



UNIVERSITY OF GOTHENBURG  
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# THE FOURTH OCTAVE ON THE FLUTE

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## ABSTRACT

Key words: flute, fourth octave, fourth register, flute technique.

This thesis is an approach to the fourth octave on the flute. The subject is looked at from three different perspectives: the physical, the historical and the technical one. First I investigated the characteristics and the limits of the instrument according to its construction. Then I had an approach to the fourth octave analyzing the flute repertoire. And last I read in flute treatises about the fourth octave and the fingerings. Then all those ideas were brought to the practice room where I experimented with the fourth octave and wrote about my experience. This work is expressed in this text, where also some musical examples of exercises that I have modified can be found and, moreover, there are four recordings made by myself. Three of them are a demonstration of those exercises and the fourth one is an example of a passage where the fourth octave can be found on a flute piece, this is Prokofiev's *Sonata for flute and piano*.

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NAME OF THE NOTES OF THE FOURTH OCTAVE AS USED IN THIS WORK

A musical staff with a treble clef and a double bar line at the end. The staff is divided into seven measures. Above each measure are ledger lines and a note symbol with an accidental. The notes are: C''' (one flat), C#''' (one sharp), D''' (natural), D#''' (one sharp), E''' (one flat), F''' (natural), and F#''' (one sharp). Below the staff, the notes are labeled: C''', C#''', D''', D#''', E''', F''', and F#'''.

Measure	Note	Accidental
1	C'''	Flat
2	C#'''	Sharp
3	D'''	Natural
4	D#'''	Sharp
5	E'''	Flat
6	F'''	Natural
7	F#'''	Sharp

## INTRODUCTION

As a flutist, I have spent a significant amount of time trying to find the best way to distribute my time during my daily practice. My first step was to look at the treatises that many flutists have published over the years. There, I was able to find really useful information about what is necessary to do to become a good flute-player. My teachers also greatly helped me with this issue and introduced me to several exercises which they either learnt from other flutists or created themselves. Apart from that, when I am playing pieces from my repertoire and find problems that need solving, I try to find the best exercises for that particular issue which makes me think about expanding my daily routine. In short, I find it really useful to define a daily routine and I am always trying to find the most efficient way of keeping myself in good shape.

Many times, but specially when I had to prepare some excerpts for an audition, I realized about the necessity of playing the highest notes of the flute. One of the examples I prepared was the excerpt from *Classical Symphony* by Prokofiev. Apart from playing a quite fast passage which was very hard, I had to manage playing some notes of the fourth octave very often and, because of that, the whole passage became more difficult for me.

Hopefully there are many flutists who take on board the idea of integrating the fourth octave on their daily routine quite soon in their musical studies, but, in my personal experience, I have found that the development of the fourth register came a bit late. This made me question why that happened to me and I have discovered a few reasons.

The first one was that my favorite flute treatises were designed several years ago and they only included exercises up to B<sup>'''</sup>. Those books are: Taffanel and Gaubert, *17 big daily exercises* (1923) and M. A. Reichert, *Sept exercices journaliers pour flûte* (n.d.) *Op. 5*. Of course, I was practicing the exercises as they were written, without thinking about the fact that there were some notes that I was not practicing. The

consequence of this was that in pieces where the fourth register featured as a normal part of the flute, I was not as agile as I was in the rest of the registers.

The second thing is that the fourth register was quite hard for a beginner, so as a beginner student, I started with the first three registers. And when I became an intermediate student, for some reason I did not continued expanding my register until my bachelor's degree.

For all these reasons, in my thesis I have researched the fourth octave on the flute and how to be able to play and practice it and my goal was to answer the following questions:

- How to manage to produce the notes of the fourth octave?
- Which are the most useful fingerings for me and my instrument?
- How to practice the fourth octave, how can the flutist integrate the highest notes in his/her daily routine?

I started to spend some time trying the highest notes but I soon realized that playing those notes was quite difficult so I wanted to know how to go about practicing them. To really understand the most appropriate way of practicing that specific part of my technique, I started to read about it and to ask my teachers. For example, I was not familiar with all the fingerings so I had to find a reference where I could check them. I discovered that the situation on fingering for all those highest notes were not the same as for the fingerings for the rest of the register: there were many options for each note and, normally, I did not find the same fingerings in different books.

At the same time that I was compiling information about the fourth octave from several references, I started to experiment with integrating the practice of the fourth octave in my daily routine in a better way. In order to do that, I have modified some of the exercises from my favourite method books: Taffanel and Gaubert *17 Daily exercises* (1923), Reichert *Sept exercices journaliers pour flûte Op. 5* (n.d.) and Marcel Moyse *De La Sonorité* (1934). My point was to extend the exercises to reach the fourth octave

because I think they do not cover the requirements of the repertoire that the flute has nowadays. Also, I did some experiments to expand my own register until the last note that I could. I compiled all the information from my own experiments in a diary and I tried all the fingerings that I could find to discover the ones that can be the most effective on my flute, which is a Lillian Burkart Professional Flute in silver, open holes, split-E mechanism, offset G, with B foot.

