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## ACADEMY OF MUSIC AND DRAMA

**What difficulties can a musician face while switching between the Bb and the C trumpet playing standard orchestral excerpts?**

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## **ABSTRACT**

Key words: trumpet, performance, postgraduate development, methods of learning

This Master thesis explores differences between the Bb and C trumpet. Firstly, it accounts for how these two trumpets historically came to be, and their physical differences. Then, it explores my personal experiences switching between these two instruments while playing orchestral excerpts.

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## **Introduction**

For my thesis, I decided to base my research on my own experiences and the difficulties I encountered in switching between the Bb and C trumpet. I had recently moved to Sweden when I began working on the outline for my thesis, and was inspired by the challenges I faced in my own trumpet practice to research the differences in the two trumpets. Before moving to Sweden, I completed my bachelor degree in music performance in the United Kingdom. While studying there, I played almost exclusively on the Bb trumpet, the most common trumpet in the UK. During my time there, I had 4 trumpet teachers: all whom chose to play on the Bb trumpet. There was a saying we used jokingly: “If you can’t play it on Bb, you can’t play it all”. This meant that when I moved to Sweden, I was relatively new to the C trumpet. In Sweden and in Scandinavia on a whole, the C trumpet is the most commonly used trumpet in the orchestra. Although the choice of instrument can depend on the repertoire and to some extent also on the individual performer, it is safe to say that the C trumpet is the instrument of choice for most trumpeter players in Scandinavian orchestras.

In Sweden I was now expected to play the C trumpet in orchestras and auditions, as opposed to the Bb trumpet that I was comfortable playing in the past. The change in instruments affected my confidence and level of playing. This became problematic especially when auditioning for orchestral jobs, when I had learned the excerpts on the Bb trumpet in the past, and was now expected to play them on the C trumpet. I knew that my biggest challenges with switching between the two instruments was transposition and intonation, and I was reluctant to put myself in situations where I would not be able to play my best. Therefore, it became important for me to research exactly how switching between the instruments affected my playing. I believed that learning how to understand my challenges in practice would ultimately help me overcome them. Therefore, this was highly relevant for my own musical practice, and will hopefully serve other trumpet players in their journey swapping between different trumpets.

## **Implications of the study**

I hoped that the implications of my historical and theoretical investigation would provide an understanding as to why two different trumpets exist and their physical differences. By recording my excerpts on both instruments, I hoped to gain an understanding of the mechanism of switching between two similar instruments. I believed that learning how to understand my challenges in practice would ultimately help me overcome them. Therefore, I believe this was highly relevant for my own musical practice, and will hopefully serve other trumpet players in their journey swapping between different trumpets.

## Methods

In order to fully understand the differences in the two instruments, I wanted to firstly explore the historical context of the instrument. In order to do this, I employed a theoretical and historical approach. By reviewing relevant literature, I strove to understand the historical context of these instruments of how they came to be and how they differ. I began by giving a brief history of how the trumpet was first discovered and how it developed into a keyed instrument, before separating into trumpets of all sizes.

For exploring the physical differences of the two trumpets, I used mainly personal expertise and referring to my own experiences. I also created an intonation chart by tuning my notes on both instruments.

When it came to the physical and psychological aspects of the instruments, I looked at this in a more qualitative manner. I recorded myself playing 4 standard, orchestral excerpts on the Bb trumpet and then on the C trumpet. I chose the excerpts based on what was most likely to be required at orchestral auditions I may attend in the future. For my notations, I wrote a diary about my experiences. I noted the immediate challenges that I faced the first time playing them through on the Bb trumpet, then recorded them on the C trumpet without doing any work or practice on them between recordings. I noted difficulties I faced on the C trumpet, in the same manner I had after the first recording on the Bb trumpet. In my notes I commented on problems I faced with the desired sound, transposition, keys, fingerings and if there were certain notes that stood out for one reason or another. After one recording attempt on each instrument, I made a second attempt at recording my excerpts on the C trumpet. Unlike my previous attempts, I now focused on practicing the C trumpet and working on the issues I had noted earlier.

I was hoping that by recording my process of practicing the excerpts it would highlight the exact difficulties I was facing, and that that would allow me to move forward in my process of being able switch between trumpets more easily in the future.

## A brief history of the trumpet

There have been different variations of the trumpet for over 3,000 years. They were originally used as hunting horns, war calls and signals for the arrival of royalty.<sup>1</sup> The trumpet was most likely first discovered by producing sounds blowing into the horns of animals, shells and hollow reeds. By the sixteenth century, the trumpet had developed into long cylindrical tubes with mouthpieces.<sup>2</sup> These trumpets were called 'natural' trumpets, and did not have valves. This meant that the range of the trumpet was limited to the harmonic series. Baroque composers would often write music in the high register of the trumpet (often concert G above the staff), because of the overtones that were available in that register.

