The Ophicleide as an Orchestral Instrument: Past and Future Perspectives

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Abstract

The history of brass instrument development has been multifaceted. There have been many trial and error moments. Some inventions have stayed until now, and some have been abandoned sooner or later towards the present. In this paper the focus will be in an instrument called the ophicleide which was a sort of transitional low brass instrument that preceded the tuba we play nowadays.

This study is for everyone interested in the topic and seeking information about early instruments, and especially for those tuba students who are eager to learn something about the ancestor of their instrument. This paper provides historical information before the ophicleide, introduces the instrument and its mechanical and technical aspects, and explains how it was replaced by the tuba.

This study addresses questions such as the following: Is there a revival of the ophicleide going on? Will the ophicleide enjoy greater popularity in the future? These questions are also addressed and answered by the principal tuba player of the Turku Philharmonic, Nicolas Indermühle, who has researched and also played the ophicleide in Turku Philharmonic.

Keywords: Ophicleide – Serpent – Low Brass – Period Instruments – Brass Instruments

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Introduction

Before padded keys or piston or rotary valves were made, a brass instrument was operated by fingering tone holes (trumpet, cornett) or using a slide (trombone). A proper low-pitched brass instrument was not invented until 1590, when a French clergyman, Canon Edmé Guillaume attempted to build one. This attempt was successful, and Guillaume named this new low-pitched bass horn "The Serpent", which is still in use.[1]

Chapter 1: The Serpent

The Serpent is made of wood and brass and consists approximately of two meters of tubing shaped in a form of double "S." It has a mouthpiece and six fingering tone holes. The instrument is conical-bored: the tubing from the mouthpiece to the bell enlarges evenly by its whole length. As one can see in Fig. 1, the serpent resembles a snake.

Figure 1: King, *Brownedc.Org.*: Blog #32, The Serpent

[1] Reginald Morley-Pegge, "Serpent," Grove Music Online, accessed July 24, 2020, https://doi.org/10.1093/gmo/9781561592630.article.25473.

The serpent is played like any other brass instrument: the vibrating air column from the player's lips to the mouthpiece creates a sound. The sound quality and the pitch are controlled by embouchure adjustments and fingering tone holes. Stabile intonation may be difficult to maintain on the serpent because the tone holes are very sensitive to any changes in the finger positions.

The serpent's initial role was to accompany the church choir and to provide stability and volume to the cantus firmus of the chant. It was a challenging instrument to master, but when played well its warm sound worked beautifully supporting the bass voice in Gregorian chant, and later in the nineteenth century the low register in wind bands and orchestras.[2]

Mocking of the serpent was very common in the eighteenth and nineteenth centuries, mainly due to the lack of good instrumentalists. Charles Burney (1726-1814), an English music historian, composer and organist, wrote that "the serpent is not only overblown and detestably out of tune, but exactly resembling in tone that of a great hungry, or rather angry Essex calf."[3] Maestro G.F. Handel included the serpent in his *Fireworks Music* (1749). He is told to have said after a concert in England where he heard the instrument for the first time: "Aye, but not the Serpent that seduced Eve."[4] Later he erased the serpent part from the score.[5]

Experimentations were made towards the nineteenth century, and instrument builders started to add keys, like in woodwind instruments, to the serpent, as one can see in Fig. 2. They were added to ease the operation and to enhance the control of the intonation of the instrument. Also, upright versions of the serpent were invented, for example the Russian bassoon by J.J. Regibo in 1789, and the English Bass Horn (ca. 1790) by Louis Alexandre Frichot.[6]

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[2] Ibid.
[3] Paul Schmidt, "Serpent Anecdotes & Quotes," The Serpent Website, accessed July 24, 2020, http://www.serpentwebsite.com.
[4] Ibid.
[5] Clifford Bevan, "The Low Brass," in *The Cambridge Companion to Brass Intruments,* ed. Trevor Herbert and John Wallace (Cambridge University Press), 143.
[6] Craig Kridel and Clifford Bevan, "Questions & Answers: Bass Horns & Russian Bassoons," *Itea Journal*, (Summer 2003): https://www.berliozhistoricalbrass.org/THE%20FINAL%20bass%20horn.pdf