The fourth register is an issue that a few authors have taken care of. Robert Dick, composer and performer, talks about how to practice the fourth octave with explanations about how to develop the necessary skills, little exercises and fingering charts in his books *Tone Development Through Extended Technique* (1986) and *The other flute* (1989), and Trevor Wye, professor and head of the flute department of the Royal Northern College of Music, also discusses the matter in *Practice book for the flute, Volume 6* (1987). Among exercise books with scales, arpeggios and other kinds of exercises for the fourth octave I have worked with are *Technical flexibility for flutist* (1988) by Geoffrey Gilbert, renowned flutist and teacher, and *Complete Daily exercises for the flute* (2003) by T. Wye. The fingering charts that I found most useful were the ones in *A modern guide to fingerings for the flute* (1972) by James Pellerite, professor of flute at the Indiana University School of Music, and also the one in *Present Day flutes* (1995) by Pierre-Yves Artaud, performer, teacher and researcher. I have not come across and personal reports of flutists working on improving the fourth octave, so I hope this thesis with my personal experiences and solutions can be of help to other players and students in their own work.



# THE FOURTH OCTAVE ON THE FLUTE REPERTOIRE AND ON THE FLUTE

## TECHNIQUE

### Physical aspects

One of the first questions that came to my mind was, how high can I expand the register on my instrument? The highest note that I had found in a piece was F<sup>'''</sup> but it seemed to me important to discover where was the real limit was. So, for that, I read the literature about it and I realized that F<sup>#'''</sup> is the highest note that one can play on the flute.

It is necessary here to talk about Robert Dick for his contribution to this issue. Composer and flutist, Dick worked thoroughly expanding the flute technique and redesigning the flute itself. He invented the "Glissando Headjoint" and designed the Robert Dick Model bass flute. Dick has authored and published several works for contemporary flute: *Circular Breathing for the Flutist*; and *Flying Lessons: Six Contemporary Concert Etudes (Volumes I and II)*. He mentioned on his article *Fourth Octave G* that he spent a lot of time in the 1970s trying to play a G<sup>'''</sup> on the flute. First, he thought that the upper limit was related to the capacity of the flutist's body. So, inspired by Cat Anderson, a famous trumpet player capable to play very high notes on his instrument, he developed his embouchure strength and flexibility in order to reach the fourth octave G. But he was not able to get it. In 1978, he was working in Paris and there, he met the acoustician Arthur Benade. He learnt from him about the "high frequency cutoff" and that the F<sup>#'''</sup> is the highest normal note and resonances above this are extremely weak. For more information about the "high frequency cutoff" one can consult Benade's book *Fundamentals of Musical Acoustics* Oxford U Press, NY, 1975. Here we can read Dick's experiments trying to reach G<sup>'''</sup>:

I read that one or two folks can occasionally get a hint of the G and this makes sense in that the cutoff is not absolute but is the tail end of a weakening train of resonance. That's why the high F natural is so difficult to play in tune with any kind of good tone quality. I tried the suggested fingering in another posting and got a transitional hint of G natural. The sound goes away so quickly because the lips cannot maintain enough pressure to compress the airstream at

such a high speed. We can "muscleup" for a blast, but lose control quickly. Benade mentioned that, if someday a flutist could muster the necessary power to jump from the fourth octave F# to the B natural above it, there would be frequencies again. I think that this is in the zone of totally diminished returns. The lip power necessary to keep the airstream focussed at the necessary velocity is quite possibly beyond what the human facial musculature is capable of. (Dick, 1997, *Fourth Octave G*)

He found two ways to play above F#<sup>'''</sup>. The first one was using whispertones and the other one was altering the headjoint, as he described on the following experiment:

I did this with Albert Cooper one sunny London morning. We moved the cork in so that the face plate reached the very upper edge of the embouchure hole. Thus the space above the embouchure hole was completely eliminated. With a bit of tweaking of the F# fingering a real, sustained in tune G natural was heard. Of course, the price to get this note was to kill the resonance of the rest of the flutes range. That space above the embouchure hole has a major role in making the flute sound like a flute. So we offered each other congratulations on a successful experiment which regretfully had led to nothing musically useful. (Dick, 1997, *Fourth Octave G*)

## Historical aspects

Now having a look on the flute repertoire, I could see that the fourth register was used in several pieces. The following chronological list contains only some examples of pieces where one can find notes higher than B<sup>'''</sup>. (In the orchestral repertoire, the first flute parts are referred to).

### Pieces that reach C<sup>''''</sup>

GERSON, Georg	<i>Symphony Eb Major</i>	1817
DVORÁK, Antonín	<i>Symphony No. 8 in G major Op. 88.</i>	1889
STRAUSS, Richard	<i>Till Eulenspiegels lustige Streiche Op. 28</i>	1895
MAHLER, Gustav	<i>Symphony No. 5</i>	1901-2
SIBELIUS, Jean	<i>Symphony No. 2 in D major Op. 43</i>	1902
STRAUSS, Richard	<i>Sinfonia Domestica Op. 53</i>	1902
STRAVINSKY, Igor	<i>Rite of Spring</i>	1913
NIELSEN, Carl	<i>Concerto for flute and orchestra</i>	1926
DUTILLEUX, Henri	<i>Sonatine for flute and piano</i>	1943
JOLIVET, André	<i>Chant de linos</i>	1944
MESSIAEN, Olivier	<i>Le Merle Noir pour flûte et piano</i>	1951
WILLIAMS, Vaughan	<i>Symphony No. 8 in D minor</i>	1953-5
FOSS, Lukas	<i>Reianassance Concerto for flute and orchestra</i>	1986

