AN ARGUMENT IN FAVOR OF THE *SAXHORN BASSE* (FRENCH TUBA) IN THE MODERN SYMPHONY ORCHESTRA

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The French tuba was a much-needed addition to the brasswind musical instrument family, adding depth, projection and a unique color to French orchestral literature. Its ancestors the serpent and ophicleide both lacked the tonal stability and sonic power to adequately present the bass wind role in a robust orchestra. Through the efforts of its developer and patent-holder Adolphe Sax, the French tuba made converts among players and composers, effectively creating its own niche in music history. Musical tastes change however, and the French tuba has been largely supplanted by tubists using instruments twice its size. Since French composers composed specifically with the distinct timbre of the French tuba in mind, this unique and characteristic musical entity deserves a resurgence in performances of French orchestral repertoire.

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CHAPTER 1

INTRODUCTION

The *saxhorn basse* or French tuba (hereafter referred to as the French tuba) was a unique and flavorful ancestor of the modern-day tuba which attracted the ear of French composers between 1843 and the 1960s. The current trend among many modern symphonic tubists is to use a tuba twice the length of the original French tuba when playing French repertoire. This is musically unjustifiable, and I intend in my lecture/recital to demonstrate the unique timbral characteristics of the French tuba in comparison to the larger bass- and contrabass tubas which have supplanted it, and demonstrate the French tuba's continued worth to the musical world. The French tuba deserves a reintroduction into the orchestral world.

The first conical valved bass brasswind instruments (tubas) were patented in 1835 by Prussian instrument builders Wilhelm Wieprecht and Johann Moritz. These new instruments were pitched in 12-foot F and were intended as a replacement for the bass trombone.[1] They were essentially ophicleides with chromatic valves instead of keys. Although the early tubas featured a narrow bore and an extremely small bell, they were by all accounts superior in terms of volume, range of attainable pitches, intonation and projection in comparison to their predecessors, the ophicleide and serpent. The valves of these early tubas were of the *Berlinerpumpen* type, which were the forerunners of the modern piston valve. Tubas in a variety of shapes and keys were quickly adopted throughout Europe by composers, ensembles and players alike.

[1] Harvey Phillips and William Winkle, *The Art of Tuba and Euphonium* (Secaucus, New Jersey: Summy-Birchard, 1992), 5.

Figure 1 Wieprecht-Moritz tuba

Although the tuba found its beginnings in Prussia, its design was quickly copied and revised as needed as the instrument's design crossed European borders. Opportunity was abundant for instrument makers, especially in Paris which had been a seat of culture for centuries. Antoine-Joseph "Adolphe" Sax (1814-1894) was a Belgian instrument maker who was drawn to Paris.[2] Shortly after his arrival in Paris in 1842, Sax invented a family of valved, conical brasswind instruments called the saxhorns. Sax's intent was to create a family of like-timbred brasswind instruments which could cover a very large range of musical pitches homogenously. In France and England, instruments similar to the saxhorns were pitched largely in B-flat and E-flat alternately, and in Czech/Germanic countries they were predominantly developed in B-flat and F.[3]

The larger bass members of the saxhorn family which assumed the tuba's role in French orchestras include the *saxhorn basse* and the *nouveau saxhorn basse* (hereafter both referred to as

[2] Stephen Cottrell, *The Saxophone*, The Yale Musical Instrument Series (New Haven: Yale University Press, 2013), 15.

[3] Cecil Forsyth, *Orchestration* (New York: Dover Publications, 1982), 163.

the French tuba, as is the custom in English-speaking countries). They were valved, conical brasswind instruments in either 8-foot C or 9-foot B-flat, the C version being predominant in an orchestral setting.[4] The *nouveau saxhorn basse* model of French tuba was fitted with as many as six independent piston valves in order to enable the musician to play chromatically down to the pedal register. Some also had an easily-moved main tuning slide in the leadpipe for ease of tuning adjustment. While Sax's workshop also introduced a model of contrabass saxhorn in 18-foot B-flat, it ceased production in 1868, apparently due to lack of interest.[5]

The utilization of the French tuba reached its zenith in the latter half of the 19th century. This was the instrument used by tubists in France and certain other European countries from around 1843 up to approximately 1960, at which time foreign influences and the pervasive effect of orchestral recordings had gradually caused a homogenization of orchestral timbres around the world, and finally drove the French tuba from orchestras, seemingly for good.

The French tuba proliferated in late nineteenth- and early twentieth century Paris partly because French composers sought an orchestral ensemble full of strong individual timbres, each with its own clear aural identity. This attitude contrasts a more Germanic/Austrian approach to ensemble sonorities such as that of Anton Bruckner, where the entire group is meant to combine, often entering as tutti instrumental groups and even emulating the pipe organ. *The Cambridge Companion to the Orchestra* says that "…lack of blend was particularly marked in French orchestras, in which individual instruments tended to be quite distinct from each other in tone-

[4] Joseph Vaillant, "The Evolution of the Tuba in France," *T.U.B.A. Journal*, Vol. IV no. 3 (Spring/Summer 1977): 17.

[5] Evgenia Mitroulia, "Adolphe Sax's Brasswind Production with a Focus on Saxhorns and Related Instruments" (PhD diss., University of Edinburgh, 2011), 165, accessed January 15, 2017, http://hdl.handle.net/1842/5490.

colour."[6] This same source goes on to describe the tonal colors of French brass players as "pungent" which to the experienced listener seems an apt description. Virgil Thomson once wrote of the French orchestral approach to timbres that "the French orchestral style is one of equilibration [sic], of clear balances and clean colors, of poetic luminosity rather than of animal warmth. And the whole repertoire of French music composed since Berlioz is designed to profit by this delicate performing style."[7] Leonard Bernstein in his renowned Young Peoples' Concerts described the French orchestral sound as "thin, transparent, delicate."[8] Henry Dutilleux used the term *sites auriculaires* – or "points of beauty for the ear" to describe the French approach to orchestration.[9] Clifford Bevan remarks:

> French composers up to the Impressionists and beyond were much more interested in the precisely calculated differences given by woodwind and brass which, while relatively narrow-bored by German standards, differed much more one from the other. On Debussy's palette the tones of horns and trombones, for example, could never be confused in the way they might on Bruckner's. Each instrument had a completely individual voice, the tuba equally with the others, and it was adequate to support the trumpets and trombones.[10]

From all the preceding remarks, we quickly get the clear impression that French composers used brass instruments for sonority rather than weight, in contrast to Germanic music. The French tuba's unique tone color admirably fulfilled this tendency of French composers to promote individuality in orchestral instrumental voicings. Yet despite the instrument's unique suitability for this repertoire, that timbre is in danger of disappearing entirely today.