Figure 2: Musical Instrument Museums Online, *Mimo-International.Com*.: Wind Instruments, Serpent

The serpent never really became a popular orchestral instrument in the Classical and Romantic eras, and its use was limited mainly to some *Harmoniemusik* and wind band ensembles. Haydn used it in his late eighteenth-century marches written for English wind bands, to reinforce the sound of the bassoons. Beethoven wrote a serpent part to his Military March in D major of 1816. Some careful attempts to include the serpent in the symphony orchestra were made through the nineteenth century, but it was eventually superseded by the louder and more controllable ophicleide.[7]

1.1 Inventing the Ophicleide

In 1815, when allied forces won the battle of Waterloo, a march of victory took place through Paris. This festive event included the Coldstream Guards Band of the British Army featuring their star soloist John Distin playing the keyed bugle (Fig. 3).

[7] Clifford Bevan, "The Low Brass," in *The Cambridge Companion to Brass Instruments,* ed. Trevor Herbert and John Wallace (Cambridge University Press), 144-145.

Figure 3: The Metropolitan Museum of Art, *Metmuseum.Org*.: Graves & Company, Keyed Bugle in E

The story goes that the Grand Duke Konstantin Pavlovich of Russia was so impressed hearing John Distin playing the bugle in this event that he immediately wanted the same instrument in his own band. Pavlovich contacted French instrument maker and music professor Jean-Hilaire Asté (also known as Halary or Halari) and asked him to build it.[8] Asté made a replica of the keyed bugle and gave it a French name, the "clavitube". One instrument was not enough for him, so he invented a whole brass instrument family based on the idea of key operation. This family included the aforementioned clavitube, which was the highest-pitched instrument member (soprano), the quinticlave (alto), and the ophicleide (bass/tenor).[9] In 1817, Jean-Hilaire Asté submitted these three instruments to the *Institut de France,* the *Académie Royale des Beaux Arts,* and the *Athénée des Arts.*[10] The new family of instruments were misunderstood at first, and therefore Asté did not receive the patent right away. Académie Royale des Beaux Arts reported in 1817:

> As to the two instruments which M. Halary designs under the names of 'quinti-clave' and 'ophicleide', they bear great resemblance to those submitted to the Academy in the sitting of the 11th of March 1811 by M. Dumas, which he designed under the names of 'basse et contrebasse guerrières' … The opinion of our commission on the quinti-clave

[8] Richard Sanborn Morgan, "The Serpent and Ophicleide as Instruments of Romantic Color in Selected Works by Mendelssohn, Berlioz and Wagner" (D.M.A. diss., University of North Texas, 2006), 10, ProQuest (3254206).
[9] John Webb, "19th-Century Keyed Brass," *The Musical Times* 127, no. 1716 (1986): doi:102307/841681.
[10] Reginald Morley-Pegge, "Ophicleide," Grove Music Online, accessed July 25, 2020, https://doi.org/10.1093/gmo/9781561592630.article.40954.

> and ophicleide is that M. Halary can only claim the merit of an improvement and not that of an entire invention.[11]

The quinticlave and ophicleide were dismissed as a kind of improvement of the bass clarinet invented by Dumas. In 1821, Asté finally received his patent for these three instruments and was even awarded a medal from Athénée des Arts.[12]

Chapter 2: The Ophicleide

The name "ophicleide" comes from the combination of two Greek words: *ophis*, meaning serpent, and *kleis*, meaning keys. Jean-Hilaire Asté had a desire to build an improved version of the serpent, using the latest brass instrument building techniques available at that time. The ophicleide is made out of brass or copper instead of wood, and it has nine to twelve keys covering tone holes. Originally, the ophicleide had nine keys, but the number increased through the years, and eleven is the most common number of keys by far.[13] The bell of the instrument is directed upwards towards the sky, and it features also a conical bore like the serpent. The bass ophicleide is pitched in C or B flat and is played with a cupped mouthpiece similar in size to the modern euphonium.

