, providing a musical example that incorporates one soprano clarinet and two bass clarinets playing a melody that spans four octaves with a spacing of two octaves between the soprano and first bass, and an additional octave between the first and second bass clarinets.
CHAPTER SIX

THE NOUVEAU TRAITÉ DE L'INSTRUMENTATION OF
FRANÇOIS-AUGUSTE GEVAERT, 1885

François-Auguste Gevaert was born in Ghent in 1828.\(^1\) He was destined to become one of the most important Belgian musicologists of his day and had great influence as a teacher in his country. His musical career began at a very early age; his earliest studies were with the organist J. B. Christiaens. Unlike Kastner and Berlioz, music was the sole focus of his youthful studies. In 1841, at the age of thirteen, he entered the Ghent Conservatory, and after two years of study he was awarded the first prize in piano performance, subsequently becoming an organist for the Jesuit College of Ghent and a teacher of piano. His studies included the instructional works of Cherubini, F. J. Fétis, Friedrich Wilhelm Marpurg, and Reicha, and he frequently attended performances given at the Théâtre de Gand.

From an early age he exhibited an interest in musical composition, writing such works as masses, motets, and piano pieces. He achieved his first public recognition in 1847 when he was awarded first prize for a cantata that he submitted to the Société des Beaux-Arts in Ghent. In the same year he was given the Belgian Prix de Rome for a second cantata. Like Berlioz, Gevaert found himself required to travel to Italy in order to

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fulfill the requirements of his prize. His parents requested a delay owing to his young age at the time—nineteen—and he was granted a stay of two years, during which time he continued to compose. His first opera was staged in Ghent in 1848.

His travels began in 1849 and lasted through 1852. He visited France (Paris), Spain (Madrid), Italy, and Germany. He was most impressed with his experiences in Madrid, and wrote a report, published by the Belgian Royal Academy in 1851, chronicling his observations on the state of Spanish music (he would later submit a second similar study about Italy).

Upon his return from his travels in 1852, he officially moved to Paris and began pursuing a career as an opera composer. He achieved success in this area and between the years 1853 and 1864 composed nine operas that were performed by the Théâtre Lyrique and the Opéra Comique. In 1867, he was appointed Music Director of the Opéra and remained in that position until the outbreak of the Franco-Prussian War, at which time he returned to Belgium and assumed the role of Director of the Brussels Conservatory, succeeding Fétis. He held this post for thirty-seven years and established the school as a leading institution and center of learning. Gevaert exerted great influence and instigated reforms in music schools throughout Belgium. He became composer to the King of Belgium and was a member of the Royal Academy, the Institut de France, and the Royal Academy in Berlin.

While he composed other works in addition to opera—including cantatas, sacred music, orchestral pieces, and chamber music—he is best known as a writer of pedagogical material. In 1863, while in Paris, he wrote his *Traité général d'instrumentation*. He expanded and revised this work in 1885, splitting it into two separate works, the practical manual
retilted *Nouveau traité d'instrumentation*; this is the version reviewed here in its English translation. It was "declared a monument of knowledge," and was subsequently translated into several languages, with such notables as Tchaikovsky and Hugo Riemann translating versions for their native countries. Other pedagogical works that have been highly praised are his *Vade-mecum de l'organiste* and the *Traité d'harmonie théorique et pratique*. He is perhaps most remembered today for his historical writings in the area of ancient and early medieval music.

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In his introductory material, entitled "The Clarinet Family," Gevaert begins with an account of the historical inception of the clarinet: he is the only one of the authors presented here who begins in this methodical manner. He presents the predecessor of the clarinet, the chalumeau, as an instrument used by Italian and German composers of the eighteenth century but states that it was not used in French compositions of the period. This is quite astounding, since the etymology of the name, apparent even in the derived cognates of the name in English (*shalamo*), Italian (*scialumò*), and German (*Schalamaux*) point to a French origin. It has been proposed that the instrument was adopted by the German nobility in an attempt to copy the style of their late seventeenth-century French contemporaries, although

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2. Riessauw, "Gevaert, François-Auguste."

3. Rice, *The Baroque Clarinet*, 16. Rice states that the origin of the instrument is suggested by the French name and that this is supported by evidence in several books and musical sources.
its absence from French music of the time would appear to contradict this.  

In order to trace the development of the clarinet from the chalumeau, Gevaert compares the acoustical differences of the chalumeau and the clarinet. He begins by defining the physical attributes of the chalumeau as "a cylindrical tube pierced with nine holes and speaking by means of a striking reed." This keyless version of the instrument provides holes for each finger (except right thumb) and includes a doubled eighth hole for the right little finger. Gevaert only accounts for this early version of the instrument and does not address the later employment of keys and of varying sizes of instrument (soprano, alto, alto d'amour, tenor or bass).

Gevaert next makes a comparison of the fundamental series of both instruments, chalumeau and clarinet. Ten pitches from f through a' are listed as the fundamental of the chalumeau, an inconsistency since the number of notes cannot be reconciled with the number of tone holes as described by Gevaert. The same notes are presented as the fundamental series of the clarinet in conjunction with their upper twelfths produced by the addition of the speaker key to that instrument, the real distinction between chalumeau and clarinet.

Gevaert states that this second register of the clarinet was at first separated from the fundamental series by a minor third. It is not possible that he can be referring to the interval between a fundamental note and its overblown partner since there is no partial a minor third above any

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5. Rice, *Baroque Clarinet*, 24, reprints the depiction of this same type of instrument from Diderot and d'Alembert's *Encyclopédie*.