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[6] Robert Philip, "Historical Recordings of Orchestras," Chap. 12 in *The Cambridge Companion to the Orchestra*, Cambridge Companions to Music, ed. Colin Lawson (Cambridge, U.K.: Cambridge University Press, 2003), 209.

[7] Virgil Thomson and Tim Page. *The Library of America*. Vol. 258, *Virgil Thomson: Music Chronicles, 1940-1954*. New York, N.Y.: The Library of America, 2014.

[8] Leonard Bernstein, "Young Peoples Concert", accessed January 15, 2017, http://www.leonardbernstein.com/ypc_script_the_sound_of_an_orchestra.htm

[9] Henri Dutilleux. *Music – Mystery and Memory, Conversations with Claude Glayman*, trans. Roger Nichols (Aldershot: Ashgate, 2001), 20.

[10] Clifford Bevan, *The Tuba Family*, 2nd ed. (Winchester: Piccolo, 2000), 347.

Another reason for the French tuba's proliferation was Sax's abilities as a salesman and promoter. In 1845, the French king Louis-Philippe and his advisors had become concerned at the state of French military music, especially in comparison to Germany's military music establishment. They sought to revamp and revitalize the French military music program and proposed a contest to determine who would receive the contract to provide new instruments for the entire French military. A battle of bands was organized, and the *"Bataille des Saxons et des Carafons"* was held in April 1845 on the *Champ de Mars* with 20,000 Parisians in attendance. Judged primarily by the standards of intonation and sheer volume, Sax's saxhorn-based band won handily, and he was awarded the lucrative contract. This was a financial boon for his workshop, and the production and use of saxhorns increased greatly.[11]

With the addition of many new clients, Sax's workshops sold 20,000 instruments between 1843 and 1860.[12] The proliferation and popularization of the saxhorn was further aided by the fact that Sax served as a stage band (or *banda*) director at the Paris Opéra from 1847 until 1892, when his son took over this function from him.[13] This gave Sax an opportunity to work closely with composers and conductors, and to influence orchestration and instrumentation of upcoming productions. The *banda* was "to some extent independent of the main orchestra, with their director frequently called upon to score music for the ensemble according to the composer's wishes."[14] As a result of his influential position at the Opéra, Sax was able to convince a number of composers to include saxhorns in their works, either in the *banda* backstage, onstage, or in the main pit

[11] Albert R. Rice, *From the Clarinet d'amour to the Contra Bass: A History of Large Size Clarinets, 1740-1860* (Oxford: Oxford University Press, 2009), 302.

[12] Stephen Cottrell, *The Saxophone*, The Yale Musical Instrument Series (New Haven: Yale University Press, 2013), 97.

[13] Stewart Carter, *Bucina*, vol. 6, *Brass Scholarship in Review: Proceedings of the Historic Brass Society Conference, Cité de La Musique, Paris, 1999* (Hillsdale, NY: Pendragon Press, 2006), 138.

[14] Cottrell, 103.

orchestra. Some of these operas including saxhorns are *la Tribut de Zamora* (1881) by Charles Gounod, *le Roi de Lahore* (1877) and *Le Mage* (1891) by Jules Massenet, *Hamlet* (1868) and *Françoise de Rimini* (1882) by Ambroise Thomas, *Le prophète* (1849) and *Robert le Diable* (1848) by Giacomo Meyerbeer, and *Robert Bruce* (1847) by Gioachino Rossini.[15] Meyerbeer was a particularly avid fan of Sax's saxhorns. His opera *Le Prophète* had eighteen saxhorn parts, and his opera *L'Africaine* had twenty saxhorn parts.[16] It has been calculated that during the period from 1847 to 1877, from the seventeen productions using *banda*, 59% of those scores required instruments invented by Sax.[17] He essentially created a market- and a place in music history for his own musical inventions.

Throughout ensuing decades, the French tuba was almost without exception the only member of the tuba family employed in French orchestras. The relatively small French tuba remained popular in France despite the increasing popularity elsewhere of the larger German tubas for several reasons. First, the keys of French tubas in 8-foot C and bass saxhorns in 8-foot B-flat mirrored exactly the keys of their predecessors the ophicleides and serpents, so could be used to play pre-existing repertoire, both in solos and in ensembles. The serpents and ophicleides were most commonly pitched in 8-foot C and 9-foot B-flat respectively, and parts were often written for two instruments together, one in each key in order to cover any shortcomings one instrument might have in a particular key in terms of tuning or resonance. Since the French tubas were in the same keys as their predecessors, this was also seen as a continuation of tradition. Second, music in France of this era revolved largely around the theater, and somewhat smaller timbres fit better in

[15] Carter, 140.

[16] Robert Ignatius Letellier, *Meyerbeer Studies: A Series of Lectures, Essays, and Articles on the Life and Work of Giacomo Meyerbeer* (Madison, N.J.: Fairleigh Dickinson University Press, 2005), 206.

[17] Carter, 140.

the theater venues. Third, the larger tubas were of German origin, and the French were loath to upend their own cultural conventions in favor of instruments from a country which had always been their hereditary rivals. Robert Tucci writes that use of the French tuba in France was partly due to "nationalistic considerations."[18] For all these reasons, French conservatories required students to study the French tuba as their main tuba instrument, and only added the study of larger tubas in lower keys since the 1960s, and this only as a sideline. Indeed, renowned French tubist Michel Godard began his tuba studies on the French tuba at the Besançon Conservatoire as late as 1978.[19] The Paris Conservatory currently has a class of six saxhorn/euphonium students as well as a class of six students studying bass- and contrabass tubas.[20]

From personal correspondence with French professional musicians who still use saxhorns, French tubas, serpents and ophicleides in a variety of venues,[21] it becomes apparent that the French tuba's decline in use is largely to blame on the "shrinking world" effect: the emergence of high-fidelity recordings in the middle of the twentieth century led to a homogenization of orchestral timbres and playing styles around the globe, and a consequent loss of local color and tradition. Also at this same time, conductors traveled more extensively than ever before, often guest-conducting week to week at different orchestras. They would bring their own expectations with them from previous weeks' experiences, and often would not encourage the local traditions of the current week's ensemble. Beginning in the 1960s, visiting conductors came to France and sometimes requested the larger tubas in 12-foot F, 16-foot C, or 18-foot B-flat be used for various repertoire. Wibart and the members of the Opus333 saxhorn quartet tell of a specific incident. In

[18] Robert Tucci, "The Tuba in Europe", *T.U.B.A. Newsletter* I, no. 1 (Fall 1973): 3

[19] Clifford Bevan, *The Tuba Family*, 2nd ed. (Winchester: Piccolo, 2000), 345.