### Pieces that reach C<sup>#''''</sup>

KARG-ELERT, Sigfrid	<i>Chaconne (30 studies) Op. 107 for flute solo</i>	1910?
IBERT, Jacques	<i>Flute concerto</i>	1934
SHOSTAKOVICH, Dmitri	<i>Symphony No. 10 in E minor</i>	1953
BROTONS, Salvador	<i>Sonata per flauta i piano Op. 21</i>	1959

KHACHATURIAN, Aram	<i>Concerto for flute (transcribed and edited by Rampal)</i>	1968
MUCZYNSKI, Robert	<i>Momentos for flute and piano Op. 47</i>	1992
HOOVER, Katherine	<i>Masks for flute and piano</i>	1998

### **Pieces that reach D<sup>'''</sup>**

PROKOFIEV, Sergei	<i>Symphony No. 1 in D major Op. 25</i> "Classical Symphony"	1916
VARÈSE, Edgar	<i>Density 21.5 for solo flute</i>	1936
JOLIVET, André	<i>Cinq Incantations pour flûte seule</i>	1936
PROKOFIEV, Sergei	<i>Sonata for flute and piano</i>	1942-3
MARTINU, Bohuslav	<i>Sonata for flute and piano H. 306</i>	1945
JOLIVET, André	<i>Concerto for flute and strings</i>	1949
FRANÇAIX, Jean	<i>Suite for solo flute</i>	1962
ARNOLD, Maricom	<i>Fantasy for flute Op. 89</i>	1966
RODRIGO, Joaquín	<i>Concierto Pastoral for flute and orchestra</i>	1978
GORDON, Jacob	<i>Concerto No. 2 for flute and string orchestra</i>	1981
LIEBERMANN, Lowell	<i>Sonata for flute and piano Op. 23</i>	1987
LIEBERMANN, Lowell	<i>Concerto for flute and orchestra</i>	1992
BROTONS, Salvador	<i>Concerto for flute and orchestra</i>	1997

### **Pieces that reach higher than D<sup>'''</sup>**

FELD, Jindřich	<i>Four pieces for solo flute</i>	1954
ARNOLD, Malcolm	<i>Concerto No. 2 for flute op. 111</i>	1972
HVOSLEF, Ketil	<i>Vind, Concerto for flute, wind ensemble and percussion</i>	1983
CARTER, Elliot	<i>Scrivo in Vento</i>	1991

I can notice how the treatment of the highest notes have changed along the years not only in the flute repertoire but also in the literature/books about the instrument. In their books, R. Dick and T. Wye had special headlines for the highest register and they spent some pages explaining how to produce it. Also, I noticed that both *Present day flutes* (P. Y. Artaud, 1995) and *Tone development through extended techniques* (R. Dick, 1986) are books about contemporary techniques on the flute, but in the first one, the most recent, there is no special place for the fourth octave and in the second one, I found a whole section. For me, that shows that the fourth octave is not a special technique any more and that it has become a common part of the flutist technique. I also read what Theobald Boehm (1794 – 1881) wrote about fingerings. He was a German flute maker, flutist, composer and inventor and he worked out the proportions and devised the mechanism which are the bases of the modern flute. He gave us fingerings for every notes until C<sup>7</sup>/Db<sup>7</sup> in his book *Die Flöte und das Flötenspiel* from 1871, so I guess he was not thinking about playing F<sup>7</sup> or F<sup>7</sup># when he designed the instrument.

And it was also interesting for me to know the application that the composers can do of the fourth register on the flutist repertoire. For that, I quote again Robert Dick:

Composers have been increasing their use of the fourth octave pitches, and there is a growing number of flutist who have developed the ability to produce these tones cleanly. While it is reasonable to say that the professional standard of flute playing has included full technique -technical and dynamic facility- up to and including D<sup>7</sup> for at least two decades, it is important for composers to note that, above this pitch, production becomes progressively more difficult with each ascending semitone. Complex cross-fingerings are involved, too, making rapid passagework above D<sup>7</sup> [D<sup>7</sup>] impractical but not impossible. [...] Composers should treat C, C<sup>7</sup> and D<sup>7</sup> as pitches with nearly a full dynamic range- p-fff is suggested. From D<sup>7</sup># to F<sup>7</sup>#, only two dynamic areas should be considered, ff-ffff when the regularly produced tone is employed and ppp-mp when these pitches are produced as whisper tones. In passages requiring dynamic fluidity in this range, use of the piccolo is a necessity. (Dick, 1989, p. 5.)

I think it is important for composers to do a good use to the resources of the instruments. It should be hard to know all the possibilities and all the limitations of all the instruments so that is why I think it is important to find information like the one that Robert Dick gave on his book. I have seen pieces where the composer asked for something that we could not give (for example, on the *5th Symphony* by G. Mahler, he asked for a low Bb. Only flutes with a B foot can play B, but no flute can play Bb). Also, it is interesting to have the information as a flute-player to know better how our instrument works.