The baroque trumpets were often made in the key of D, judging by the trumpet music written at this time by Purcell, Handel and Bach. These instruments were much larger than today's trumpets, and at eight feet in length, they were double the length of today's modern Bb trumpet. The trumpets were introduced to the orchestra in the year 1607.<sup>3</sup>

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<sup>1</sup> W. Morrow, "The Trumpet as an Orchestral Instrument." *Proceedings of the Musical Association* 21 (1894): 134, JSTOR.

<sup>2</sup> Morrow, "The Trumpet", 134, JSTOR.

<sup>3</sup> Morrow, "The Trumpet", 135, JSTOR.

Valve trumpets were established in the 1820s when the professor of trumpet and trombone at the Prague Conservatory, Josef Kail acted as champion for valve trumpets.<sup>4</sup> There are two main schools of valves today: rotary valves and piston valves. Rotary valves are flat valves with a teardrop shape and are mainly used in Germany and Austria. The piston valves are stem valves with a flat button cap and are more common elsewhere.

The first valve trumpets in the 1800s were the cumbersome F and G trumpets<sup>5</sup>, which were very large in tubing. Around the 1830s the Bb cornet was introduced to the musical world, the smallest instrument of its kind. The tubing for this instrument was shorter more conical than the F and G trumpet, and the cornet could be played with far more agility. French composers began composing for cornets alongside trumpets, and the cornet grew in popularity.<sup>6</sup> During the 19<sup>th</sup> century, composers were challenging the performers with more technically demanding music than before, and the cornet grew in popularity. The Bb cornet soon overtook the large and impractical F and G trumpets in the orchestra. According to Oxford Music Online

*Valved trumpets were at first rarely used in Paris orchestras, and so only by adding a pair of cornets could the composer secure chromatic trebles to the brass. (b) In many orchestras of the second half of the 19th century, especially in Britain and the USA, all trumpet parts were played on cornets – a practice which deprived classical trumpet parts of their heraldic ring; this was largely responsible for the harsh terms in which the instrument is described in older books on orchestration.*<sup>7</sup>

The Bb cornet became influential for the introduction of the Bb trumpet. The transition from the F trumpet to the Bb trumpet began when German trumpeter A. Kühnert was the first to recognize the possibility of the smaller trumpet.<sup>8</sup> The C trumpet followed a similar pattern to the Bb. In 1874 the C trumpet found its way in the Paris. The Bb and the C trumpet arrive around the same time and with the same intentions, to usurp the F and G trumpets with superior accuracy and agility. The C trumpet found its way into orchestral playing because of the bright sound it produces. It is the principal trumpet player who will decide what instrument to play on, but the tradition of the trumpet section and orchestra will also have a deciding factor.

Modern trumpet players are required to play a variety of different instruments, often pitched in Bb, C, D/Eb, piccolo trumpets in Bb and A and cornets. While the orchestral trumpet player uses nearly every different type of trumpet, the jazz scene uses the Bb trumpet almost exclusively because of its mellow sound.

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<sup>4</sup> Herbert, Trevor, and John Wallace, eds. *The Cambridge Companion to Brass Instruments*. Cambridge Companions to Music.

<sup>5</sup> A. Gingery, "Types of Trumpets: Keys, Size, History and Performance Practice", Musikalessons.

<sup>6</sup>A. Baines, and A. Myers. 2001 "Cornet (i)." Grove Music Online. 26 Apr. 2019.

<sup>7</sup> A. Baines and A. Myers. 2001 "Cornet (i)." Grove Music Online. 26 Apr. 2019.

<sup>8</sup> M. Sarkissian and E. Tarr. 2001 "Trumpet." Grove Music Online. 26 Apr. 2019.

## Acoustics of the trumpet

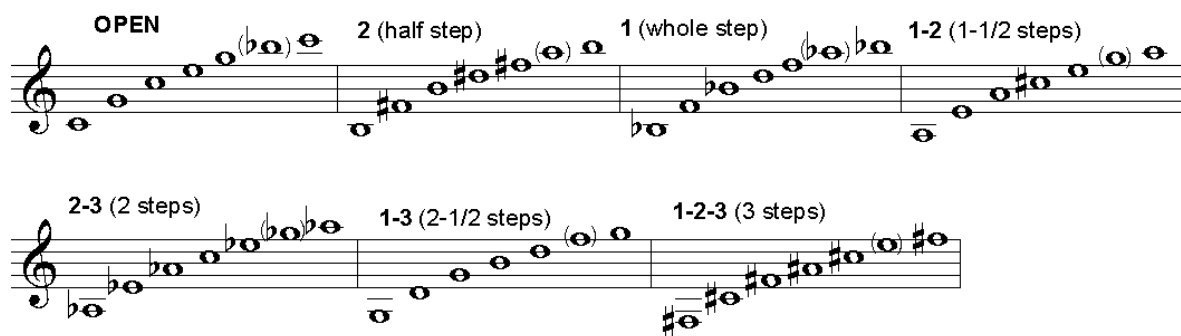
What are the main physical differences between the Bb and C trumpet and how can this affect playing them?