[20] Patrick Wibart (Opus333 professional saxhornist), Facebook correspondence with author, January 2017.

[21] Wibart, January 2017.

1959, renowned Wagnerian conductor Hans Knappertsbusch was guest-conducting a production of Wagner's *Ring* cycle at the Paris Opéra. He requested that tubist Jean-Baptiste Marie not use his French tuba for the production, but a contrabass tuba in 18-foot B-flat instead. Marie balked but ultimately managed to negotiate a permanent 75% salary increase from his employers in exchange for his use of the larger tuba. This premium became standard for French tubists' use of bass- and contrabass tubas, and remained in force until the players' retirement, so only ended gradually in France over a period of decades. What made players such as American expatriate Mel Culbertson attractive upon his arrival in France was that he was already familiar with the larger tubas, and was happy to use them without need for the 75% premium. Mr. Culbertson was appointed to the tuba position in the Nouvel Orchestre Philharmonique of Radio France in the 1970s.[22] He had studied with American tubists Roger Bobo, Harvey Phillips and Arnold Jacobs, so was accustomed to the American custom of using the larger tubas, and he imported this custom when he moved to France. He was also one of my predecessors in my position as solo tubist of the Hague Philharmonic, where he most often played a large contrabass tuba in 16-foot C.

Aside from orchestral repertoire which helped keep the French tuba active in France, there were a number of composers who actively and enthusiastically wrote solo literature for the instrument. Eugène Bozza, Jacques Castérède, Joseph Edouard Barat, and Henri Tomasi all composed for the French tuba, although their works were often listed for other low-brass instruments such as the bass trombone as well. Typical of this, Tomasi's *Danse Sacrée* is inscribed for *"Tuba Ut ou Trombone ou Saxhorn basse Si-♭."* By and large, the character of French low brass solo repertoire was light and virtuosic.

[22] Trevor Herbert and John Wallace, eds., *The Cambridge Companion to Brass Instruments*, Cambridge Companions to Music (Cambridge: Cambridge University Press, 1997), 155.

Although lack of demand caused the French tuba to cease being produced in the 1980s, they may be making a resurgence. Willson Band Instruments of Switzerland recently resurrected a model for production: the "Willsax"[23], a compensating saxhorn in 9-foot Bb which has been adopted and championed by the saxhorn quartet Opus333[24]. To date however Willson has sold less than twenty of these instruments.[25] Major orchestras (Philadelphia Orchestra, 2003; Chicago Symphony, 2008[26]) will occasionally demonstrate a genuine French tuba as a peculiarity, but only in order to demonstrate the Bydlo solo from the Mussorgsky/Ravel *Pictures at an Exhibition*. They do not however use the instrument for the entire work as Ravel intended. As a proponent and performer of the French tuba, I regularly used an original 1931 Couesnon French tuba in 8-foot C in my duties as solo tubist of the Residentie Orkest/Hague Philharmonic of the Netherlands on repertoire by composers such as Debussy, Mendelssohn, Berlioz, Franck, Messiaen and Ravel, and under conductors such as Jaap van Zweden, Neeme Järvi and Evgeny Svetlanov.

[23] Willson Saxhorn, accessed January 15, 2017, http://www.willson.ch/en/instrument/willsax.

[24] *Quatuor de Saxhorns* Opus333, accessed January 15, 2017, http://www.opus333.com/.

[25] Wibart, Facebook correspondence January 31, 2017.

[26] Chicago Symphony Orchestra, Sounds and Stories, accessed January 15, 2017, http://csosoundsandstories.org/video/mussorgsky-pictures-from-an-exhibition-pictures-of-what/ 35:15

CHAPTER 2

TUBA SIZES, NOMENCLATURE, AND THE EUPHONIUM: BASIC DEFINITIONS

Since the tuba's invention in 1835, a degree of confusion has come to exist because many different instruments have been referred to as "the tuba" despite a wide variety of designs. Naming conventions varied across borders and between languages. More recent tubas can be found in the following varieties:

- Contrabass tubas: These are pitched in 18-foot B-flat or 16-foot C. They generally have a broad and dark tone. These instruments are commonly used in larger ensembles.
- Bass tubas: These instruments are pitched in 13.5-foot E-flat or 12-foot F. They are generally more musically nimble and lyrical and have a lighter tone than the contrabass tubas, and are often used for solos or work in smaller ensembles.
- Bass saxhorn: A member of Sax's family of conical brasswind instruments, the *saxhorn basse* was usually in 9-foot B-flat, and used almost exclusively in bands and wind ensembles. Nomenclature becomes confusing however because the variant in 8-foot C known in France as the *nouveau saxhorn basse* with 5 or 6 independent valves was the instrument used in orchestras and which eventually became known as the French tuba. French composer and organist Charles Widor wrote of the saxhorns "It would be well to admit the Saxhorn group into our orchestra. This perfectly homogeneous mass, with a total compass of five octaves, would serve as a firm and mellow background for the brilliant flourishes of the Trumpets and Trombones. It would serve as a foil rather than as an element of combination with them."[27]
- The euphonium: This instrument is pitched in 9-foot B-flat and has a sweet singing

[27] Charles Marie Widor, *The Technique of the Modern Orchestra: A Manual of Practical Instrumentation - Primary Source Edition* (Charleston, South Carolina: Nabu Press, 2014), 91.

quality. Although the euphonium's lineage comes directly from the saxhorn family, the first instrument bearing this name was developed by Ferdinand Sommer of Weimar, Germany with the assistance of Franz Bock who filed the patent for the "euphonion" in 1844. Sommer also called the instrument the Sommerphone, but ultimately the name "euphonion" was Anglicized to "euphonium."[28] The instrument was popularized in the United Kingdom by Henry Distin who was under contract to Adolphe Sax. The popularity of the performances by Distin and his family are credited with the beginning of the brass band movement in the United Kingdom.[29]

- The French tuba: This instrument is also known as the *saxhorn basse*, the *tuba en Ut*, and the French tuba in the English-speaking world. These instruments were pitched in 9-foot B-flat and 8-foot C. Around 1860, variants were produced of the C models with as many as six independent valves in order to aid production of low notes and make the instruments able to play chromatically down to the pedal register. This variant is known as the *nouveau saxhorn basse*, but still is known as the French tuba. This is the instrument which remained in use until approximately 1960 in French orchestras and conservatories.