And there is another thing that I find very interesting about the fourth octave on the flute repertoire. I always enjoy listening to pieces where the flutist, changing a little bit the original score, adds some notes of the fourth octave in his/her performance or recording. I heard that at the end of Ibert's *Concerto* (finishing with a high F<sup>'''</sup> instead of A<sup>'''</sup>), in the *Fantasy of Carmen* by Bizet/Borne (playing one octave higher in one passage and reaching D<sup>'''</sup>) and in *Oblivion* by Piazzolla (finishing with C<sup>'''</sup> after playing the last passage one octave higher). I remember those versions especially because of the impression that the players gave to me by using the fourth octave. The result sounded very surprising and virtuosic. So, even if the fourth octave appears often in the repertoire written by the composers, it is true that the flutists sometimes also include it as a resource for the interpretation.

## Fingerings

As Robert Dick says: “Fingerings for the flute's first three octave are quite standardized, and may be found in many texts.” (Dick, 1989, p.5.). But for the fourth octave, it is not the same and we can find many options. Below, I present some fingerings that I have found in four different books. I have tested all of them and I have graded aspects like comfort for the fingers (position), the easiness of the attack, the tone quality or the intonation.

About the references, I consulted Pellerite *A modern guide* (1972). For me, his book is an excellent guide of fingering for the whole flute register and I always find many options for each note or each trill. Also I consulted Dick's book called *Tone development through extended techniques* (1986). There, he wrote: “The fingerings given below represent the “state of the art” at the time of this writing (1986), and are the result of a continuous inquiry into improved pitch and clarity. Without doubt, further refinements will be made in finding less resistant, but equally good-sounding fingerings.” (Dick, 1986, p. 23.) Three years later, in his book *The other flute* (1989), he made some changes in his chart. And I also found also interesting Wye's fingerings in his book *Practice book for the flute, Volume 6* (1987) and Artaud's fingerings in his book *Present day flutes* (1995).

It was an indispensable aspect of practicing the fourth octave to find the best fingerings for me and my instrument. And I experienced many times the fact that having more than one fingering for the same note can be very useful. For example, I was on a sectional rehearsal playing *Symphony No. 10* by Shostakovich. First flute (me), second flute and piccolo played the same C<sup>4</sup> in one passage and the oboe played C<sup>4</sup>. Changing the fingering solved the problems with the intonation much easier than fixing them with the embouchure or the air.

## C<sup>'''</sup>



**P. Y. Artaud** (1995, p. 15) and **R. Dick (for C foot)** (1989, p. 6.):

Since I have a flute with B foot, I prefer the next one. Position: Easy; Attack: Easy; Tone quality: Good; Intonation: Sharp.



**R. Dick (for B foot)** (1989, p. 6.), **J. Pellerite** (1972, p. 9.) and **T. Wye** (1987, p. 2.):

This is the fingering that I normally use because it is the regular one for a flute with B foot. Position: Easy; Attack: Easy; Tone quality: Good; Intonation: Sharp.



**R. Dick (for B foot)** (1989, p. 6.):

I like this one, it sounds more consistent than the one before and it is a bit lower.

Position: Medium; Attack: Easy; Tone quality: Good; Intonation: Sharp.



**T. Wye** (1987, p. 2.):

Position: Difficult; Attack: Easy; Tone quality: Good; Intonation: Sharp.





**My own fingering:**

My professor gave it to me when I was studying my Bachelor's degree.

Position: Easy; Attack: Easy; Tone quality:

Good; Intonation: Sharp.



**J. Pellerite:** (Pellerite, 1972, p. 9.):

Position: Easy; Attack: Easy; Tone quality:

Good; Intonation: Slightly sharp.



**J. Pellerite** (1972, p. 9.):

Pellerite says that this lowers the pitch for a *ff*.

*Position: Easy; Attack: Medium; Tone quality:*

*Medium; Intonation: Slightly sharp.*



**J. Pellerite** (1972, p. 9.):

Pellerite says that this fingering also lowers the pitch for a *ff*.

Position: Easy; Attack: Medium (easiest in *ff*);

Tone quality: Good; Intonation: Slightly sharp.



**T. Wye** (2003, p. 80):

This fingering was very useful because it is the better in tune and it is very easy for the fast passages.

Position: Very easy; Attack: Hard; Tone

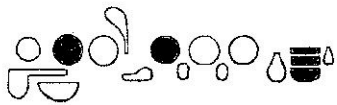
quality: Medium; Intonation: In tune.

## C#<sup>'''</sup>



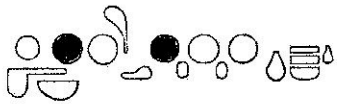
**P. Y. Artaud** (1995, p. 15.):

Position: Easy; Attack: Medium; Tone quality: Medium; Intonation: Sharp.



**R. Dick** (1989, p. 6.):

Position: Easy; Attack: Hard; Tone quality: Bad; Intonation: Very sharp.



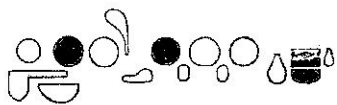
**R. Dick** (1989, p. 6.) and **J. Pellerite** (1972, p. 9.):

Position: Easy; Attack: Hard; Tone quality: Bad; Intonation: Very sharp.