2.1. How Has the Ophicleide Been Played?

Firstly, the player has to attach the mouthpiece to the lead pipe of the instrument as one can see in Fig. 4. The left hand is placed near the bell in the upper group of touchpads controlling the keys, and the right hand is placed near the bottom on the touchpads, as with the

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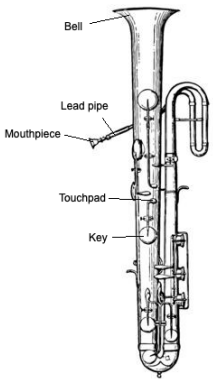
11 "Ophicleide," 1911 Encyclopædia Britannica, Volume 20, accessed July 25, 2020, http://en.wikisource.org/wiki/1911_Encyclopædia_Britannica/Ophicleide.
12 French Ministry of Commerce, *Description des machines et procédés spécifiés dans les brevets d'invention* (Paris: Par les Ordres de Monsieur le Ministre du Comerce et des Cravaux publics, 1831), https://play.google.com/store/books/details?id=VUUFAAAAQAAJ&rdid=book-VUUFAAAAQAAJ&rdot=1.
13 Morley-Pegge, "Ophicleide."

bassoon. If a player wants to produce a sound, his or her lips should be buzzed into the mouthpiece (with a clear concept of the desired pitch and tone in the mind, of course). A sound will be created, and the rest is history.

Figure 4: Clip Dealer, *En.Clipdealer.Com.*: Vectors, Ophicleide

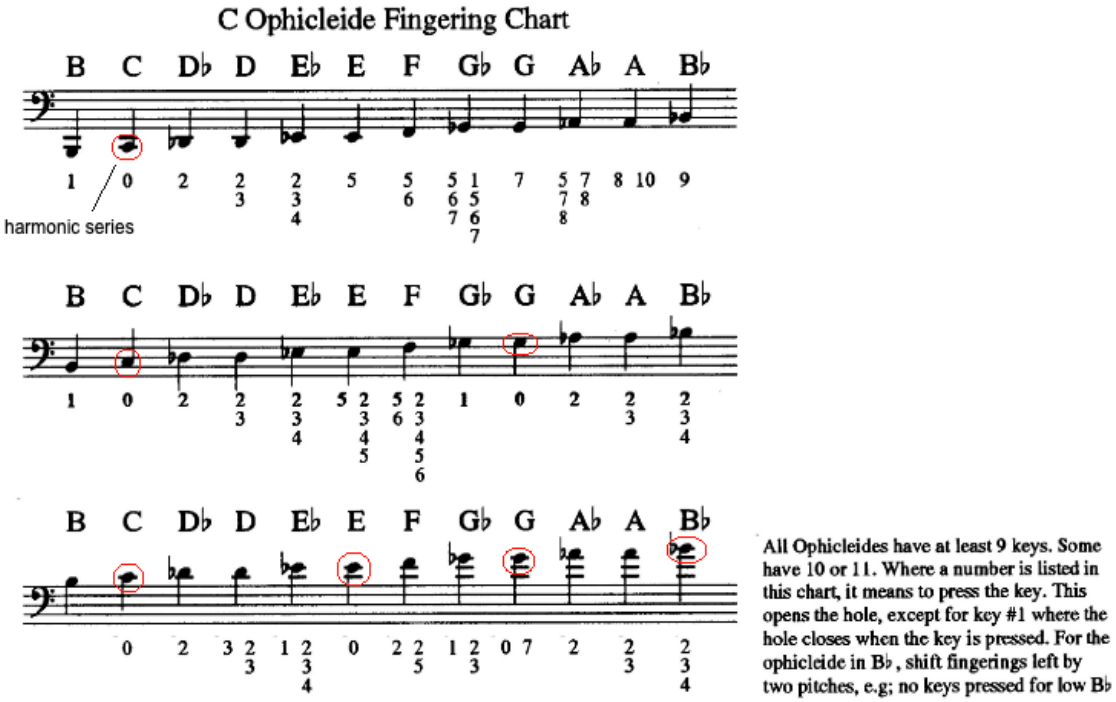


2.2 The Key System of the Ophicleide

The largest key nearest to the bell is open when not pressed, all the others are closed. When an ophicleide in C is played while not pressing any touchpads, one can produce the harmonic series on C (circled in Fig. 5). Closing the key nearest to the bell lowers the series by a semitone. Different key combinations combined with changes in embouchure create different pitches. It has been said that instrument designer Adolphe Sax was inspired by the ophicleide and its key system and started to develop a saxophone from it.[14]

[14] Ibid.