All of these instruments fit the description of the term "saxhorn." Matters of nomenclature become complicated, however, because Sax essentially patented an instrument which already existed: a conical valved brasswind instrument. In fact, his patent claim was so tenuous that he was immediately sued by a plethora of other European instrument designers who rightly claimed that there was nothing unique or new about his saxhorns.[30] The lawsuits dragged on for years, ultimately driving many of his competitors out of business.

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[28] Lloyd E. Bone, Eric Paull, and R Winston Morris, eds., *Guide to the Euphonium Repertoire: The Euphonium Source Book*, Indiana Repertoire Guides (Bloomington: Indiana University Press, 2007), 7.

[29] Ray Farr, *The Distin Legacy: The Rise of the Brass Band in 19th-Century Britain* (Newcastle upon Tyne: Cambridge Scholars Publishing, 2013), xi.

[30] Anthony Baines, *Brass Instruments: Their History and Development* (New York: Dover Publications, 1993), 255.

CHAPTER 3

ORCHESTRAL REPERTOIRE CHOICES FOR THE FRENCH TUBA: HISTORY AND PERFORMER'S EXPERIENCE

Once a tubist has obtained a position of tenured employment in an orchestra, the choice of which instrument to use for specific repertoire is largely his to make, taking into consideration the wishes of both the music director and to a lesser extent the wishes of the colleagues in the trombone section. While the choice of instrument is commonly driven by a player's subjective personal tastes, ideally it is also motivated by objective considerations of the composers' intent and historical context. The tubist must arm himself with knowledge about the predecessors of the modern tubas, as it is not unheard of to be presented with published parts marked "*ophicléide monster à pistons*" or "*bombardon*" and so forth. It is the responsibility of the musician to know what these instruments are, their respective roles, and to make informed decisions as to which instrument to choose in each situation in order to best carry out the wishes of the composer. Especially in American orchestras, there has been a trend over the last decades of using the largest tuba possible for any and all repertoire, regardless of the express wishes of the work's creator. I experienced this firsthand when engaged by high-profile ensembles to perform as second tubist on works such as Berlioz' *Symphonie Fantastique* or Stravinsky's *the Rite of Spring*. I was sometimes asked by the principal tubist to bring the largest tuba possible. The most cursory musico-historical investigation will reveal that this is not what these composers intended.

1. *Pictures at an Exhibition* (1922)……Modest Mussorgsky (1839-1881), arranged by Maurice Ravel (1875-1937)

The *Bydlo* movement of this work is a tremendous showcase for the French tuba. It musically depicts an oxcart and its driver trundling in from the distance, passing by the observer and receding once again away into the distance. The current trend is that either the tubist performs

this solo on a bass tuba in 12-foot F, or the solo is given to a euphoniumist to play, as it is quite high and risky for the larger tubas.

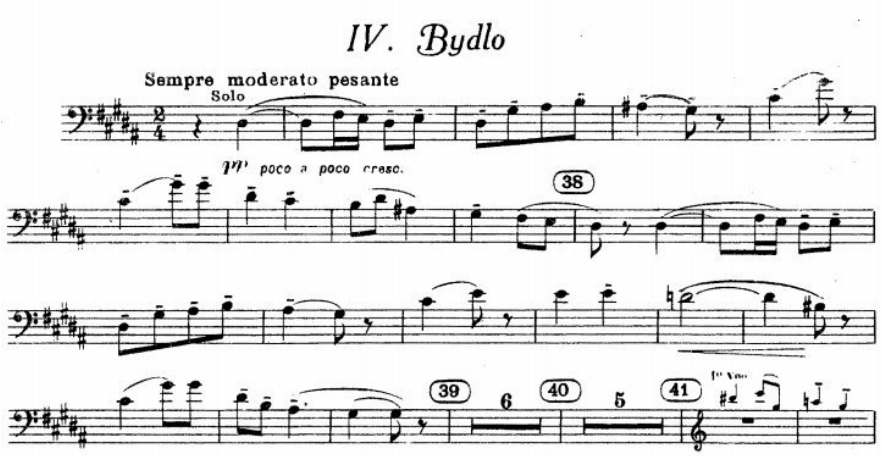

Figure 2 "Bydlo" movement from Ravel's "Pictures at an Exhibition," tuba part

Ravel intended, however, that all movements of *Pictures* be played on the French tuba. The rest of the part makes extensive use of the large compass of the French tuba. The following excerpt is played in octaves with the bass trombone and illustrates the wide range required of the French tuba.

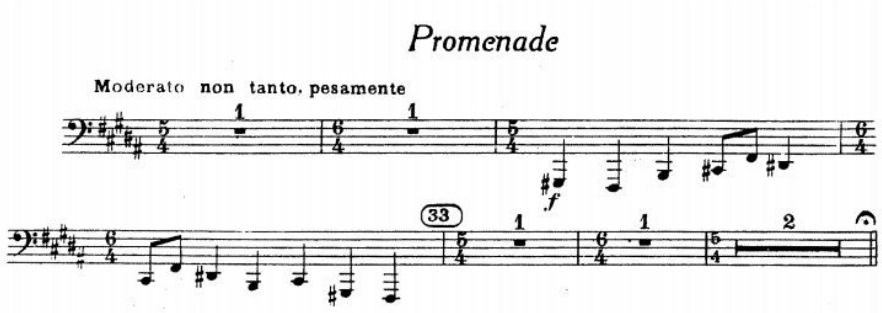

Figure 3 Third Promenade from Ravel's "Pictures at an Exhibition," tuba part

It was standard practice in France until around 1960 to play the entire work on the French tuba.[31] Ravel's arrangement makes full use of one of the French tuba's strongest points: its ability to navigate a large number of octaves with relative ease.