6. Ibid., 29. There are currently eight extant instruments in collections that were constructed between 1700-1760, and these instruments have from two to seven keys.
fundamental. He is more likely referring to the fact that the earliest clarinets, equipped with a key for $a'$ but not for $b$-flat' or $b'$ were left with a gap of a minor third ($a'$ to $c''$) between the two registers because the fundamental register was thus incomplete. Early fingering charts, however, indicate that the acoustic proportions of the clarinet did not always correspond to the twelfth, so it cannot be completely ruled out that Gevaert is basing this statement on some earlier source, however implausible it may seem.7

The addition of the register vent, properly placed, to the chalumeau is attributed to the instrument maker Denner around the year 1700. The earliest clarinets have been traced to Johann Christopher Denner and his son, Jacob, who were noted instrument makers working in Nuremberg. In addition to the register vent placed well toward the top of the bore, the clarinet has a wider bell than the chalumeau and more definite flare to the bore. The mouthpiece of the clarinet is designed to facilitate the production of overblown notes.8 The name chalumeau has been retained by custom to refer to the lowest register of the clarinet—that which it shares with the chalumeau instrument—while clarinetto was employed to describe the higher register, which must have sounded similar to the clarino trumpets of the day.

It is the variety provided by these two registers that gives the clarinet the unique role it plays in the woodwind family. As Gevaert observes,

7. One such early fingering chart is reproduced in Rice, Baroque Clarinet, 65. It indicates that the fundamental tone $f$ produces a $b'$ when the speaker key is opened. It seems most likely that this was owing to poor construction or incorrect placement of the speaker vent. While this does not explain the possibility of Gevaert's observation of a minor third, it does show the precedence of unusual relationships between the registers.

8. Ibid., 38.
“Owing to its rich and expressive quality and its manifold capabilities, the Clarinet took up among wind instruments a position analogous to that of the Violin among bowed instruments.” Of course, the extended range provided by the clarinet’s acoustical properties is certainly part of that unique role.

The clarinet that is described by Gevaert has eighteen holes and thirteen keys. Its fundamental scale runs chromatically from e through b-flat', nineteen notes. This instrument was an adaptation of Müller’s thirteen-keyed instrument developed by two separate Belgian manufacturers, Mahillon and Albert. The older Müller design was improved in two substantial ways: the speaker vent was moved to the front of the instrument and sealed with a wrap-around mechanism, which improved the sound of the b-flat' by making it “more sonorous” and provided greater purity of sound in the acute register (donnait un si-bemoll plus sonore et une grande pureté à toute l'octave du clarion); and a long key for g-sharp' was added that worked independently of the a' key.

When Gevaert was appointed director of the Brussels Conservatoire in 1871, he urged his new colleagues to adopt the Boehm-Klosé common in France, but abandoned this quest “on the advice of the better clarinetists”


(sur le conseil des meilleurs clarinettistes). Their refusal delayed the official adoption until late in the 1890s.

Albert's instrument had a larger bore than Mahillon's and was the more popular of the two. Owing to the increased bore size and several key additions (an extra c-sharp" that facilitated performance in the sharp keys, a short side-key for e-flat', a long trill key for a'/b-flat') the instrument was considered by performers and composers as superior in sound and intonation.

Gevaert presents the gamut of the clarinet in its relation to the fundamental series. This, of course, is how the entire range of the instrument is achieved—it could not be otherwise—but Gevaert presents only the simplest of these relations, even when the simplest is not the one used by performers. He shows, for instance, f" as the second partial of b-flat', which is sound theoretically, but not practically: producing the notes from c-sharp" through f" as second partials of a fundamental a twelfth below provides notes of uncomfortable instability and questionable intonation, and so these notes are usually produced as fourth partials of a fundamental a major seventeenth below. Notes above f" are produced either from sixth or tenth partials, the eighth being out of tune. Gevaert's orderly presentation of the physical basis of the clarinet's range is thus a theoretical possibility but a practical impossibility—one is reminded of the


14. According to Rendall, *Clarinet*, 111, these instruments were even considered superior to the modern-day Boehm-Klosé instrument. Belgian and English players continued to use this instrument until the increasing demands of composers required them to switch to the more facile Klosé instrument.
speculative medieval treatises with which Gevaert must have spent so much time.

The subject of notation is presented next, treated less thoroughly in the earlier treatises, yet still important because of the conflicting usage of different times and places. Notation for the clarinet normally appears in the treble clef, with the exception of some writing by Mozart. Owing to Anton Stadler’s extension of the instrument’s compass down to c, Mozart would notate the bottom of this register in bass clef an octave lower than the actual register. This is a practice that Mozart also used for the horns, which allowed for the notes to remain within the staff when incorporating the wide range of the instrument. Gevaert also informs the reader that Wagner, on the other hand, uses the F clef but scores the instrument indicating the actual register on the staff.

The final portion of the introduction is devoted to listing the twelve members of the clarinet family. Owing to the simplicity of clarinet construction, instruments of all sizes were easy to produce.\(^\text{15}\) Gevaert lists four categories of clarinets. The small (soprano) clarinets were pitched in the keys of A-flat, F, E-flat, and D, and were generally used most in military bands. The ordinary (soprano) clarinets were in C (which he defines as the “standard instrument”), B, B-flat, and A; the alto clarinets were in F (Basset-Horn) and E-flat; and finally the bass clarinets were in B-flat and A. He refers to instruments invented by Adolphe Sax that sound an octave lower than the alto clarinets, the contrabass clarinets in F and E-

\(^{15}\) According to Montagu, *Romantic and Modern Musical Instruments*, 62, the clarinet was easier and cheaper to make than the oboe and early nineteenth-century flute since the bore of the instrument was cylindrical instead of conical.
flat. These are also described by Lavoix, but Gevaert points out that these instruments have not been used in compositions.¹⁶

The following detailed treatment of the clarinets is divided into four main sections, with the bulk of material dealing with the ordinary clarinets and brief sections discussing the alto, bass, and small clarinets.