After I established how they developed into two instruments, I began to study each individual instrument and examine their physical differences, such as timbre and intonation. This was done through studying user manuals, textbooks and personal expertise. I believed that these physical differences can result in several challenges. The size difference between the two instruments means that there are a few differences in how the instrument functions and sounds. In order to categorize my investigation, I divided this section into three categories. Timbre, fingerings and intonation.

### Timbre

The tubing on the C trumpet is shorter, making the instrument smaller than its sister instrument. This gives the C trumpet a brighter sound whilst the larger Bb trumpet produces a more mellow, relaxed sound. The Bb trumpet is best suited for popular music and jazz bands where the mellow sound of the instrument compliments the rest of the ensemble. For orchestral playing however, the C trumpet may often be the instrument of choice, as the brighter sound can easily cut through the orchestra. In addition to the brightness of the sound, it is also pitched one note higher, making it easier to play in higher register than on the Bb.

Figure 1: Fingerings



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Above is a pictured fingering chart for the trumpet. These fingerings are taught as the recognized method and remains the same on any 3 keyed trumpet. Some of these fingerings are interchangeable with a variations of fingerings, but this will affect the intonation. For instance, an open fingered middle C can also be played on 2-3 valves, which will sharpen the intonation, or a D on the top staff can be played on 1-3, and will have the same effect. This is when intonation becomes directly linked to fingerings, as the performer can adjust by using alternative fingerings. The intonation can differ from instrument to

<sup>9</sup> Taken from <https://en.wikipedia.org/wiki/Trumpet>

instrument, and that may affect what fingerings the performer will use. Open notation on C trumpets are often flat for instance, and many will choose to use the 2-3 valve combination. The fingering combinations is something the performer must be aware of when switching between instruments. The fingerings may need to change for the instrument being used, meaning that the performer may need to relearn fingerings for the same passage.

## **Intonation**

From past experiences experimenting with different trumpets, I suspected that intonation would be one of the main issues I would face in this research, so I decided to make a simple chart of the intonation tendencies on both trumpet to see where they differ. I found a chart on Hendersen University's homepage for trumpets that I decided to base my own on, in order to make it as simple as possible, and make it easy for comparison if the differences were substantial.

It would be impossible to make an intonation chart that it entirely accurate for everyone, so this is the result of my own personal practice. Intonation issues are often personal for musicians, and also depend on factors such as instruments being used and context of playing. Other factors that may affect the intonation include whether or not the trumpet player is fully warmed up and if they are faced with particularly cold or hot environments. Unlike string instruments, older brass instruments do not age particularly well, and may be more prone to having intonation issues as the brass ages. Although some would argue that the best trumpets ever produced were specific models and brands made in particular factories or in certain years, the production of brass instruments has certainly improved its general quality and reliability throughout the years.

To create my own personal intonation chart, I warmed up on my Bb and C trumpet, and tuned the instruments to a concert A, as you would in an orchestra, with a tuning device. I then played sustained tones through the register of the trumpets, beginning with the Bb trumpet. I held the notes for 10 seconds, looking at where the pitch was. After registering the tendencies on every note in my chart on the Bb trumpet, I then proceeded to do the same for the C trumpet. My chart was creating during the fall of 2018. It may not be entirely accurate, as intonation can be affected by many different factors, such as fatigue, temperature and familiarity. At the time of producing this chart, I had been focusing my practice on the C trumpet, perhaps making my intonation on the Bb less reliable.



Figure 2: intonation chart



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Studying the results of my intonation issues, you may notice that on a whole, I have a tendency to be sharp on the Bb trumpet and flat on the C trumpet. This will certainly create issues when first switching between the two, as we learn to automatically adjust to the tendencies we have intonation-wise. When I first started playing the C trumpet, I would be exceptionally sharp on certain notes, and would automatically use the slide triggers on notes that would now not need it (such as D, E and A).

The original intonation chart that I found online has been included in the appendix.

The original chart did not differentiate between the different trumpets, but has specific instructions for the C trumpet on certain notes. There are many similar comments on this chart as on my own personal one, but the main difference being that I separated the two trumpets into categories. This showed that they have slightly different tendencies (the Bb being sharp and C being flat), but it may also depend on instruments.

<sup>10</sup> Found at: <http://www.hsutrumpets.com/trumpet-intonation-tendencies/> on October 2018

## **What difficulties can a musician face while switching between the Bb and the C trumpet playing standard orchestral excerpts?**

Since there are many physical differences between the instruments, there may be implications when switching between the two. One of the implications I was interested in researching, was the difficulties a musician can face while switching between the Bb and C trumpet while playing orchestral excerpts. I decided to dedicate my third sub search question to this.