Figure 5: Schmidt, *Serpentwebsite.Com.*: Serpent & Ophicleide Fingering Charts



2.3. How Does the Ophicleide Sound?

The bass ophicleide has a lyrical sound at its best, comparable to that of a euphonium and bassoon. The strongest register of the ophicleide in C is between C_3 to C_4.[15] The lower register of the instrument (below C_3) is, in my own experience, harder to control and "woolly." Hector Berlioz wrote the following description of the ophicleide in his book *A Treatise on Modern Instrumentation and Orchestration*:

> The quality of these low sounds is rude; but it does wonders – in certain cases – beneath masses of brass instruments. The very high notes have a wild character, of which perhaps sufficient advantage has not yet been made. The medium, - especially when the player is not very skillful, - too much recalls the sounds of the cathedral serpent, and of the cornet-à-bouquin. I think they should rarely be allowed to have

[15] Middle C = C_4

> prominence. There is nothing more coarse – I might almost say, more monstrous, - or less fit to harmonise with the rest of the orchestra, than the passages more or less rapid, written in the form of *solos* for the ophicleide medium in some modern operas. It is as if a bull, escaped from its stall, had come to play off its vagaries in the middle of a drawing-room.[16]

Chapter 3: The Ophicleide's Introduction into the Symphony Orchestra

In this chapter, I introduce some of the most important orchestral literature that features the ophicleide. The instrument drew much attention since it was invented. It was supposed to be a natural extension of the orchestra's trombone section since it could reach the low notes that the bass trombone could not play. As a brass bass in the orchestra, the ophicleide was a forerunner of the modern tuba.

Olimpie, by the Italian composer Gaspare Spontini, was the first musical work that made use of the instrument. This three-act opera was based on the tragedy of the same name by Voltaire. The ophicleide appeared in the stage *banda* along with four horns, eight trumpets and three trombones.[17] The opera was premiered on December 22, 1819 by the Paris Opéra at the Salle Montansier, even before Asté's ophicleide received its formal patent. Paris was the first major centre for ophicleide players because the opera was well funded at that time.[18]

Hector Berlioz is perhaps one the most known composers that utilized the ophicleide's tonal possibilities in several of his works. His *Symphonie Fantastique* is a great example of how the ophicleide can be used effectively: Two ophicleide parts have an important role in the fourth and fifth movements. In the fourth movement, they have both melodic motives and supporting bass lines. The fifth movement of the symphony features a haunting *Dies Irae* (Ex. 1.1) played by four bassoons and two ophicleides.

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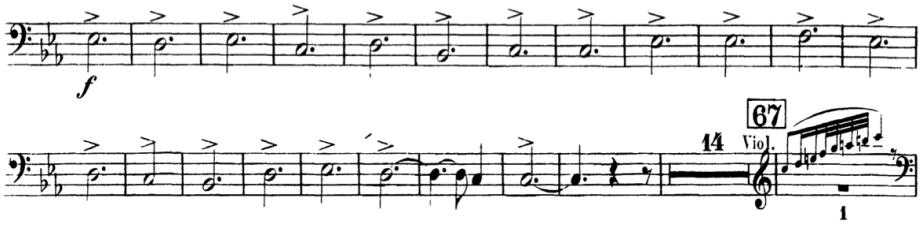
[16] Hector Berlioz, *A Treatise on Modern Instrumentation and Orchestration* (London: Novello, 1900), https://archive.org/details/treatiseonmodern1900berl/page/174/mode/2up

[17] Clifford Bevan, "Keyed Bugles and Ophicleides," in *The Tuba Family,* (Winchester: Piccolo Press, 2000), 161.

[18] Ralph T. Dudgeon, "Keyed Brass," in *The Cambridge Companion to Brass Intruments,* ed. Trevor Herbert and John Wallace (Cambridge University Press), 141.