Gevaert begins the section on the soprano instruments with the clarinet in C, the oldest member of the clarinet family and the model for all the other instruments. Its range of three octaves and a sixth (e through c‴) is divided into four discrete registers, as in Berlioz. A remarkable feature of his discussion on the registral qualities of the clarinet is the comparison of the clarinet to the character of the female voice. Presenting the compass of the clarinet as a combination of the ranges of the soprano and contralto voices, he observes that the acute register (b' - c‴) "has the bright quality of the high soprano; the chalumeau (e - e') with its hollow incisive timbre, recalls the tone of the deeper female voice."¹⁷ The other two registers are areas to use with caution. The medium register (f - b-flat') is weak and dull while the highest register (d‴ - c‴) is too high for the human voice and has a shrill, piercing quality. The medium register notes g-sharp', a' and b-flat' are recommended as notes to avoid.

To demonstrate the correct use of the problem areas on the clarinet, Gevaert chooses as his first example the clarinet solo in Weber's Overture to Oberon. This excerpt is to demonstrate the proper use of the clarinet's medium register in an exposed passage. It is a curious choice, since the notes g-sharp' and a' are used to reach the apex of a dramatic crescendo.

¹⁶. Lavoix, Histoire, 125.
¹⁷. Gevaert, New Treatise, 166.
Furthermore, the first five measures of this eight-measure fragment center around g' and f' (both occurring on the strong beats of each first four bars of the phrase) of the same medium register that is the weakest of the instrument. But the point would seem to be here that this and the following examples are extraordinary uses of these registers whose success is greatly dependent on the skill of the performer.

The second example is provided as a demonstration of the successful use of highest register. The opening measures of the fourth movement of the Reformation Symphony by Felix Mendelssohn demonstrate that this register can be used carefully in context—in this case as an effect to create the sound of organ stops in a chorale passage. In this instance, Gevaert describes the effect of the C clarinet (an instrument he had earlier called bright to the point of harshness) in the highest register as creating the effect of the organ stops of the Fifteenth and the Cornet. Mendelssohn here writes for two clarinets playing in octaves with the first clarinet doubling the flute and the second clarinet doubling the viola line. When the trumpets enter in the fifth measure, both clarinets drop into the grave and medium register, and at the end of the seventh measure the first clarinet returns to the highest register to double the flutes, with the trumpets and violas playing the same line an octave lower. Thus Gevaert points out that in his attempt to paraphrase the chorale Ein feste Burg ist unser Gott, Mendelssohn has used the clarinet as a tool to recreate the sound of an organ within an orchestral context.

He also cites the incorporation of the g'' in Beethoven's Eighth Symphony as the extreme upwards limit. Despite this “joyful and popular nature” he states that the higher notes are only found in bravura pieces. The incorporation of these three excerpts appears to be a demonstration of
unique occurrences of the difficult areas of the clarinet. Gevaert states that
the instrument primarily consists of two tone-colors, the chalumeau and
acute registers. He makes the odd observation that “the two middle
registers” are the most commonly used. Technically, however, this use of
the word “middle” would indicate that the medium register—but he defines
that as the weak connection, and in his previous discussion has presented
the lower register as providing one of the two primary tone-colors for the
clarinet.

Complications of fingering notes and passage work occupy the next
brief section. His main premise is the fact that the clarinet requires more
keys than other woodwind instruments owing to the large number of
fundamental notes required by the difference of a twelfth, rather than
octave, between the fundamental and its first sounding partial (which is the
second partial of the overtone series). This fact complicates the fingering
when key signatures exceed two sharps or two flats for major keys, and
three flats to one sharp for minor keys. (In a footnote he states that the “old
composers” never write in key signatures of more than one flat or sharp
and when they do incorporate more complicated key signatures, each
altered note is provided with an accidental, citing examples from Mozart
and Beethoven). If the clarinet is used in florid passages that are exposed,
only keys that are closely related to the instrument’s fundamental should be
used.¹⁸ Trills should not exceed the upper limit of f"/e"", and those
between f-sharp/e, g-sharp/f-sharp, and a-flat/g-flat (or their
corresponding upper partials) should be avoided. In the medium register,
lower notes in trills should not be flat or sharp, and passages that lie

18. Ibid.
entirely in this register are to be avoided. This last admonition is certainly owing to the fact that the g-sharp' key on the Albert clarinet worked independently from the a' key and forced the left-hand index finger to operate each key separately.\(^\text{19}\)

Owing to the difficulties of using the clarinet in extended keys, most performers own three instruments, pitched in A, B-flat, and C, and the general guide is to use the specific instrument corresponding most closely to the key signature, allowing the composer to write for the clarinet in all keys and to utilize the unique timbre of each instrument. Generally, the key area thus dictates the choice of instrument, and while the clarinetist can change instruments to accommodate modulation, care must be exhibited so that the performer does not have to do so too rapidly, since the change of instrument often means that intonation will become a concern. As an example of good use, Gevaert cites an excerpt from the first act finale of Don Giovanni in which the clarinetist is given ample time to change instruments, neglecting, however, to notice that later in the same finale the clarinetist is required to switch from a clarinet in B-flat to a clarinet in C with less than a full measure of rest.