Having learned to play all my orchestral excerpts on the Bb trumpet in the United Kingdom, it became important for me to relearn the excerpts on the C trumpet after moving to Sweden. Many musicians face a similar problem while having to switch between different instruments in the orchestra. I wanted to take a closer look at the affect it would have on my orchestral excerpts, and that if I was able to identify the specific problems I faced in each excerpt, it would help me create a basis of which I would improve. My overarching goal by doing this, was to improve my standard of playing orchestral excerpts and to minimize the difficulties of switching between instruments. I hoped that this would result in me feeling more comfortable playing on different trumpets in the future.

In order to answer this question, I made 3 recordings of 2 standard trumpet excerpts from Mahler's 5<sup>th</sup> symphony and 2 excerpts from Stravinsky's Petroushka on the Bb trumpet and then the C trumpet. I wanted to look at the main challenges I faced on the Bb trumpet, and then record on the C trumpet to see what challenges I experienced and if they differed. I wanted to know specifically what I found the most difficult when playing the excerpt on the C trumpet as opposed to the Bb, in order to help me understand what I needed to work on to improve the excerpts at a faster rate.

I chose to record excerpts from Mahler's 5<sup>th</sup> symphony and Stravinsky's Petroushka because I wanted to look at excerpts I would be facing at auditions in the future. The excerpts I chose are part of the standard repertoire that is required at most orchestra auditions for trumpet. They are contrasting in style and provide different challenges.

I had first learned the excerpts I chose on the Bb trumpet, but was faced with having to relearn them on the C trumpet. It is worth mentioning that I had worked on these excerpts on both instruments in the past before recording these attempts, so this research does not follow my progress of learning the excerpts from the beginning.

To structure the recording process, I made the first recordings of me playing the excerpts on the Bb trumpet. The plan was then to record the second recordings on the C trumpet on the same day. I notated the difficulties of fingering, intonation and any other problems that occurred on both instruments. Additionally, if there were any thoughts or aspects that were easier on each instrument, I notated that as well. Depending on what difficulties I faced, I changed my practice in order to target those problems. I was looking for common denominators of what I found the most difficult in switching between the instruments in each excerpt, and what the reoccurring themes were.

I believe that any musician who is faced with having to switch instruments may experience similar difficulties, and that this research can help us understand how to overcome these challenges.

## Recording process

I began my recording process with the intention of only making one attempt at each excerpt, but immediately felt frustrated and disappointed by the results of what I had produced. Then I decided that I would make two additional attempts at recording, leaving me with 3 recordings to choose from. My thinking was that I would be able to upload recordings that would not embarrass me. This was the first mistake I made. My stamina would simply not hold for making 12 recordings on the Bb and then C trumpet: 24 recordings, all in one day. I was in fact only able to record the Mahler excerpts on the Bb trumpet that day. Two days later, I was able to finish recording the Petroushka excerpts on the Bb trumpet. I then decided to wait a few weeks before recording the C trumpet excerpts. Because of this the recordings were spread out over a longer period of time. The first recordings on the Bb are played stylistically different to the C trumpet excerpts, because I had been working on them for an audition, but I do believe that the results will still serve their educational purpose.

## Recording results

### Excerpt no. 1: Mahler's 5<sup>th</sup> symphony

The first excerpt I chose to record was the opening of Mahler's 5<sup>th</sup> symphony. This was an excerpt I knew very well before recording, as it is one of the most famous orchestral excerpts in the trumpet repertoire. I have worked on this excerpt over several years and find it one of the most tiring and challenging excerpts in the trumpet repertoire. It was a physical struggle recording this excerpt as I was not in my best playing form at the time, and as mentioned earlier, I was not able to make very many productive recordings on this day. The excerpt is pictured below.

Figure 3: Opening of Mahler's 5th Symphony in 1st trumpet part (excluding the last note)

The image shows a musical score for the opening of Mahler's 5th Symphony, specifically the 1st trumpet part. The score is written in B major and 3/4 time. It begins with the tempo and performance instructions: "in B. In gemessenem Schritt. Streng. Wie ein Kondukt." The first staff is marked "Solo" and starts with a piano (p) dynamic, followed by a forte (f) dynamic. The second staff includes markings for "molto" and "Triole flüchtig". The third staff is marked "ff" and "sempre ff". The fourth staff is marked "Pesante" and "ff". The score includes various musical notations such as triplets, slurs, and dynamic markings.

### **Recording attempt no. 1 on the Bb trumpet – audio 1**

I do however know that aside from the physicality of playing the excerpt, the key that it is written for in Bb is relatively in tune on the Bb trumpet, and the opening phrase lays in a good register. D# and F# are notes that generally are in tune on the Bb trumpet.