Example 1.1: Berlioz, *Symphonie Fantastique*, 5th mvt., mm. 127-147.



In 1826, Felix Mendelssohn (1809-1847) originally wrote a part for the English bass horn (*corno inglese di basso*, an upright serpent) in his *Ein Sommernachtstraum*, but in 1832, when the music was published, he had the bass horn changed to ophicleide.[19] Mendelssohn also wrote an ophicleide part for the *Elijah* oratorio.

3.1. The Modern Tuba Displaces the Ophicleide as a Brass Bass Instrument

In 1827, Heinrich David Stölzel, a German musician and inventor, devised a new piston valve called *Röhrenventil.* It was a short piston valve of large diameter, which was suited to be used with instruments of a wide bore. In 1835, a Prussian bandmaster, Wilhelm Wieprecht, and instrument maker J. G. Moritz adapted their own version of Stölzel's piston valve and introduced their new instrument called the "Bass-Tuba in F."[20] The tuba started to take over the place of the low brass bass in the orchestra, starting first in Prussia where the use of the ophicleide was nearly non-existent because of lack of instruments and players, then spreading to France and Britain where the ophicleide was still widely in use.[21] For a while, the tuba and ophicleide were used side by side, both playing the lowest brass part.

Virtuoso ophicleide artists from the middle to the late nineteenth century kept the ophicleide alive. Artists such as Jean Prospère Guivier, soloist of Louis-Antoine Juillien's orchestra, and Samuel Hughes, professor of Guildhall School of Music and member of Hallé

[19] Richard R. Demy, "The Automatic Compensating Euphonium as the Ideal Choice for Performing Music Composed Originally for Ophicleide" (D.M.A. diss., University of North Texas, 2014), 37, ProQuest (3727146).
[20] Clifford Bevan, "Tuba (i)," Grove Music Online, accessed August 26, 2020, https://doi-org.ezproxy.uniarts.fi/10.1093/gmo/9781561592630.article.28525.
[21] Ibid.

Orchestra, were performing with the instrument, and the latter even made some improvements on the instrument's key system.[22]

The ophicleide's use started to fade away naturally because the developing tuba started to be a more reliable instrument with respect to tone production and intonation. Nicolas Indermühle states:

> There are of course many reasons why the ophicleide "disappeared." Unevenness in the tone color is one of them. The fact that not all notes come out from the same place (the bell) is a big disadvantage in matters of projection. The ophicleide has a significantly less massive sound than the tuba and a thinner sound than the euphonium.[23]

In 1874, the Paris Opera replaced the ophicleide with the tuba. Orchestras in Britain, such as the London orchestra and Hallé orchestra, banished the ophicleide and replaced it with the tuba towards the end of the nineteenth century. Morley-Pegge refers to its final disappearance in the *Couesnon*-catalogue from 1916, that meant the instruments were not made anymore, and the last instruments were sold for individuals, which then marked an end of an era.[24]

3.2. The Revival of the Ophicleide?

After the ophicleide's "disappearance" in 1916, it was used rarely in public. The instrument still existed, and was perhaps used by some really dedicated enthusiasts in amateur ensembles, or it was collecting dust in storage. After a while, it started to appear again in public towards the end of the twentieth century. Carey Blyton used both the serpent and ophicleide for the soundtrack of the *The Revenge of the Cybermen* episode of the BBC Television series *Doctor Who* released in 1975. The year 1989 marked a true comeback of the ophicleide when the London Classical Players recorded Berlioz's *Symphonie fantastique* under Roger Norrington producing a historically informed performance on period musical instruments.

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[22] Bevan, *The Tuba Family,* 146.
[23] See the appendix for a transcription of the interview. The interview was conducted in August 2020.
[24] Ibid, 166 & 168.

Clifford Bevan, author of the book *The Tuba Family,* gave possibly the first ophicleide recital at the Horniman Museum with a pianist in London on November 11, 1990.[25] Performers such as Douglas Yeo, Nick Byrne, Harri Lidsle and Nicolas Indermühle have been at the frontline, bringing the instrument back to the music scene all over the world. Patrick Wibart from France is probably one of the most praised young ophicleide virtuosos today. He has made the recording "Virtuoso Ophicleide" consisting of ophicleide solos accompanied by piano. Wessex, an instrument manufacturer, has recently started to make bass ophicleides. The interest is growing all the time, and there are more and more players coming and ensembles being formed, so one can say state that the revival is going to continue in the future.