Gevaert moves on to describe the character of each of the principal members of the clarinet family, providing examples of music most suited to each. The bright sound of the clarinet in C can be used in passages that are reminiscent of folk music, strong in dynamics, or cheerful in character,

\[^{19}\text{Rendall, Clarinet, 111.}\]
and works by Haydn, Mozart, Mendelssohn, and Beethoven are listed as examples of its use—all in the keys of C and G major.²⁰

An excerpt from Louis Joseph-Ferdinand Hérold’s *Le Pré aux Clercs* is provided to demonstrate a method used by “masters of old French opera” of writing everything for clarinet in C, and leaving the choice of instrument to the performer’s discretion. According to Gevaert, this practice, while more or less obsolete in his own time, had been encouraged by Gluck, Cherubini and Gasparo Spontini. He argues against it, stating that it leaves too much artistic license to the performer and does not encourage the composer to consider registral limitations and fingering difficulties. The question, however, may be larger than Gevaert recognized, as some have suggested that composers actually meant these works to be played on the clarinet in C to obtain a certain quality of sound. Paul Bekker writes,

It makes no difference to the singer in what key he is singing except as it affects his range. But Meyerbeer may have observed that the woodwinds sound best and that their color, especially that of the oboe, clarinet, and English Horn, reveals itself most impressively in the more remote keys. He favored these keys more because his orchestra, like that of Berlioz, was based upon the sonorities of the woodwinds. But the extreme keys also proved especially suitable for the display of new and peculiar harmonic effects resulting from a more frequent use of the chromatic style, the so-called enharmonic changes.²¹

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²⁰ These examples are Haydn, final chorus of the third part of *The Seasons* and that of the first part of *The Creation*; Mozart, finales of *Don Giovanni*, Act I, and *Die Zauberflöte*, as well as the Overture and various “Turkish” pieces from *Seraglio*; Beethoven, finale of the Fifth Symphony and all three *Leonora* Overtures; Mendelssohn, last movement of the *Reformation* Symphony, and the Wedding March from *A Midsummer Night’s Dream*.

²¹ Bekker, *Story of the Orchestra*, 159.
Add to this intriguing idea the fact there are many examples of these same composers writing for clarinets in A and B-flat—as can be seen in the examples provided later by Gevaert that even include another excerpt from *Le Pré aux Clercs*—it can still be argued whether the "masters of old French opera," and in this particular instance Hérold, truly intended the performer to play his part on a different instrument than specified. In the following pages, Gevaert makes many more references to musical examples from French grand opera. In his discussion of the clarinet in B-flat, he refers to examples from Meyerbeer's *L'Africaine* to demonstrate the use of the clarinet in key of G-flat major written A-flat major for the instrument Halévy's *La Juive* to demonstrate the use of the same instrument in the key of D-flat major. He also provides an example to demonstrate the simultaneous use of clarinets in B-flat and A, a rare occurrence even in later repertoire.\(^{22}\) The excerpt cited is from *Les Huguenots* and is the result of the composer’s desire to write for the lowest note on the A clarinet (sounding c-sharp): this instrument plays in the written key of A major while the clarinet in B-flat is written in A-flat major.

Gevaert describes the clarinet in B-flat as the instrument par excellence and the main instrument of the virtuosi. Indeed, with the exception of Mozart’s Concerto, the B-flat clarinet is used almost exclusively by composers writing solo works for the instrument (Weber, Spohr, Stamitz). He observes that this is the instrument most used in the orchestra and is the purest and most incisive of the soprano clarinets. The practice of using this instrument in place of the C and A clarinets is not encouraged owing to the loss of the semitone in the low register when

transposing A clarinet parts and the loss of timbral characteristics unique to both of these other instruments. On the other hand, Gevaert points out that the A clarinet does not perform florid passages easily: he refers to Mozart’s predilection towards the instrument in the Quintet and Concerto and his use of it for sweet, gentle, and elegiac sound. He goes on, however, to show twenty-eight measures from the first movement of Mozart’s Concerto to demonstrate the technical resources of the clarinet—this passage work is very florid and demands a great deal of flexibility, yet Gevaert does not recognize that Mozart is here requiring the performer to use the clarinet in A in a technically sophisticated manner.²³

Gevaert emphasizes the appropriate method of key choice and transposition for the clarinets in B-flat and A, and provides extensive tables of transpositions for both instruments, demonstrating keys with musical examples to show the appropriate method to write for the instrument in the various key signatures with juxtaposed accompanimental music for non-transposing string instruments. He claims that the favored keys for the clarinet in B-flat are the real tonalities of A-flat, E-flat, B-flat, F, and C major and B-flat, F, C, and D minor. He adds examples, though, for all keys.

In addition, he refers to musical examples that incorporate the instruments in many of the key signatures. He has painstakingly sifted through the orchestral repertoire to find examples of the use of these clarinets by composers in various keys. The musical references for the clarinet in B-flat include works of Mozart, Beethoven, Weber, Schumann, Mendelssohn, Halévy, and Meyerbeer, and only the minor keys of A-flat,

²³. Ibid., 172.
B-flat, and A are not provided with musical examples. Examples of the use of the clarinet in A are cited from Beethoven, Mendelssohn, Mozart, Weber, Schubert, and Meyerbeer. He does not provide examples in the major keys of F-sharp and C or the minor keys of G-sharp, C-sharp, and E. He points out that since the clarinet in B-flat is used the most often in orchestral music, composers will sometimes write for it in keys with more flats and sharps than will usually be found for other instruments. He also points out that the clarinet in A is "hardly used for any but sharp keys." Finally, he states that sometimes it is wiser to write passages in F-sharp and B majors and G-sharp minor for the clarinet in B-flat, depending the course of modulation throughout the piece, since these keys would be transferred to their enharmonic equivalents. The examples in G-flat major from Les Huguenots and L'Africaine mentioned above show that this key was considered at least allowable.