[31]André Cluytens conducting the *Orchestre National de France*, August 1960.https://youtu.be/rp-vIzUbK-c (accessed January 15, 2017)

2. Symphony in D minor (1888)…….C. Franck (1822-1890)

Although César Franck was born in Belgium, he was from a portion of Belgium known as Walloonia where French is spoken and where French culture is strongly represented. Most of Franck's productive adult life was spent in Paris, so he would have heard the French tuba frequently and been influenced by Parisian composers. Franck's Symphony is full of sumptuous, tuneful melodies written in a resonant range for the French tuba. Bevan writes that this symphony best sums up the French school's unique approach to brass writing.[32]

3. Symphony No. 3 "*Organ Symphony*" (1886)…… C. Saint-Saëns (1835-1921)

Although originally commissioned by the Royal Philharmonic Society in England, this work is typically French: lush with sweeping melodies showcasing the individual timbres of the instruments of the orchestra.

4. *A Midsummer Night's Dream* (1826)……..Felix Mendelssohn (1809-1847)

This work was written for the serpent. Mendelssohn composed often for the serpent, and in a variety of contexts. In the overture to *A Midsummer Night's Dream,* the serpent is alone; neither trumpets nor trombones play in this movement. The serpent lines are soloistic and expressive, at one point meant to portray the character from Shakespeare's play named Bottom, who is transformed into a donkey. Mendelssohn also composed often for the serpent in unison with the contrabassoon which produces an octave effect, as the contrabassoon is a transposing instrument. This is a clever means of providing a strong bass-wind sonority, as the tuba had yet to be invented. Mendelssohn again uses this same technique in *Meeresstille und glückliche Fahrt* as

[32] Bevan, 349

well as in his Symphony No. 5 "Reformation." I have performed the "Reformation" Symphony under the baton of Neeme Järvi. He was quite insistent that I sit next to the contrabassoon, as if I was an extension of the woodwind family. Bevan notes that Mendelssohn uses the serpent in a variety of ways in his oratorio *Paulus*, opus 36 (1836). Sometimes the serpent is listed in the score after the bassoons as if it was a woodwind, and at other points in the score the serpent is listed after the trombones, suggesting a brass role. Bevan also suggests that Mendelssohn's writing for the serpent may have influenced Richard Wagner to use the serpent in Rienzi.[33]

5. Romeo and Juliet (1839)…….Hector Berlioz (1803-1869)

The opening recitative with the trombones is a showpiece of Berlioz's writing for low brass instruments. The unison theme played by the trombones together with the tuba musically represents the intervention of the stately Prince of Verona between battling Montagues and Capulets. Because the extended theme is entirely unison until the closing chords, accuracy is of paramount importance, and the relatively comfortable high register of the French tuba argues in its favor in this work.

6. "Hungarian March" from *Le Damnation de Faust* (1846)……Hector Berlioz (1803-1869)

This was Berlioz' first part originally written specifically for the tuba, albeit in the role of second to an ophicleide which has the first part. Interestingly, Berlioz never composed for the tuba without including an ophicleide as well although he did later return to some of his works, rescoring them with the tuba in mind. One example is *Lelio*, his sequel to *Symphonie Fantastique*.

[33] Bevan, 482

When traveling and concertizing in foreign lands, Berlioz was often disappointed by the lack of instruments and trained musicians to play them to which he was accustomed in Paris. Often he would grudgingly assent to a trombone, a bombardon, or a Russian bassoon as an emergency substitute for the substandard ophicleides. Berlioz thought highly of the saxhorns, writing in his *Treatise on Modern Instrumentation and Orchestration*, "Their sound is round, pure, full, equal, resounding, and of perfect homogeneousness throughout the extent of the scale."[34] The French tuba would have been his first choice as a substitute for his beloved ophicleide, for which he continued to compose until his death in 1869.

I have performed this work many times. Because the second part is virtually identical to the first and differs in only a few notes, it is often performed with only one tubist. I have however performed the entire opera (Netherlands Opera, 1992) with two players; an ophicleide on the first part, and I played bass tuba in 12-foot F on the second part.

7. *Rite of Spring* (1913) …….. I. Stravinsky (1882-1971)

Since the *Ballets Russes* was situated in Paris and exclusively used a French orchestra, it can be surmised with some certainty that Stravinsky wrote these two tuba parts with the French tuba in mind. The tessituras lend credence to this.[35] This has also been confirmed by Patrick Wibart, who also confirms that *Petrouchka* (composed by Stravinsky for the Ballets Russes) was also written for the French tuba.[36]

I have performed *The Rite of Spring* in a variety of configurations:

[34] Hector Berlioz and Richard Strauss, *Treatise on Instrumentation* (New York: Dover, 1991), 400.

[35] BBC recreates Stravinsky's Rite of Spring with original instruments, BBC Proms 2013 - François-Xavier Roth conducting *Les Siècles* https://youtu.be/rq1q6u3mLSM?t=17m36s (accessed January 15, 2017)

[36] Wibart, correnspondence.

- Two large contrabass tubas in 16-foot C (New York Philharmonic)
- The two tubists played both contrabass tuba in 16-foot C as well as bass tuba in 12-foot F in various places throughout the work (Netherlands Radio Philharmonic).[37] This is my least-favorite configuration. The sound the tubist creates naturally changes drastically when the player switches from bass- to contrabass tuba and back again, so there is no musical continuity. Unless a composer specifically requested a change of instruments, it would be difficult to fathom any composer approving this choice.
- Euphonium in 9-foot B-flat and bass tuba in 12-foot F (Residentie Orkest)
- French tuba in 8-foot C and euphonium in 9-foot B-flat (Residentie Orkest)

This is a guttural, raucous and percussive work, and in my experience of performing this piece over thirty times in the course of my career, the tuba parts require a bright, clear and immediate sound. The French tuba works marvelously on this repertoire.

The question of which instrument to use for parts originally scored for serpent or ophicleide becomes more difficult. A composer such as Berlioz continued to score for the ophicleide despite the invention- and increasing popularity of the tuba because he wanted a particular effect. He used the tone color as an element of expression, and the ophicleides playing Dies Irae embody that expression.[38] The tuba playing these same notes turn "harsh parody into a Falstaffian romp," in the words of noted Berlioz scholar Julian Rushton.[39] Berlioz was also not shy in his criticism of the forerunners of the tuba and saxhorn. In his Treatise, he wrote this concerning the serpent:

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[37] *Rite of Spring*, Igor Stravinsky, Jaap van Zweden conducting the Netherlands Radio Filharmonisch Orkest, November 2010, https://youtu.be/5UJOaGIhG7A?t=13m36s (accessed January 15, 2017)

[38] Here is a fine presentation of the Dies Irae on original instruments: serpent and ophicleide https://youtu.be/IrHJTvMfXvw performed by La Chambre Philharmonique under direction of Emmanuel Krivine, (accessed January 25, 2017)

[39] Julian Rushton, *The Musical Language of Berlioz*, Cambridge Studies in Music (Cambridge: Cambridge University Press, 2008), 89.