**R. Dick** (1989, p. 6.) and **J. Pellerite** (1972, p. 9.):

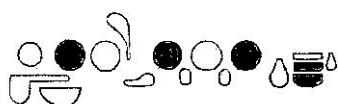
Position: Medium; Attack: Easy; Tone quality: Good; Intonation: Sharp.



**J. Pellerite** (1972, p. 9.) and **T. Wye** (1987, p. 2.):

This is the only fingering for C#''' that I knew before writing this thesis.

Position: Easy; Attack: Medium; Tone quality: Medium; Intonation: Sharp.



**T. Wye (1987, p. 2.):**

Position: Easy; Attack: Medium; Tone quality: Medium; Intonation: Slightly sharp.



**T. Wye (flatter) (1987, p. 2.):**

This one was very hard to get and to keep for a while so I only evaluate two aspects.

Position: Easy; Attack: Very hard.

D<sup>'''</sup>



**P. Y. Artaud (1995, p. 15.), R. Dick (1989, p. 6.), J. Pellerite (1972, p. 9.) and T. Wye (1987, p. 2.):**

I found only one fingering for this note. The four authors chose the same one.

From this point on, and quoting Gilbert:

The choice of fingerings for high notes such as top D sharp, E natural, and F natural is a highly individual matter depending a great deal on the player and the particular instrument being used. (Gilbert, 1988, p. 54).

## D#<sup>'''</sup>



**P. Y. Artaud** (1995, p. 15.):

I did not get it on my flute.

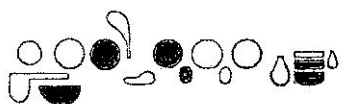
Position: Easy



**R. Dick** (1989, p. 6.):

I did not get it on my flute.

Position: Hard



**R. Dick** (1989, p. 6.) and **J. Pellerite** (1972, p. 9.):

This is the one that worked on my flute.

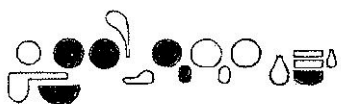
Position: Easy; Attack: Medium.



**T. Wye** (1987, p. 2.):

I did not get it on my flute.

Position: Hard



**T. Wye** (1987, p. 2.):

I did not get it on my flute.

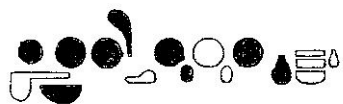
Position: Hard



**T. Wye** (1987, p. 2.):

I did not get it on my flute.

Position: Hard



**T. Wye (1972, p. 9.) and J. Pellerite (1987, p. 2.):**

I did not get it on my flute.

Position: Very hard



**J. Pellerite (1972, p. 9.):**

I did not get it on my flute.

Position: Hard



**J. Pellerite (1972, p. 9.):**

I did not get it on my flute, actually the sound that I got was D<sup>'''</sup>

Position: Very hard

**E<sup>'''</sup>**



**P. Y. Artaud (1995, p. 15.):**

Position: Easy; Attack: Easy; Tone quality:

Medium; Intonation: Sharp.



**R. Dick (1989, p. 6.):**

Position: Hard; Attack: Easy; Tone quality:

Medium; Intonation: Sharp.



**R. Dick (1989, p. 6.):**

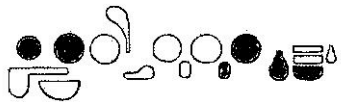
Position: Medium; Attack: Easy; Tone quality: Medium; Intonation: Sharp.



**R. Dick (1989, p. 6.) and J. Pellerite (1972, p. 9.):**

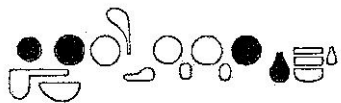
This one is my favourite and the one which worked better on my flute.

Position: Medium; Attack: Very easy; Tone quality: Good; Intonation: Sharp.



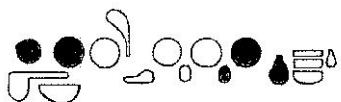
**R. Dick (1989, p. 6.) and T. Wye (1987, p. 2.):**

Position: Very hard; Attack: Difficult.



**T. Wye (1987, p. 2.):**

Position: Easy; Attack: Hard.



**T. Wye (1987, p. 2.):**

Position: Hard; Attack: Hard.



**T. Wye (1987, p. 2.):**

Position: Hard; Attack: Medium.



**J. Pellerite (1972, p. 9.):**

Position: Hard; Attack: Hard.

## F'''



**P. Y. Artaud (1995, p. 15.):**

I did not get it on my flute.

Position: Hard



**R. Dick (1989, p. 6.):**

I did not get it on my flute.

Position: Too hard



**R. Dick (1989, p. 6.):**

I did not get it on my flute.

Position: Too hard



**R. Dick (1989, p. 6.):**

I did not get it on my flute.

Position: Too hard



**R. Dick (1989, p. 6.):**

I did not get it on my flute.

Position: Hard



**T. Wye (1972, p. 9.) and J. Pellerite (1987, p. 2.):**

Position: Easy; Attack: Medium Tone quality:

Bad; Intonation: Slightly flat.



**T. Wye (1987, p. 2.):**

This one was my favourite and the one which worked better on my flute.

Position: Easy; Attack: Easy; Tone quality: Good; Intonation: Flat.