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[25] Ibid, 178.

Conclusion

When I played the ophicleide at the ITEC (International Tuba and Euphonium conference) in 2008, I had no idea of the colorful and eventful history of this still rather unknown instrument. When the tuba is used in orchestral repertoire originally written for the ophicleide, it does not really achieve the timbre that the composer intended. The sound timbre of the tuba lacks some sort of “mysteriousness” and “ghostliness” that the ophicleide has; the tuba sounds too big. The sound of the euphonium is closer to that of the ophicleide, but there is still something missing.

Already a few ophicleide solo compositions have been written in twenty-first century, and perhaps in the future the ophicleide will find a permanent place in new compositions for orchestra. The ophicleide could have a place in modern orchestra literature once awareness of the instrument increases.

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Appendix: Interview with Tuba Player Nicolas Indermühle from the Turku Philharmonic Orchestra, 18.8.2020, Turku, Finland

K. Ojutkangas: How did you become interested in the ophicleide?

N. Indermühle: I was ending my studies in Switzerland, and somehow noticed that the ophicleide was not in use in Finland. Since I knew how much the ophicleide was coming back in use in Switzerland and France, and that I guessed I might be freelancing for a while, I thought it would be a clever thing to try to get one. Also, some close friends from France motivated me to get one.

K. Ojutkangas: What kind of task was it to learn the key mechanism of the ophicleide?

N. Indermühle: The same as when you learn anything else which is completely new: practice regularly and slowly build up automatism.

K. Ojutkangas: What do you think about the tonal possibilities of the ophicleide compared to the tuba?

N. Indermühle: There are of course many reasons why the ophicleide "disappeared." Unevenness in the tone color is one of them. The fact that not all notes come out from the same place (the bell) is a big disadvantage in matters of projection.

The ophicleide has a significantly less massive sound than tuba and thinner sound than euphonium. First reason is it's tuning; Bb or C (high Eb) and of course the general size which is rather small. The ophicleide also has a smaller low end; the lowest ''real'' note [on Bb ophicleide] to be possible is A1 (at 55Hz). Seen like this it seems that ophicleide has smaller possibilities than the tuba. I would still rather say that the ophicleide offers different qualities than the tuba and there are probably many reasons why the ophicleide came back in the last 20-30 years...

K. Ojutkangas: Have you played the ophicleide in the orchestra and/or as a soloist?

N. Indermühle: Yes; Berlioz's *Symphonie Fantastique* and Mendelssohn's *A Midsummer Night's Dream Overture*. I have used it also in chamber music set up; to perform some of the very first brass quintets composed by J.F.V. Bellon (1848-1850). Never as a soloist.

K. Ojutkangas: Is there solo literature written for the ophicleide in the 21th century?

N. Indermühle: Yes. At least 4 pieces at the time I made ophicleide repertoire research in Sibelius Academy (2015). Harri Lidsle has also commissioned a solo piece for ophicleide and piano.

K. Ojutkangas: Could there be a place for the ophicleide in today's modern orchestra literature?

N. Indermühle: Definitely, but one would need real knowledge about this instrument from the composers.

K. Ojutkangas: How is the ophicleide scene in Finland?

N. Indermühle: Small. As long as I know we are three (3) players; Harri Lidsle from Lahti – who is using it very actively – Harri Miettunen from Tampere – and myself. The activity is growing slowly: I had one concert in 2014, one orchestral series in 2017, and in 2019-2020 already 4 projects.

K. Ojutkangas: Will there be a renaissance of the ophicleide to be expected?

N. Indermühle: It has already happened! Conductors start to ask about it - or are even happy to see it on the first day of rehearsals (and concert as well!). I am certain that there are more ophicleide's in use than in museums. Also, in past years, several instrument makers have started to copy – or make new a design – of the ophicleide. Facebook group "Ophicleide Players on Earth" has over 350 members!