The first main physical challenge in this excerpt is the B above the staff in bar 13. This is a note that I struggle with on producing on the Bb trumpet and also keeping it in tune. The next challenge comes after figure 1, when it goes down to the low Bb. That note has a tendency to become too flat for me.

The Bb gives a darker, more mellow sounds which suits the style of the music. The physical challenges of the piece (mainly high register playing) however, makes many orchestral players choose to play the part on the C trumpet. I have been playing this excerpt on the Bb for many years, and only recently started dabbling with performing it on the C trumpet.

### **Recording attempt no. 1 on the C trumpet – audio 2**

I recorded the first C trumpet attempt a few weeks after the Bb recordings. You can hear the difference in approach to the excerpt stylistically. This was not a deliberate change, but happened naturally. I think it is important to mention that this was not the first time I had ever played the excerpt on the C trumpet. In the past year, I have been experimenting with swapping between different trumpets, so my perspective will not be from someone who has never played these excerpts on the C trumpet before. I have learned the fingerings before attempting these excerpts.

The first note played on the C trumpet in this opening is now a C#, a notoriously difficult note for intonation. It is very sharp on most instruments, and a note that I must extend the tuning slide a substantial amount to lower the pitch when I play it. The next note, E (on C trumpet) is now very flat. This is a general problem I encountered making this recording on the C trumpet. I am not sure what caused this problem, and whether it was just that I needed to push my tuning slide in. The remaining phrase is fine in this pitch until the first E in the top space, in bar 11. This is very flat with normal fingering, and will need to be played with alternative fingering. The A above the staff is much easier to play than it was on the Bb trumpet. The next phrase is straightforward, but for all the E's and Eb's, I need to use alternative fingerings. The last Ab of the excerpt is more comfortable intonation wise on the C trumpet than it was earlier on the Bb, but I am not sure if that is coincidence.

The main issues I found after switching to the C trumpet for this excerpt were the intonation issues on different notes than previously, and also keeping the timbre dark and somber.

### **Recording attempt no. 2 on the C trumpet – audio 3**

I made my second attempt at this excerpt on the C trumpet a couple of weeks after the first attempt. By this attempt, I had more or less been practicing the C trumpet exclusively for a period of time. Listening to the recording, I feel that the timbre of the sound had improved by becoming rounder and deeper, but it is still in my opinion a brighter sound than on the Bb trumpet recording. The intonation on a whole in this recording is still an issue, and for some reason the intonation is very sharp again as in the recording from the 1<sup>st</sup> attempt on the C trumpet. I am not sure what the cause for this is, although I have suspicions that it will be from fatigue.

The range of the excerpt, combined with the contrasts in dynamics are the most daunting aspects of this opening. The B above the staff on the Bb trumpet is particularly challenging, and also the dynamic of which it needs to be played. I have found playing this note (now an A) on the C trumpet is far more

consistent on the C than on the Bb trumpet, partly because it is a note lower. This has strengthened my frame of mind tremendously when performing it on the C trumpet.

### Excerpt no. 1: Mahler's 5 symphony continued

The second excerpt from Mahler's 5 symphony is often played after the opening excerpt in auditions. Although it is not as famous as the opening, it is certainly an excerpt that is important to know. I had played this excerpt previously in auditions before my thesis investigation, but mainly on the Bb trumpet. I suspect that transposition will become my main topic of interest in this excerpt.

Figure 4: Mahler's 5 symphony, 1<sup>st</sup> trumpet from rehearsal no. 7 until no. 8

2 5 12 6 19 Tromp. III. *sf* *p* 7 *Plötzlich schneller. Leidenschaftlich. Wild.* *ff* 8 8  
x) Die Auftakt-Triolen dieses Themas müssen stets etwas flüchtig-quasi acc. nach Art der Militärfanfaren.

### Recording attempt no. 1 on the Bb trumpet – audio 4

The second excerpt of Mahler's 5 symphony was a recording that took several attempts to record. I found that the loud and sustained notes were difficult to keep in tune, but I believe that that was mainly caused by fatigue from loud playing, and not the instrument itself.

Other than the general difficulty of keeping the trumpet in tune for this excerpt, the register and notes are comfortable on the Bb trumpet. This is an excerpt that I have previously played in the past on the Bb trumpet, so I was intrigued to see what the results would be on the C trumpet.

### Recording attempt no. 2 on the C trumpet – audio 5

The first time I decided to play this excerpt on the C trumpet was for an audition I had a year ago. I felt so uncomfortable and unsure about playing the excerpt on the C trumpet after having learned it on the Bb, that I rewrote the transposed version for C trumpet in Sibelius and taped it on to my printed music.