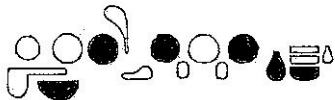
### F#<sup>4</sup>



**R. Dick (1989, p. 6.):**

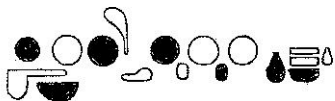
I did not get it on my flute.

Position: Easy



**R. Dick (1989, p. 6.):**

Position: Medium; Attack: Easy; Tone quality: Good; Intonation: Flat.



**T. Wye (1987, p. 2.):**

I did not get it on my flute.

Position: Medium



**T. Wye (1987, p. 2.):**

Position: Hard; Attack: Hard.



## PRACTICING THE HIGHEST NOTES

The first time I tried to add exercises that reached the fourth octave to my daily routine with the flute, I was studying my Bachelor's degree. My teacher knew that I had to prepare works like Prokofiev's Sonata and she gave Gilbert's *Technical flexibility for flutist: A book of daily practice routines*. It was really useful to work on one scale every week and, little by little, C<sup>4</sup>, C<sup>4</sup># and D<sup>4</sup> became easier for me. G. Gilbert put the highest passages in brackets with the advice to the flutist "The passages in brackets should be practice first first, before the complete scale". (Gilbert, 1988, p. 2.) I remember how difficult it was for me and my colleagues to play those notes for the first time and I remember how in some instruments it was harder than in others.

When I decided to start expanding the fourth octave higher than D<sup>4</sup>, I was looking for a method to learn how to work on my highest notes. The following advices were very useful at the beginning so I decided to quote them.

### **Advice 1, about the procedure for playing a fourth octave note for the first time.**

Before playing a fourth octave note for the first time, this procedure is recommended: Be sure the fingering is correct! Check the fingering in a mirror. Then, try the note as a whisper tone to find the angle of the airstream. To produce the regular sound, make sure that the jaw is pushed out so the airstream is at a very horizontal trajectory and that the flute is turned out with most (at least three-quarters) of embouchure hole uncovered. Finally, set the embouchure first, then start the airstream. If these notes are approached with confidence and a sense that they will be sustained -not played staccato- success is far more probable. Begin at ff or fff; only after considerable experience will working at lower dynamic levels be sensible, as, at first, the air itself and not the lips should be doing the most work. (Dick, 1986, p. 23.)

I did not use the checking with the mirror, I just had a look to the fingering on the book and then I looked at my hands. But trying the note as a whisper tone first was useful because then producing the note was easier. I do not agree with the change of the

jaw, I prefer that, if there is any change, is because I need to do it after trying and it happens naturally. I prefer to have a more stable jaw and move it the minimum possible. My flute is quite turned out all the time, so I did not turn it more. But it is true that I was always aware of not turning it in, specially on the highest notes. The tips about setting the embouchure, focusing on the air were useful also. And, of course, playing ff or fff seemed the only way to begin with the highest notes.

### **Advice 2, about the duration of the practice of the fourth octave.**

Flutist should approach practice of the fourth octave pitches with care, following a ratio of about ten seconds in the first octave for every second spent in the fourth. Because these pitches demand great strength of the embouchure, they should not be practiced for long periods, but must be worked on daily for a short time if they are to sound good. Production of these pitches is aided by turning the flute outwards so that the embouchure hole is at least three-fourths uncovered. (Dick, 1986, p. 23.)

I soon noticed that practicing the fourth octave was very tiring for the embouchure. That is why focusing on the fourth octave for short periods of time is for me a key principle while practicing. And I have also confirmed how turning the flute outwards helps a lot. What I did was practicing the highest notes after warming up very well, especially on the third register. And then I tried the fingering carefully, without forcing the embouchure, during three or four minutes. Then I played something not so high for a while, and maybe I tried again for another 3 or 4 minutes.

### **Advice 3, about how often should the fourth octave be practiced and which are the benefits of working on the highest notes.**

The fourth octave pitches require the embouchure strength that the harmonics develop. Because these notes are strenuous, they should be practiced only for a short time, but must be practiced daily if they are to sound good. The benefits of working on these notes are clear: the strength developed will make it easier to play in the third octave even at the softest dynamics and they remove the psychological blocks to the

top notes of the third octave, which will not seem so very high. Pitch and color control of the third octave will also be enhanced. (Dick, 1986, p. 23.)

For me, practicing the fourth octave did remove my psychological blocks to the top notes of the third octave, but I found that I gained more control on dynamics, pitch and color of the third octave by playing piccolo than by practicing the highest notes.

Apart from R. Dick's advices, Trevor Wye wrote some tips about how to play the fourth octave in his book *Practice book for the flute, Volume 6*.

The top notes of the 4<sup>th</sup> octave: Practice of these notes can be even more tiring; try them for no more than a few minutes at a time. After a few days the lips will become a little stronger and be more capable of holding an “embouchure”. Some advice on getting the notes easily:

- (a) Don't turn the flute in; just the reverse, keep it turned out.
- (b) Try each new note as a short, fortissimo, burst of air.
- (c) Make sure you try out all the available fingerings. Some are easier on some flutes, difficult on others.
- (d) Remember your neighbors.
- (e) Leave Eb out until you've worked at the others.\*

\* Eb has been left out as the fingering is by no means standard and it tends to be more difficult on some flutes than others. Try it later. (Wye, 1987, p. 31.)