A fourth type of soprano clarinet is briefly mentioned by Gevaert. The clarinet in B, although obsolete, was used by Mozart in Idomeneo and Cosi fan tutte. He was the sole classic master to employ this instrument and he did so only in the key of E major, written in F for the instrument. According to Gevaert, the use of this rare instrument is limited and only an option for the composer who wishes to write in the keys of B or F-sharp major or who wishes to avoid difficult passage work for the clarinet in A.

In the following section, Gevaert discusses the special technical abilities of the clarinet. In comparison with the other wind instruments, the clarinet offers the most technical variety. Articulation is swifter than the oboe and bassoon and can be executed in a sweet and precise manner. The

24. Ibid., 170.
clarinet has a wider range of dynamic control than the other reed instruments, particularly in the area of extreme pianissimo and control of dynamic graduations. If the correct key signature is employed, the clarinet is equally facile in lyrical or florid passage work. He provides examples of florid passage work from the Mozart Concerto to demonstrate bravura use of the clarinet. These measures exhibit diatonic and chromatic scale passages, ascending and descending arpeggios, wide leaps, trills, and many variations of articulations, indicating that the clarinet can perform almost any variety of technique when provided with a compatible key signature.

Following this demonstration of soloistic technique, Gevaert discusses the various methods of using the clarinet in orchestral writing. He divides this discussion into three sections in order to cover the three contrasting styles—florid, accompanimental, and melodic. He claims that parts for the clarinet are generally more "florid and daring" than those for the other reed instruments and to demonstrate this he uses two contrasting excerpts that require the clarinet to perform with agility and delicacy over a wide range of the instrument (Beethoven, Eighth Symphony, mvt. III) and articulate lightly and rapidly (Rossini, Il Barbier di Siviglia, finale to Act. III). His treatment of the accompanimental style begins with the observation that the notes of the chalumeau register are effective in the use of broken chords owing to the "penetrating quality" of their timbre, and adds concrete demonstration with excerpts from the Third Symphony of Beethoven and from Les Huguenots. He completes the technical demonstration by briefly discussing the use of the tremolo in the low register of the clarinet—a technique commonly used for accompaniments in military band music.
The melodic style is further subdivided in two sections. Gevaert returns to his aesthetic observations of the B-flat clarinet's character—proud, passionate, and dramatic. The acute register is described in the following manner:

Its timbre is akin to that of both the Flute and the Oboe, it has the stirring tone of the human voice, but softened and idealized. It voices feminine feelings of a serious and affectionate nature: love, devotion, bashfulness, regret; playfulness it seems alone unable to depict.\textsuperscript{25}

He quotes Grétry as remarking that the instrument expresses sentiments of sorrow—an instrument that cannot play joyful melodies without a tinge of sadness—and that the clarinet would be a suitable instrument to accompany dancing in prison.\textsuperscript{26} An extended quote from Berlioz describing the clarinet as an epic instrument is used as further demonstration of the common aesthetic view of the instrument. In Gevaert's opinion, the clarinet is the ideal instrument for the opera and most of the solos in operas are written for it. Further indication that this view was prevalent comes from Lavoix,

\ldots it is throughout that the clarinet is the master in the small orchestra of the most poetic inspirations and the most amorous; like Mozart and Weber, Meyerbeer has perfectly utilized the timbre of this instrument, so penetrating and sweet at all times to convey tender sentiments, passion and timidity that one confesses with pain \ldots

\ldots c'est surtout à la clarinette que le maître a confié, dans le petit orchestre, ses inspirations les plus poétiques et les plus amoureuses; comme Mozart et comme Weber, Meyerbeer a parfaitement compris combien le timbre de cet instrument, si pénétrant et si doux tout à la

\textsuperscript{25} Ibid., 174.

\textsuperscript{26} Lavoix, \textit{Histoire}, 360-61, provides the full text of this statement by Grétry. Instead of dancing, however, Grétry actually states "if there is singing in prison, it would be with the accompaniment of the clarinet" (si on chantait dans une prison, ce serait avec accompagnement de clarinette).
fois, convenait aux sentiments tendres, à la passion encore timide qui s'avoue à peine . . .

Lyrical capabilities are demonstrated in various excerpts from Weber (Overture to Der Freischütz), Meyerbeer (Robert le Diable, Les Huguenots), and Hérold (Le Pré aux Clercs), and the range of these excerpts remains largely within the acute register. Also in accordance with Gevaert’s aesthetic descriptions of the instrument, these examples instruct the performer to play con molto passione, dolce, con espressione, or dolcissimo.

In a brief section, the general characteristics and use of the clarinets in A and C are discussed. According to Gevaert, the acute and medium register of the A clarinet has a more “reticent and timid expression” than the other instruments. The example provided to demonstrate this statement is the opening of the second movement from Mozart’s Quintet. In contrast, Gevaert shows in Mendelssohn’s incidental music for A Midsummer Night’s Dream “the frankness of the Soprano becoming too outspoken and easily turned to vulgarity, or even into the ridiculous” by the composer’s use the C clarinet in the music that accompanies the play of Pyramus and Thisbe.

In contrast to the acute register, the chalumeau notes of the clarinet produce “a strange and vaguely threatening sensation; it lends forcible

27. Ibid, 409.


29. A description of a performance of this work from Gevaert’s time is reprinted in Weston, More Clarinet Virtuosi of the Past. 27-281. It states that the performer “obtained clear success in executing with exquisite sentiment the sublime adagio” (il obtint un succès éclatant en exécutant avec sentiment exquis ce sublime ‘adagio’).

expression to dark forebodings and terror inspired by hidden powers."  
This lowest register of the clarinet is a tool for dramatic expression that is 
best displayed in isolated tones and chromatic harmonies. Gevaert provides 
an excerpt of sustained chordal writing for the clarinets in the low register 
from Weber’s Overture to Der Freischütz. Lyrical passages are not 
generally effective in the low range, although he demonstrates the ability of 
dramatic cantilena style writing with the slow variation from Weber’s 
Concertino.