> The truly barbaric tone of this instrument would be much better suited for the bloody cult of the Druids than for that of the Catholic church, where it is still in use—as a monstrous symbol for the lack of understanding and the coarseness of taste and feeling which have governed the application of music in our churches since times immemorial. Only one case is to be excepted: masses for the dead, where the serpent serves to double the dreadful choir of the Dies Irae. Here its cold and awful blaring is doubtless appropriate; it even seems to assume a character of mournful poetry when accompanying the text, imbued with all the horrors of death and the revenge of an irate God. The instrument might also be used in secular compositions based on similar ideas; but its use must be limited to this purpose only. Moreover, its tone blends poorly with the other timbres of 24 Su Lian Tan, 78. 53 the orchestra and of voices. As the bass of a great mass of wind instruments it cannot match the bass tuba or even the ophicleide.[40]

Regarding the serpent part he wrote in Symphonie *Fantastique*, Berlioz makes this note in the score: "If the church serpent plays out of tune, as most of them do, an ophicleide will be more suitable."[41] And as to the ophicleide, he seems to have valued it as a musically evocative element, and less so as a worthy artistic entity. This, also from his *Treatise on Modern Instrumentation and Orchestration*:

> Nothing is more clumsy- I could almost say, more monstrous- nothing less appropriate in combination with the rest of the orchestra than those more or less rapid passages played as solos in the medium range of the ophicleide in certain modern operas. They are like an escaped bull jumping around in a drawing room.[42]

Although Berlioz used the ophicleide and serpent for musico-dramaturgical effect, he was also enough of a pragmatist to want his music played as well as possible. In the example of *Symphonie Fantastique*, the autograph score was written for one ophicleide and one serpent in unison almost the entire time, but the first published score was changed to two ophicleide parts. In the end, he finally agreed to the use of tubas as effective substitutes for the ophicleides.[43] In fact,

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[40] Berlioz *Treatise*, 348

[41] Nicholas Temperley, *Hector Berlioz, New Edition of the Complete Works*, Volume 16, Symphonie fantastique, edited by Nicholas Temperley (Kassell: Barenreiter, 2000), xv

[42] Berlioz *Treatise*, 337

[43] Colin Lawson and Robin Stowell, *The Historical Performance of Music: An Introduction*, Cambridge Handbooks to the Historical Performance of Music (Cambridge, UK: Cambridge University Press, 1999), 132.

Bevan writes "[music critic Henri] Lavoix mentions that the collection of autograph scores at the Bibliothèque Nationale shows Berlioz's replacement of ophicleides by tubas in almost every case. Where Berlioz did not make the alteration, his publishers did."[44] During this period in France, "tuba" of course meant French tuba.

Although ophicleides are long out of standard production and refurbished examples are quite scarce, reproductions of ophicleides are now being mass-produced in Asian factories. This, however, does not change the reality that both the ophicleide and serpent ceased to be used simply because they were acoustically inferior instruments, which is also why they were supplanted by the tuba. Scale tones were inconsistent, both in timbre and intonation. The sound tended to be airy and lacking core, and the instruments simply could not produce the volume of the other brass instruments. The same criticisms however can not be made regarding the French tuba. It can certainly complement a modern, robust orchestral brass section, and since it does not rely on keys and finger holes to produce different notes, the production of sound is far more consistent and reliable.

[44] Bevan, 209

CHAPTER 4

DIFFERENCES BETWEEN THE FRENCH TUBA AND THE EUPHONIUM AND WHICH IS THE MOST APPROPRIATE INSTRUMENT FOR FRENCH ORCHESTRAL REPERTOIRE

The primary difference between the orchestral French tuba in 8-foot C and the euphonium in 9-foot B-flat is that the euphonium is 31.9 centimeters (12.3%) longer because it is pitched one whole step lower than the French tuba. While 12.3% might not seem like a significant difference, it is an infinitely larger difference than the 0.0% difference in instrument length between the tenor- and bass trombones, and one can easily hear a significant timbral difference between those two instruments. Since conical instruments with no valves engaged are generally comprised of one-third cylindrical pipe and two-thirds conical pipe, this difference of a foot yields a substantially different shaped taper, and consequently a noticeably different tone. The result of the French tuba's shortened cone in comparison to the euphonium is a somewhat brighter sound, but this is ameliorated somewhat by the fact that although stubbier, it is a fatter cone in comparison to the taper of the euphonium. The difference in rate of taper is illustrated in figure 2 below. The chart also reflects how the taper of the bass saxhorn compares to both the euphonium and the French tuba: the bass saxhorn is narrower throughout the length of the instrument. Mitroulia also concludes that throughout the second half of the nineteenth century, French tuba design trended toward wider-bore and more conically-shaped instruments, thus increasing the difference between the French tuba and the euphonium.[45]