By far the most challenging part about playing this on the C trumpet at the time, was the transposition. I had been transposing up a tone (music in C played on Bb trumpet), but had never transposed down a tone (music in Bb played on C trumpet), as I would always play music in Bb on a Bb trumpet. If the music was simple, I could slowly and painfully transpose down a tone, but what made this transposition even more complicated was the accidentals. Which are a combination of flats and sharp.

Personally, I find transposing music with flats the most confusing. Just after the audition where I had written out the transposition, I decided to focus on transposing down a tone and force myself to play music in Bb on the C trumpet. I have found that the best way to improve my transposition skills is purely through mindful repetition. I benefitted hugely from the work I had done on my transposition, and by the time I recorded the excerpt for this research, I stopped using my transposed music, and was able to read it from the original part.

My main concern with playing this excerpt was the transposition initially, and when I was recording this, I focused on tuning and keeping a dark, mellow sound. I experimented with different fingers on the C trumpet for the E's and Eb's as I previously did on the first excerpt, and found that I needed to use alternative fingerings for these notes in order to keep them from being flat.

### **Recording attempt no. 2 on the C trumpet – audio 6**

I recorded the second attempt at this excerpt on the C trumpet a couple of weeks later. At this point I had been practicing the C trumpet exclusively. I believe that the sound is rounder than in the previous recording, which was my goal. Intonation is still an issue on the first, sustained note, but most of the intonation issues were corrected thanks to alternative fingerings.

### **Excerpt no. 3: Stravinsky's Petroushka**

The first Petroushka excerpt is an excerpt I know very well and have played many times on both instruments. It is an excerpt that is expected at most auditions for trumpet, because it showcases finger technique, tonguing and also contrasts in the phrases. I know from past experience that the main difficulties in switching between the two trumpets here, are the intonation differences.

Figure 5: Stravinsky's *Petroushka* - *Ballerina's Dance* (1947), 1 bar before number 135 – number 139 (excluding the first bar)

The image shows a musical score for the *Ballerina's Dance* from Stravinsky's *Petroushka*. The score is written for a Bb trumpet and consists of five staves of music. The key signature is Bb major (one flat) and the time signature is 2/4. The tempo is marked 'Allegro' with a metronome marking of 118. The score begins with a 'Solo' marking and a '3' indicating a triplet. The first staff (measure 134) includes the instruction 'in Bb' and 'senza sord. mf'. The subsequent staves (measures 135-139) are marked with dynamics 'p' (piano) and 'mf' (mezzo-forte). The music features a complex rhythmic pattern with many sixteenth and thirty-second notes, and several high notes above the staff.

### Recording attempt no. 1 on the Bb trumpet – audio 7

This *Petroushka* excerpt is one that I feel very comfortable playing. I have spent a lot of time perfecting it throughout the years. The main difficulties in it for me are articulation, phrasing and general technical ability. It is written in G major for the Bb trumpet, a key that sits well on the instruments. The most difficult notes on the Bb trumpet are the B's above the staff in bar 4 after 136 and the A's above the staff in the bar before 137. As mentioned earlier, these are the most difficult notes for me to play on the Bb trumpet.

### Recording attempt no. 1 on the C trumpet – audio 8

I recorded the C trumpet attempt a week or so after the Bb trumpet recordings. This recording attempt was not the first time I had played this excerpt, so I did not need to worry about relearning the transposition for this attempt. I remember being surprised the first time I decided to play it on the C trumpet, that it was not as difficult transposing as I first feared. Playing it on the C trumpet brings the excerpt to F major, which for me is the most comfortable key to play in. It means that the entire excerpt is played with first and second fingering.

The intonation on the C trumpet was not a big issue as it is played at such a high tempo with constant moving notes, but the E's became flat on the C trumpet. I noted this after listening to the recording. I believe that the bright sound of the C trumpet suits the music perfectly, and wanted to keep that while practicing this excerpt.

### Recording attempt no. 2 on the C trumpet – audio 9

Once I had relearned the fingering for this excerpt, I actually found it much simpler playing it on the C trumpet than the Bb trumpet. The main reason for this is now being able to play the excerpt in F Major, and also that the problematic top B and A in the Bb trumpet move down to the comfortable A and G on the C trumpet.

Before recording my second attempt on the C trumpet for this excerpt, I experimented with alternate fingerings for the flat E's, but after practicing the excerpt slowly and becoming more used to the C trumpet, I ultimately decided to use the standard fingerings. Overall, I was pleasantly surprised by the ease of switching trumpets for this excerpt.

### Excerpt no. 4: Stravinsky's Petroushka continued

The second Petroushka excerpt that I chose is often played after the Ballerina dance excerpt, because it showcases a melodic phrasing that is in contrast with the short 16<sup>th</sup> notes of the Ballerina dance. Although this excerpt does not provide as many technical challenges at a first glance as other excerpts, the style, details and legato phrases provide their own set of challenges. I believe that my main difficulties here will be intonation and potential alternative fingerings.