I experienced how my lips became stronger after a few days of practicing the fourth octave. Also, I think it is a good idea trying notes as a short, fortissimo, burst of air at the beginning. Keeping the note was very tiring for me, specially when I was trying them for the first times and it was easy for me to tense my lips and other parts of my body. About the fingerings, I have seen how my colleges using the same fingerings that I was using got different results, so yes, I agree with the idea of trying out all the fingerings and discover which ones work better on your instrument. And the idea about leaving Eb out was the most important for me from all the tips that Wye wrote in his book. When I started my Master's Programme I found that I could reach D<sup>'''</sup> quite easily but D<sup>#'''</sup> was almost impossible. So, with the idea that E<sup>'''</sup>, F<sup>'''</sup> and F<sup>#'''</sup> were harder

that Eb<sup>'''</sup>, I stopped expanding my register and kept practicing until D or D#. But writing this thesis and reading Wye's tips, I found out that actually playing D#<sup>'''</sup> was harder than playing E<sup>'''</sup>. So, I chose a good fingering and it was quite easy to play an E<sup>'''</sup> for the first time. Thus, in that moment, I decided to try more notes and then, I would try with Eb<sup>'''</sup> again. After playing the highest ones, I came back to Eb<sup>'''</sup> and it was much easier. Still, I found that it is the hardest one, but I was able to produce it.

## INTEGRATING C<sup>'''</sup>, C#<sup>'''</sup> AND D<sup>'''</sup> TO MY DAILY ROUTINE

I like dividing my daily practice into two different parts: tone quality and intonation, and scales and arpeggios. This is because for me it is important to have specific exercises to focus on each part of my technique as a flutist. My goal was to integrate C<sup>'''</sup>, C#<sup>'''</sup> and D<sup>'''</sup> in all those exercises. Anyway, the truth is that in my real life, sometimes I have more time to practice, sometimes I have less, so very often I have to adjust myself to this fact and what I try is to keep the idea that no matter what exercise I practice, it is necessary to reach C<sup>'''</sup>, C#<sup>'''</sup> and D<sup>'''</sup>. Here I present some of the exercises that I use on those days that I can do my whole daily routine.

### **Tone quality and intonation**

To control the sound quality and the intonation I found that the most useful way is playing long notes. As I said before, and according to the tips, I did not play long notes on the fourth register when I was playing them for the first times. But after some days practicing them as short notes, I found that playing them as long notes was possible and very useful.

My favourite exercise for this is the one that Marcel Moyse wrote on his book *La Sonorité*. What I do is starting from B<sup>''</sup>, I go up chromatically until I reach D<sup>'''</sup>. The first weeks I did not worry about the dynamic on the highest notes, but then I tried to control them and play a bit softer, without forcing the embouchure.

One problem for me while practicing the long notes was my inner ear. Playing in the fourth register was very painful for my ears, especially for the right one. I had the option of using earplugs but I do not like them because I cannot listen to the tone quality, so in the end, what I decided to do was to play the highest notes only for a few minutes and then I let my inner ear rest.

## Scales and arpeggios

I use the scales and arpeggios to be agile with the highest notes. When I started my Master's Programme, I used to work with Wye's book: *Complete Daily exercises for the flute*. I find it a very good book of exercises, especially if you want to practice until D or D#. T. Wye explains his purpose with the book in these words:

This book contains the traditional exercises which most flautist worldwide use in their daily workout. There were based on the five most popular "French School" study books, though some of them have been modified in the light of present day practice and custom, but, for those who prefer it the original material is still covered, too. I have taken the liberty of extending the compass of some of the favorites to top D, or to low B, which is often now required, but allowing those with more traditional views to retain the old format if they wish. [...] (Wye, 2003, p.4)

I found that I could play the scales and arpeggios pretty fast when I reached B<sup>'''</sup> but if I included C<sup>''''</sup>, C#<sup>''''</sup> and D<sup>''''</sup> I became much slower. So I decided that I needed to practice more, and, for that, I needed good exercises. I have found lots of exercises that reach those notes, but I find quite often that the highest notes are written very small, as optional, and the author always explains that we can skip them if we are not yet prepared to play those notes. In my case, the idea of writing them as something optional did not help me to really meet the need of the whole register. And there were also a lot of good exercises written many years ago that I wanted to use. The only thing is that I just needed to adapt and expand the material where the exercises only reach B<sup>'''</sup> as I said at the introduction. Here follows an example of how this can be done.

From my experience, the exercise No. 4 by Taffanel and Gaubert is one of the most played exercises, I have heard lots of flute players practicing it and I used it countless times in master classes, lessons, etc. For me, the easiest solution to expand this exercise is to change the end. In the original exercise, we are supposed to play C major from C'. My idea was to start from C'' instead of C', so then I reached C<sup>''''</sup>. Then, chromatically, I added the scales of C# and D. It is very simple so I can do it by heart, moreover it takes one more minute than the original exercise and the advantage is that

practice my whole register. It was important to practice both major and minor, so I alternate the tonalities when I practice it. (Sound example No. 1).

**Major version:**

Taffanel & Gaubert, daily exercises. No 4.