[45] Mitroulia, 372

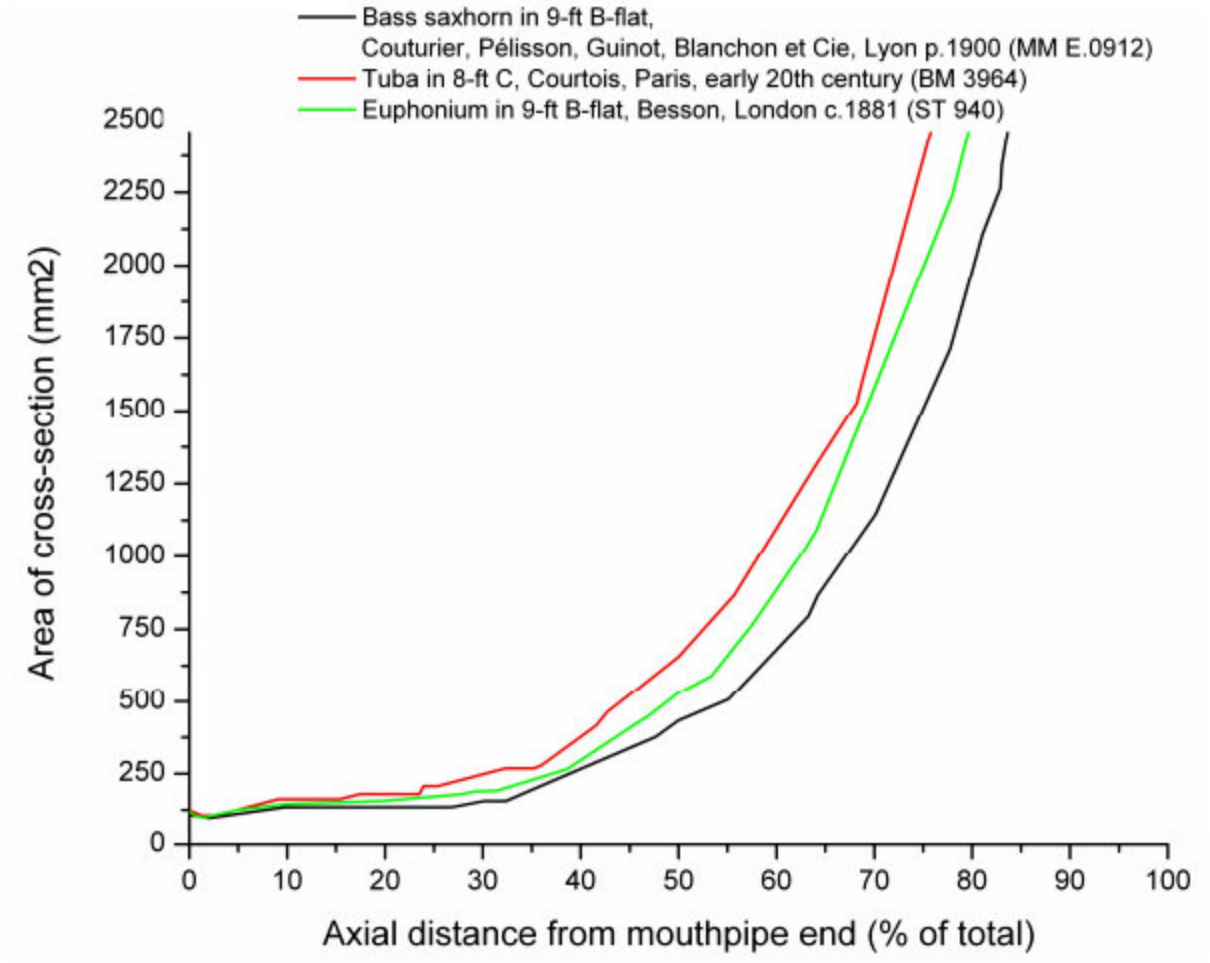

Figure 4 Comparison of bore profiles: bass saxhorn, French tuba, and euphonium[46]

Most euphoniums since the late nineteenth century have been equipped with Blaikley compensating valves, an ingenious system which adds lengths of pipe when certain valve combinations are used. These extra bits of pipe allow the musician to play chromatically down to the pedal register using only four valves. Blaikley valves route the windway through the valve set twice instead of just once as with a conventional set of valves, and there are critics who say that this extra trip through possibly misaligned valve ports carries with it the potential to make the instrument blow with more resistance, or "stuffier." The French tuba on the other hand relies on

[46] Mitroulia, 362

simple addition of valve tube lengths to lower the pitch. Since most French tubas have six independent valves, there are a variety of valve combinations possible with which to manage intonation deficits. This is an added benefit.

The bore size of French tubas is generally smaller than that of the modern euphonium. My 1931 Couesnon 6-valve French tuba has a bore size of 14.5mm. This is smaller compared to the bore sizes of modern euphoniums:[47]

- Boosey Imperial: 14.73mm
- Besson Sovereign 967: 14.73mm
- York Preference 3067: 14.75mm
- York Eminence 4052: 14.75mm
- Meinl-Weston 451: 14.99mm
- Meinl-Weston 551: 14.99mm
- Besson Sovereign 968: 15mm
- Besson Prestige 2052: 15mm
- Besson Prestige 2051: 15mm
- Sterling Virtuoso: 15mm
- Courtois 167 II: 15mm
- Yamaha Maestro 642: 15mm
- Yamaha Custom 842: 15mm
- Willson 2900: 15mm
- Willson 2950: 15mm
- Hirsbrunner HBS 378: 15mm
- Hirsbrunner HBS 479: 15mm
- Miraphone M5000: 15.50mm

From this we see that while the bore diameter of the French tuba through the valve section is

[47] Dave Werden, http://www.dwerden.com/forum/showthread.php/13711-Euphonium-Comparison-Reposted#.WIJ93BsrLDc (accessed January 15, 2017)

somewhat smaller than almost any modern euphonium, the taper flares faster since it is 31.9cm shorter in total instrument length. It is essentially a fatter cone.

This is the mouthpiece which came with my 1931 Couesnon French tuba:

Figure 5 Original Couesnon French tuba mouthpiece

The inscription reads "'"Embouchure Rayee; Guilbaut; Bte SGDG [Patented Without Guarantee of the Government], and on the stem is "Couesnon, Paris." E. Guilbaut was a well-known ophicleide teacher and author of a method book for the instrument.[48] The demarcation "Rayee" signifies

[48] E. Guilbaut, "*Méthode très facile pour ophicléïde en si♭*" (accessed January 15, 2017), http://gallica.bnf.fr/ark:/12148/btv1b525024245/f1.item

Guilbaut's invention of the ribbed, star-shaped mouthpiece throat. The intended benefit of this design is unclear.

In comparison to a modern euphonium-style mouthpiece (Schilke 51D), the Guilbaut is rather shallow and the cup aperture quite narrow. These attributes help produce an immediate, light and transparent tone which would complement the lighter sound of trumpets, trombones and horns favored in the desired style of French orchestral playing.

CHAPTER 5

NECESSARY COMPROMISES AND CONSIDERATIONS IN INSTRUMENT AND MOUTHPIECE CHOICE REGARDING THE FRENCH TUBA FOR USE IN FRENCH ORCHESTRAL REPERTOIRE

Because other orchestral instruments have also changed since the peak of the French tuba's use, it can be argued that the French tuba cannot in good conscience be used alongside the now slightly larger modern trumpets and trombones. While trumpets and trombones of the nineteenth century were pitched in the same key in which they are currently pitched, modern orchestral contrabass tubas (16-foot) are now pitched in an entirely different octave compared to their predecessors. They are essentially twice as long as their musical ancestor, the French tuba. While these larger, lower pitched tubas existed in the nineteenth century (e.g: Wagner's *Ring des Nibelungen*) and French composers were certainly aware of their existence, French composers consistently chose the French tuba as their bass brass voice of choice. This image clearly illustrates the differences between the French tuba and the modern orchestral contrabass tuba in 16-foot C.