Figure 6: Stravinsky's Petroushka - Valse (1947), number 140 – bar 7 in 142

The image shows a musical score for a trumpet part from Stravinsky's Petroushka - Valse. It consists of two staves of music. The first staff starts at measure 140, marked 'Lento cantabile, ♩ = 72', 'Solo', and 'mf ben cantabile'. The second staff starts at measure 142 and ends with 'G.P.'. The music is in 3/4 time and features a melodic line with various articulations and dynamics.

### Recording attempt no. 1 on the Bb trumpet – audio 10

This second excerpt of the Petroushka is written in F Major for Bb trumpet. I believe that this excerpt can have a rounder sound than the first Petroushka excerpt, and the Bb trumpet suits that characteristic wonderfully. The key of this lays perfectly on the Bb trumpet. This is a fairly simple excerpt that does not pose too many difficulties instrumentation wise, but the motif in the 5<sup>th</sup> bar of 141 can be challenging in this, as the highest note is again a Bb on the Bb trumpet. This excerpt is one that I have spent a lot of time on in the past, and I do not believe it will pose too many challenges. Listening back to the recording I can hear that the D's are a little flat, so I would be interested to know what intonation issues I will face on the C trumpet.

### Recording attempt no. 1 on the C trumpet – audio 11

I recorded the C trumpet recording fairly soon after the first recording attempt on the Bb trumpet. Surprisingly, I found that there were not as many intonation issues as I thought there may be. I suspect that this may be due to the comfortable *mf* dynamic and the key it is written in. The excerpt is played in Eb Major on the C trumpet which lays well on the instrument, as well as eliminates the problematic top Bb and the flat D on the Bb trumpet.



I did not find many difficulties instrumentation-wise in playing this excerpt on the C trumpet, so I continued practicing normally before recording the second attempt.

### **Recording attempt no. 2 on the C trumpet – audio 12**

For the second attempt I made at the 2<sup>nd</sup> Petroushka excerpt, I did not make any changes in my practice. I continued my practice on the C trumpet as normal, and recorded it a few weeks after the first attempt.

## **Conclusion**

This thesis has provided several insights into the differences between the Bb and C trumpet, and the art of switching between the Bb and C trumpet in orchestral playing. Many musicians are faced with the issue of having to play on instruments they have not yet mastered or feel comfortable playing on under different circumstances. The issues that the musician may face will be personal and will pose unique challenges for each individual performer. These challenges can affect whether a classical musician will be employed in an orchestra, and can be the deciding factor in their career. The investigation that I have done relates to my own artistic practice, but I believe that it can serve any musician in a situation where they must overcome the differences in instruments and enable them to perform at their highest standard. In the following, I will briefly summarize the results.

Firstly, I covered the historical context of the trumpet and explained how and why the trumpet developed into different keyed and size instruments. In doing so, I discovered that the trumpets came to be in the same historical manner, with the same purpose of overtaking the cumbersome F and G trumpets. I believe that the historical context is important to understand while choosing which instruments to play and how they were intended to be used.

I then continued to look at the main physical differences between the Bb and C trumpet and how they affect our playing. For this, I covered the main physical differences between the instruments: focusing on timbre, fingering and intonation. To summarize: I wrote how the timbre of the trumpets differs slightly, with the C trumpet being brighter than the Bb trumpet. The fingerings are the same on any three valved trumpet, but how one may use alternative fingerings differently on the instruments, because of the difference in intonation. Lastly I wrote a chart about my own personal intonation tendencies, where I discovered that my C trumpet tends to be flat and my Bb tends to be sharp. I believe that this is essential to understand the physical aspects of the instruments and how they function in order to master any instrument.

Finally, I investigated “What difficulties can a musician face while switching between the Bb and the C trumpet playing standard orchestral excerpts?” by using my own practice of playing orchestral excerpts on the Bb trumpet and then on the C trumpet. This study allowed me to analyze the difficulties I faced in practice while recording excerpts that I will play at orchestral auditions in the future. From this investigation, I learned that good intonation and transposition skills are highly important if the trumpet player will successfully switch between the C and Bb trumpet. Practicing transposition on a regular basis in all keys will aid any trumpet player in this aspect. I also believe that familiarity in the excerpts (truly knowing the music and practicing it thoroughly) will help the switch. The information I gathered on the topic is invaluable information to my future practice and will aid me in my quest to continue improving my quality of playing. I believe that the results of my study can be utilized by any classical musician in a similar situation.

I believe that by looking at the historical context, the physical context and then the psychological and practical aspect of the two trumpets, I have been successful in fully understand my overarching question, “What difficulties can a musician face while switching between the Bb and the C trumpet playing standard orchestral excerpts?”.