The major version of the exercise is presented in three staves. The first staff is in treble clef with a key signature of one flat (B-flat). The second staff is in bass clef with a key signature of two flats (B-flat, E-flat). The third staff is in treble clef with a key signature of one sharp (F-sharp). The exercise consists of four measures per staff, featuring a mix of eighth and sixteenth notes with various accidentals.

**Minor version:**

Taffanel & Gaubert, daily exercises. No 4.

The minor version of the exercise is presented in three staves. The first staff is in treble clef with a key signature of one flat (B-flat). The second staff is in treble clef with a key signature of two sharps (D-sharp, F-sharp). The third staff is in treble clef with a key signature of one sharp (F-sharp). The exercise consists of four measures per staff, featuring a mix of eighth and sixteenth notes with various accidentals.

Another exercise that I like is No. 12, also by Taffanel and Gaubert. What I do is to add the following bars at the beginning of the exercise. And then I just continue playing the original exercise. (Sound example No. 2).

## Taffanel & Gaubert, daily exercises. No 12.

1  
3  
5  
7  
9  
11

There are exercises like Reichert No. 2 where the only thing that I do is to repeat some tonalities one octave higher and that is all. In that exercise, the tonalities that one should repeat are Eb Major, E minor, E Major, F minor, F Major and F# minor. (Sound example No. 3).

## Reichert No. 2

8va  
5 (8)



Now talking about the difficulties of practicing scales and arpeggios, the first problem that I found was reading the notes. There are many ledger lines in the highest notes so I became very slow when I wanted to play an exercise. Since the design of the exercises is thought to reach the highest notes, each scale has its own shape (meaning that it is not like playing C Major from C' to C''' and come down, it could be playing from C' to D'''' and at that point, coming down, no matter in which bar or group you are). That makes it very hard to play each tonality by heart. On the other hand, there was no problem reading the arpeggios because I knew which note I was suppose to play every time, that is to say I could play by heart, so no reading was needed. After some practice, I got familiarized to the highest notes but still it was not easy to read them. One solution could be to write the exercise one octave down but I still think it is important to get familiar with them so what I did was to play the original exercise when I was practicing it slowly and then, if I was focusing on the speed, sometimes I wrote it one octave down.

Another problem was that many times, at the beginning of my work with the highest notes, D'''' did not sound when I was playing the scale or the arpeggio. For that, I found it very useful to play the highest passage first and then try to play the whole exercise, as Gilbert recommended in his book. When I played like that, D'''' sounded almost every time. What happened then was that playing only the passage worked quite well but trying to play the whole scale did not work. This time it was because I had problems with my air. I did not have enough when I reached the top of the scale and I also was not preparing my support very well. At the end, practicing the highest passage first and breathing very well before the whole scale or arpeggio and focusing on my support, I could reach D'''' quite successfully. I have also added an audio example with a passage from Prokofiev's *Sonata* where I had to reach many D''''s. After practicing scales and arpeggios I could play that passage very confident and trusting that all the D''''s will sound. (Sound example No. 4).

## BEING ABLE TO PLAY D<sup>8</sup>, E<sup>8</sup>, F<sup>8</sup> AND F<sup>#8</sup>

It was very satisfactory and enjoyable being able to play all the notes in my instrument. At the beginning it was quite hard, especially D<sup>8</sup> and sometimes frustrating when I did not get results. But after some practice and with the appropriate fingering it was gratifying getting the results.

I feel like I have more resources now. I am not afraid of finding a very high note in my part because I know the fingering that suits me. Also it was very surprising how low C<sup>8</sup>, C<sup>#8</sup> and D<sup>8</sup> seemed to be after playing F<sup>8</sup>. And it was interesting investigating and experimenting with my instrument. I learnt a lot about my resources and my limitations and I expanded them. Also, I think it will be useful if I have to teach one day.

What was scary was the idea of forcing the embouchure and losing my tone quality. Every time I thought about playing those high notes I was worried about that, but following the advices it worked quite well. It is true that my tone quality was a bit worse after trying the highest ones, specially after trying a few times. But on the other hand, I felt my sound bigger and my support more powerful.

To sum it up, I really liked knowing better my instrument and being able to play all the notes that it has.

## DISCUSSION

Thinking about my development as a flute player, and having the knowledge that I have now about the repertoire, I would have started to expand my range as soon as possible and never forgetting that B<sup>'''</sup> is not the highest sound I was going to need to play.

My control of the fourth octave was not as good as my control of the rest of the registers. That gave me the task to improve it. And the aim was not only playing those highest notes. The flutist also has to control the dynamics and, of course, play in tune. I found many times high notes in the orchestra repertoire (until D<sup>'''</sup>) and there, it is essential to control the pitch of the passages because it is very important for a good result of the woodwind section. So that is why I think it is not only a question of producing the highest sounds, it is also a question of having control in the fourth register, at least until D<sup>'''</sup>. That is why I believe it is a good idea to integrate them to the daily routine, because the practice will guarantee the control that is necessary to make music.

I find it necessary that those notes become a part of my technical skill as a flute player. Even if the highest notes are not played as often as the third register, I feel that it is to be expected that the flutist will frequently come across some of them. So, the best way to manage this challenge is to be ready by developing my technique on the highest notes and practicing them often enough.

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