Figure 6 left: Couesnon French tuba. right: Nirschl CC contrabass tuba

Choosing to play (for instance) Franck's D minor Symphony on a tuba pitched an octave lower than the composer intended is musically unjustifiable. While the sounded pitches will be the same, the timbre would be drastically different than the composer's wishes.

Mouthpieces originally used with French tubas are comparable to tenor trombone mouthpieces. Experience gleaned from performances with my own orchestra taught me that in order to keep up with the sheer volume produced by a modern brass section, I had to use a much larger mouthpiece. This gave heft to the sound, yet did not negatively affect intonation nor significantly alter the timbre of the French tuba. Here are comparative pictures of the Guilbaut Rayvee mouthpiece which was intended for use with my Couesnon French tuba, a modern Schilke 51D mouthpiece (which is not an unusual mouthpiece for use with a current-day euphonium), and a Yamaha Roger Bobo tenor tuba mouthpiece, which is intended for use by tubists when playing euphonium-sized instruments.

Figure 7 L to R: Cousenon Guilbaut Rayvee, Schilke 51D, Yamaha Bobo tenor tuba mouthpieces

Figure 8 Cousenon Guilbaut Rayvee, Schilke 51D, Yamaha Bobo tenor tuba mouthpieces

Figure 9 Cousenon Guilbaut Rayvee, Schilke 51D, Yamaha Bobo tenor tuba mouthpieces

As can be seen from these images, the Guilbaut Rayvee is a very shallow and narrow mouthpiece. The Schilke has a wider cup aperture in comparison as well as a substantially deeper cup, creating more cup volume. The interior volume of the mouthpiece cup helps determine the character of sound the mouthpiece will produce: bright or dark. The Yamaha is both wider and deeper than either of the other mouthpieces, helping to produce a bigger and somewhat darker sound in order to complement a modern orchestral brass section. The Yamaha's larger cup does

make the French tuba play at a slightly flatter pitch, and one must adjust the main tuning slide accordingly.

One important factor which might not be immediately apparent to the tubist contemplating trying out a French tuba in an orchestra: the bell points to the right, which is the opposite direction to which bells of modern orchestral tubas point. This is a factor in several ways:

- Directionality of sound. Lower frequencies generally have an omnidirectional character. A dark contrabass tuba sound will tend to fill an entire hall with music regardless of which direction the player's bell is pointed. This is somewhat less so with the French tuba, as it generally plays in the higher range and its sound is comprised of more upper harmonics than that of the contrabass tuba. The French tubist's sound is directed either towards the back of the stage, or toward stage right. This then may mean that more effort on the part of the musician is required in order to get a balanced sound out into the hall. A good sound-check with the help of trusted ears in the hall is a must.

- In any job, keeping good relations with colleagues is essential. This is certainly no less true in music. In one of our first performances of Berlioz' *Symphonie Fantastique* in the Hague Philharmonic under direction of conductor Jaap van Zweden, while using French tuba on the first part and euphonium on the second part, our bass trombonist expressed distress at the amount of sound these small saxhorn-type instruments were producing in his direction. Various solutions were suggested, but we eventually solved the problem by angling our chairs slightly so that he was no longer directly "downrange." This solution has its limits however, as considerations of sightlines to the conductor, concerns of other musicians nearby, and making this solution work consistently in other venues all come into play.

Another consideration when the tubist decides to use the French tuba in the orchestra is the aural expectations of his colleagues. If section members have only ever heard the tubist play bass- and contrabass tubas before, and if they have never been previously exposed to hearing the French tuba played on French repertoire, the chance exists that they will not like it, and for no other reason than that they have never heard it before. I myself have experienced this hesitance, and this is a time when good working relationships between colleagues comes to bear fruit. Their understanding and cooperation is important.

The French tuba has other advantages besides being the historically correct choice of instrument for French repertoire. When one examines the tessituras of what the tubist is expected to play in a work by (for instance) Berlioz, embouchure fatigue and lack of accuracy become important factors in choosing an instrument on which to perform these difficult parts. Far too often a tubist's confidence will exceed his ability to consistently play a high part accurately, and sometimes with musically disastrous results. The shorter overall instrument length and smaller mouthpiece of the French tuba make the high range much more secure. As Shakespeare wrote, "Discretion is the better part of valor," meaning that caution and prudence are a better choice than rash bravado.

CHAPTER 6

CONCLUSIONS

From all that has been said, we see that French composers of the era between 1843 and approximately 1960 were well aware of the larger German bass- and contrabass tubas, and had heard them played sometimes expertly during their forays through foreign lands, yet they continued to write for the French tuba during this period. The sound of the French tuba is an integral component of those composers' compositions. That these works are now played on instruments which are twice as large is musically unjustifiable, and performers, teachers and students of the tuba will ideally be prudent enough to make informed instrument choices. Orchestral tuba parts composed in France during the period in question should be performed using the French tuba, as that was almost without exception the composers' intent.

Although the French tuba is the historically correct instrument for use in French repertoire of this era, current scarcity of these instruments informs us that we cannot afford to be quixotic and merely organologically correct. The French tuba might currently be just as scarce as the acoustically inferior ophicleide, so perhaps a more realistic and practical compromise would be that a euphonium in 9-foot B-flat should play parts intended for the French tuba despite the fact that they have substantial timbral differences from each other.[49] To this end, eminent euphonium soloist and pedagogue Dr. Brian Bowman writes in his dissertation that the euphonium would make an appropriate substitute for the ophicleide in works such as Mendelssohn's "Midsummer Night's Dream."[50] Nonetheless, performers, teachers and students of the tuba should still at the

[49] Richard Demy, "The Automatic Compensating Euphonium as the Ideal Choice for Performing Music Composed Originally for Ophicleide", (DMA diss., University of North Texas, 2014), 1.

[50] Brian L. Bowman, "The Bass Trumpet and Tenor Tuba in Orchestral and Operatic Literature." (DMA diss., Catholic University, 1975), 17.

very least be cognizant of the timbre which authentic performances of French repertoire asks of them, and knowledgeable regarding the important role in music history which the French tuba has played. The longstanding tradition of the use of the genuine French tuba in 8-foot C, as well as the wishes of the composers who wrote for it must be respected, and the French tuba used whenever possible for French repertoire.

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