Gevaert concludes his discussion of the soprano clarinets with a 
cursory historical view of the clarinet literature, both solo and in ensemble. 
He makes reference to the solo and chamber works of Mozart, Weber, and 
Beethoven, thus demonstrating that the finest composers had written such 
music for the clarinet.

The earliest use of the clarinet documented by Gevaert dates from 
1720 and is an excerpt from a mass, now lost but once in the cathedral 
archives in Antwerp, by one J. A. J. Faber. After this date, he says, “we 
know of no example of the use of the Clarinet before 1751” when Rameau 
wrote Acante et Céphise. Even in Gluck’s Alceste of 1767, chalumeux

31. Ibid.

32. Another author makes the following observation: “the storm in the forest 
suggested in Der Freischütz Overture is conveyed largely by trombone chords in the bass, 
tremolando strings and long lyrical phrases for the clarinets.” Raynor, The Orchestra , 104.

33. Gevaert, New Treatise, 177-78. Rice, Baroque Clarinet, 91, states that this was 
written for a two-keyed clarinet in C and features the earliest known use of arpeggios in the 
chalumeau register.

34. It is interesting to note that this statement indicates that Gevaert was not aware 
of works by Vivaldi, Antonio Caldara, Francesco Bartolomeo Conti, Johann Valentin 
Rathgeber, Giuseppe Antonio Paganelli, Herbert Kölbel, Georg Philipp Telemann, 
Handel, and Johann Melchior Moller—all of whom wrote works that incorporated the 
clarinet prior to 1751.
were still used. Around 1778, Mozart and Haydn used clarinets for the first time, and it was Beethoven’s First Symphony of 1800 that stands as the benchmark for making the clarinet a regular member of the symphony orchestra.

Gevaert generalizes that the chalumeau register was avoided by Haydn, Mozart, and Beethoven, and that Weber was the first to exploit the “threatening, infernal expression of the notes of this register.”35 He cites only one example—“as far as [he is] aware”—in which Mozart writes for the low register in an orchestral ensemble: the finale of Act I of Don Giovanni, a curious statement since Mozart employs the low register of the clarinet in orchestral writing in the finale of Act II of the same opera and in the third movement of Symphony no. 39.

Generally, two clarinets are used in orchestral ensemble composition, allowing the instruments to participate in various roles. He claims that the aria composed specifically using the clarinet as an obbligato instrument, like Mozart’s famous “Parto! ma tu, ben mio” from La Clemenza di Tito, was an archaic compositional practice.36 The use of the clarinet in various roles is further explored by Wagner, who often expands the section to three soprano clarinets in addition to bass clarinet. An excerpt from Die Walküre is presented to demonstrate the various roles: the first clarinet plays a solo line in the acute register, the second and third clarinets provide sustained notes in the grave register for accompaniment, and the bass clarinet plays a melodic line in the grave


36. The practice was certainly not as dead as Gevaert supposed. Verdi in La forza del destino had written such an aria, and well after both Verdi and Gevaert, Puccini revived the practice in Tosca. Gevaert also makes no mention of the extensive melodic interaction of solo clarinet writing in operas by Meyerbeer.
register in contrary motion to the first clarinet. In this example, each instrument follows the prescription that Gevaert has defined for the various roles of the clarinet in ensemble writing.

Gevaert closes by noting that the clarinet was being replaced in military bands in France and Belgium by the saxophone. Before 1840, the members of the clarinet family were the staples of the wind band since they were the only instruments capable of assuming the melodic and florid roles comparable to the violin and viola in orchestra. Indeed, at the time of Kastner's treatise, the clarinet was the most popular wind instrument in the military bands, as can be seen by the sheer numbers of performers employed in the various military bands in Paris alone.\(^{37}\)

The next category of clarinet to be presented is the alto. There are two instruments in this group, the alto clarinet in F and the alto clarinet in E-flat. Since Gevaert has no evidence of orchestral music composed for the alto clarinet in E-flat, he briefly presents the requisite transposition and range information for this instrument and devotes the remainder of the section to the presentation of the alto clarinet in F. This instrument is known under various names, the most common being basset horn, *corno di bassetto*, *cor de basset*, and *Bassethorn*. The range of the instrument is described as c - g" if it is a *Bassethorn* made in Germany; otherwise the lowest note is only e. The staff notation generally uses the treble clef, although in works by some composers (Mozart and Beethoven especially), the bass clef is often employed to notate the lowest notes an octave below

\(^{37}\) In 1836, there were twelve legion bands in the National Guard of Paris alone, each band employing an average of twelve clarinet players. See Planque, *Agenda musical pour l'année 1836*, 37.
the real register in order to keep the notation on the staff.\textsuperscript{38} The musical examples that Gevaert provides for the basset horn are transcribed to the treble clef "in accordance with the logical mode of writing for this instrument."\textsuperscript{39}

Just as with the soprano clarinets, Gevaert is consistent in his presentation of the various styles that this instrument can execute (florid, accompanimental, and lyrical). The musical examples that he selects demonstrate each of these categories. The ballet from \textit{The Creatures of Prometheus} by Beethoven begins with a very florid style of writing for the basset horn in the acute register; after eight measures, it switches to an accompanimental style of arpeggio that traverses the low register. The next excerpt, from \textit{La Clemenza di Tito}, also presents scale and broken chord passages that move through both low and acute registers in an accompanimental fashion.