## **Appendix 1: Audio reference**

Audio 1 – Mahler’s 5<sup>th</sup> symphony, excerpt 1 on Bb trumpet – attempt no. 1

Audio 2 – Mahler’s 5<sup>th</sup> symphony, excerpt 1 on C trumpet – attempt no. 1

Audio 3 – Mahler’s 5<sup>th</sup> symphony, excerpt 1 on C trumpet – attempt no. 2

Audio 4 – Mahler’s 5<sup>th</sup> symphony, excerpt 2 on Bb trumpet – attempt no. 1

Audio 5 – Mahler’s 5<sup>th</sup> symphony, excerpt 2 on C trumpet – attempt no. 1

Audio 6 – Mahler’s 5<sup>th</sup> symphony, excerpt 2 on C trumpet – attempt no. 2

Audio 7 – Stravinsky’s Petroushka, excerpt 1 on Bb trumpet – attempt no. 1

Audio 8 – Stravinsky’s Petroushka, excerpt 1 on C trumpet – attempt no. 1

Audio 9 – Stravinsky’s Petroushka, excerpt 1 on C trumpet – attempt no. 2

Audio 10 – Stravinsky’s Petroushka, excerpt 2 on Bb trumpet – attempt no. 1

Audio 11 – Stravinsky’s Petroushka, excerpt 2 on C trumpet – attempt no. 1

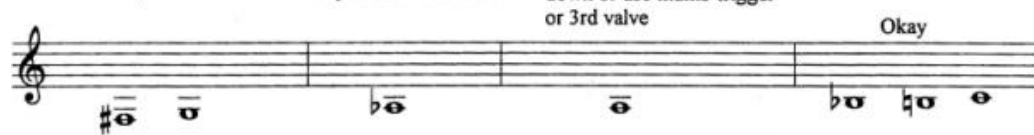
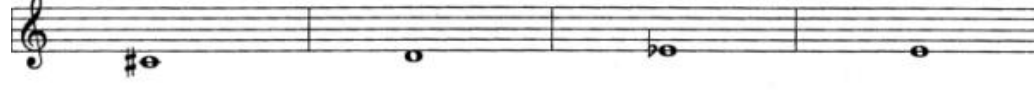
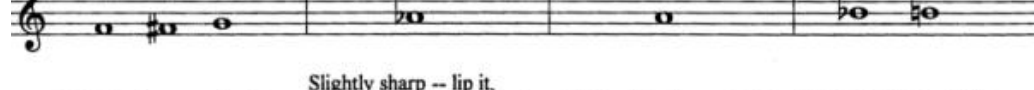
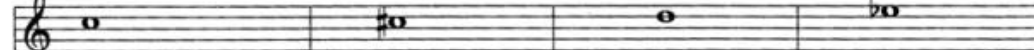
Audio 12 – Stravinsky’s Petroushka, excerpt 2 on C trumpet – attempt no. 2

## Appendix 2: Tentative plan

Table 1. Plan for executing my Master thesis

<b><i>Time frame</i></b>	<b>Research activity</b>	<b>Goal</b>
<i>Spring 2018</i>	Develop questions Literature review Read methods	Complete historical context and physical aspects
<i>Fall 2018</i>	Record progress of learning excerpts  Data analysis (Find common themes)  Write results	Complete psychological aspects (recordings)
<i>Spring 2019</i>	Thesis writing: Abstract Introduction Discussion/implications Conclusion	Complete thesis

## Appendix 3: Intonation chart from Hendersen University Trumpet Website

<p>Check with tuner -- often sharp, but not on Bach Strad trumpets; if sharp, correct with 1st or 3rd valve slides; G often REALLY sharp on E-flat trumpets</p>	<p>Slightly sharp -- lip it, unless 3rd of major chord, which might require 3rd valve slide</p>	<p>Somewhat sharp -- lip it down or use thumb trigger or 3rd valve</p>	<p>Okay</p>
			
<p>Very Sharp!! -- Use 1" of 1st or 3rd valve slides or combination; correct whenever possible!</p>	<p>Sharp! -- Use 1/2" of 1st or 3rd valve slides; correct whenever possible</p>	<p>Slightly sharp -- lip it, unless 3rd of major chord, which might require 3rd valve slide</p>	<p>Somewhat sharp -- lip it down or use thumb trigger or 3rd valve</p>
			
<p>Okay</p>	<p>Slightly sharp -- lip it, unless 3rd of major chord, which might require 3rd valve slide</p>	<p>Somewhat sharp -- lip it down or use thumb trigger or 3rd valve</p>	<p>Okay</p>
			
<p>May be sharp on the C trumpet -- lip it or use 23</p>	<p>Slightly sharp -- lip it, unless 3rd of major chord, which might require 3rd valve slide</p>	<p>Flat! -- Lip it or use 13 with 3rd valve slide extended about 1/2"</p>	<p>Flat -- lip it or use 23, especially on the C trumpet</p>
			

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