The use of the highest register, as with the soprano clarinets, is discouraged for the same reasons of poor tone, questionable intonation, and lack of control. If notes from this register are desired, they should be assigned to the soprano clarinets, which would then be playing in their better registers. Gevaert calls the acute register of the basset horn remarkable for its "unctuous seriousness."\textsuperscript{40} Mozart is again cited for using these instruments in pairs to create a superhumanly serene character in the Act I finale of \textit{Die Zauberflöte}, the march of the priest in the beginning of the Act II of the same opera, and the opening six measures of the Introit

\textsuperscript{38} See above, Chapter 2.


\textsuperscript{40} Ibid.
from the *Requiem*, in which the sustained, canonic writing falls entirely within the acute register.

Gevaert notes that the expressive character of the basset horn is "less striking" when accompanying a female voice. He refers at this point to Vitellia's aria at the end of *La Clemenza di Tito* and to an excerpt from *Le Nozze di Figaro* in which the basset horn timbre is used to provide a mellow background. It seems that by "less striking," Gevaert is referring to the instrument's ability to blend with female voices.

Gevaert indicates that the bass clarinet in B-flat was the only one employed in French and Belgian orchestras of his time. (At the end of his discussion he does introduce the bass clarinet in A but states that it is found solely in German opera scores.) The range of this instrument is from written e through g" (although he advises that c" be only rarely exceeded) and sounds an octave lower when notated in treble clef on the score. This is called French notation; the German notational system utilizes the bass clef, and the exact sounding octave is represented in this method. According to Gevaert, this latter method is confusing and "illogical" since the performer must transpose his fingering up the octave.

The bass clarinet provides dramatic depth to the orchestra. Gevaert advises the reader that the low register is the most characteristic in sound—penetrating, dark, somber. Florid writing is not advised for the instrument unless it consists of legato arpeggiated figures. Meyerbeer is acknowledged as the first composer to take advantage of the dramatic powers of the instrument and musical excerpts are provided to demonstrate the use of the bass clarinet in *Les Huguenots* and *Le Prophète*. This example from *Les Huguenots*, the same cited by Kastner and Berlioz, contains an arpeggio
that begins on e and ascends to a high g".\textsuperscript{41} The example from \textit{Le Prophète} demonstrates the use of the bass clarinet performing legato arpeggios in the low register of the instrument, a figuration that enhances the dark horror of the dramatic moment and acts in counterpoint with the voices.

Until Wagner, the bass clarinet was used sparingly, and Gevaert states that it was not until 1848, after \textit{Lohengrin}, that the instrument achieved a sense of permanence in the orchestra in order to fill out the harmonic tone-color of the clarinet family. The instrument began to appear in French wind bands around 1845, but according to Gevaert, its role had by his time been usurped by the baritone saxophone owing to the greater power of that instrument. A melodic fragment from \textit{Lohengrin} is provided to demonstrate the use of the bass clarinet in A, an example that juxtaposes two clarinets in A playing sustained notes in the low register against the bass clarinet playing in unison with the English Horn.

The final members of the clarinet family addressed by Gevaert are the soprano clarinets: instruments higher in pitch than the clarinet in C. He states that the clarinet in D is the only instrument of this group to successfully find its way into orchestral writing. These instruments are, in his opinion, best relegated to the military band since their hard and unrefined qualities do not work well in "the higher manifestations of art."\textsuperscript{42} Examples of the transposition and range for the clarinet in D are provided (range from e to g""). Aside from recalling Gluck's \textit{Echo et Narcisse}, Gevaert states that the only example that deserves mention in regard to the use of the D Clarinet is the music of the "Magic Fire" from the final scene

\textsuperscript{41} Unlike his predecessors, Gevaert has correctly read the German notation and transposed the uppermost notes to their correct octave placement.

of Die Walküre. The instrument, playing here in its upper acute register, "produces the effect of an Organ Fifteenth stop, and blends admirably with the crackling sounds of the high Harp-strings, with the sparkling notes of the Piccolos, with the Violin figures that rise like clouds of flame, and with the jingling of the Triangle—in a word, with an ensemble of picturesque tone-colours, that call up before the mind the vision of an immense conflagration produced by a supernatural power." He points out, though, that the nature of the space in the Bayreuth Festspielhaus is suitable for such orchestration, which might create rather rough effects in the ordinary concert hall.

The final three small clarinets, E-flat, F, and A-flat (as well as the clarinet in D), are presented in the same fashion as the previous instruments in regards to transposition and range. The small clarinet in E-flat is used as a bridge between the clarinet in B-flat and the piccolo in military bands, where its role is primarily to double the melodic part at the octave and providing well-defined bravura passages. The famous passage from the fifth movement of Berlioz's Symphonie fantastique is reproduced in addition to a quote from the master's Traité in which Berlioz writes about the use of the clarinet in E-flat to "parody and degrade" the melody. Gevaert refers to the symphony as "disheveled" and adds—unflatteringly—that Berlioz speaks of his music in "the language of a

43. Ibid., 185.

44. See above, Chapter 4.
French romantic of 1830."45 The clarinet in F, Gevaert says, had fallen into disuse owing to its harsh and shrill timbre, and the clarinet in A-flat was only used with any regularity in Austrian military bands.

CONCLUSION

These three treatises were important and influential tools for the contemporary composers in France. For the modern day reader, they provide valuable observations regarding the use of the clarinet in the orchestra during the middle of the nineteenth century, and they reflect the technical developments that the instrument received during this period. The clarinet family had become one of the most prominent in the orchestra. At the time that the treatises of Kastner and Berlioz appeared the clarinet was the most popular woodwind instrument in Paris. This is demonstrated by the numbers of performers and teachers working in the city during this time. The fervent attention to improvements on the instrument also illustrates the demand made by performers to increase the abilities of the instrument.

Kastner and Gevaert provide detailed information regarding the various members of the clarinet family. Berlioz is less thorough covering this large family and devotes his text primarily to those instruments that were currently employed in contemporary orchestral works. The versatility of the clarinet in these different forms is a striking feature that is emphasized by each author. They voice a uniform concern that the high clarinets are too shrill to be used in orchestra. This is reflected in the rare occurrence of these instruments in compositions of the period, aside from military music. The bass clarinet was the favored member of the low clarinet family, thanks to the innovations of Adolphe Sax. The composer in France had a rich palate of instrumental color available between the
seventeen members of the clarinet family that are discussed in these treatises.

The color provided by the instrument is an important feature that each author carefully demonstrates. Both performer and composer were faced with decisions regarding the use of a particular clarinet, whether it was dictated by a necessity of key or a desired timbral effect. All three authors strongly discouraged the substitution of one instrument for another. This demonstrates the importance of instrumental color in the artistic mind of the composer. The advent of the 13-keyed clarinet eliminated the need for the many variations in the clarinet family. But these treatises acknowledged that each instrument added a unique shade of color to the orchestra.

Certainly the rejection of Müller's clarinet by the Paris Conservatory in 1812 could not stand in the way of progress for long. The practical considerations of progress had a stronger influence and this was reflected in the selective reduction of this large family to the primary use of the soprano clarinets in B-flat and A and the bass clarinet in B-flat. The technical improvements made to these instruments allowed a wide range and almost complete chromatic flexibility. This was a practical solution, since it was expensive for a performer to own multiple instruments, impractical to change instruments during the course of a work and expensive to hire extra musicians to play numerous instruments. The loss of the variety, while lamented by the authors, was the price for reality.

Another important aesthetic and technical feature of the clarinet that was emphasized in the treatises is the variety of register tone colors. This was a quality that fascinated composers and limited them at the same time. All three treatises assigned specific roles to each register, relegating the
first register to accompanimental passages and the third register to lyrical lines. Despite the improvements in instrument manufacture, the second and fourth registers were not recommended for frequent employment. The lack of resonance of the second register (commonly known today as the “throat” register) was a clear reason for composers to avoid using these notes. There was uniform concern in these works that the high register, like the use of small clarinets, should be avoided owing to the sharp quality that these notes render in combination with other instruments.

Both Gevaert and Berlioz provide musical examples to assist in demonstrating the various lyrical, accompanimental and soloistic capabilities afforded by the various registers. The use of register tone color was an important feature for artistic expression, whether it was the dark, somber notes of the first register or the high, shrill notes of the fourth register. Each author chose a slightly different angle from which to present his information regarding the clarinet registers. The more remarkable observations came from Gevaert and Berlioz. Gevaert compared the range and character of the clarinet registers with characteristics of the soprano and mezzo-soprano female voices. Berlioz presented florid descriptions of the clarinet’s expressive abilities, with particular attention to the third register. Of the members of the clarinet family, only the bass clarinet is recommended to be used predominantly in the first register in these treatises.

A large portion of these works were devoted to instruction in transposition and choice of key for each of the clarinets. Both Kastner and Gevaert were methodical in their presentation of transposition for the different members of the clarinet family, demonstrating the clear intent that their work would serve as a pedagogical resource. Even though the
Müller clarinet was adopted during this period, the flexibility of the clarinet was still somewhat limited. Generally the three works consistently presented the keys through two sharps and two flats as the most effective for the clarinet. Gevaert provided the most complete documentation of the historical use of keys for the clarinet and he cited multiple examples of compositions that employ the clarinet in different keys.

The final critical aspect of these orchestration treatises involved the technical capabilities of the individual instruments. Improvements made by Sax and Klosé were acknowledged by Kastner and Berlioz, although these treatises also address the limitations of the Müller clarinet since that was the primary contemporary instrument. Despite the number of keys that were provided by this design, the instrument still had difficulty negotiating complex keys. Berlioz and Kastner provided detailed examples that illustrate the various problems encountered with these instruments. Innovations introduced by Müller, such as the metal ligature and position of the mouthpiece, enabled performers to improve their articulation and dynamic range. This fact is reflected in the observations made in all three treatises on the ability of the clarinet to articulate rapidly and to have great flexibility in dynamics, particularly in the soft range. Kastner alone recommended various method books to the reader for further reference in regard to the technical capabilities of the clarinet.

The facility of the clarinet, specifically its flexibility, wide range of tone color and family size would be a major influence upon composers in the later nineteenth century. These treatises defined the capabilities of the clarinet and were instructional manuals that influenced composers of several generations in many countries. Kastner produced the first treatise to be adopted for instruction at the Paris Conservatory. Berlioz's treatise
has become the most famous treatise in history. The treatise of Gevaert was translated into English, Portuguese, Russian (prepared by Tchaikovsky) and German (prepared by Riemann). Certainly the development of the clarinet's technical abilities that was codified by these men was reflected in the late 19th-century compositions of Strauss, Wagner, Debussy, Rimsky-Korsakov, Stravinsky, Ravel, Mahler and Tchaikovsky. The members of the clarinet family found life in the works of Strauss, Wagner, Mahler, Stravinsky and Ravel. New horizons in the use of timbre to create rich and exotic sonorities were explored by Debussy, Rimsky-Korsakov and Ravel. The unique personality of the clarinet, defined clearly in these treatises, was explored by all of these composers, thus insuring a permanent home for the clarinet in the orchestra of today.

In his revision to Berlioz's Treatise, Strauss made the following observation in his foreword:

Thus, the practical instrumentalist, through his skill, stimulates the composer to new ideas. Great ideas, on the other hand, which at first do not seem feasible, gradually lift the ambitious instrumentalist to their level. They have had the greatest influence on progress in the construction of instruments, on improvements in their technique, and on the enrichment of their expressive powers.¹

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