

The Building of the Chromatic 'Hyperbass' Flute (32 feet of Flute)

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(Translation adjustment: P. Sheridan)

Development of Low Flute Design

The last few decades has seen the development of low flutes in full pace. Initially, these instruments lacked a good key (flap) system, which was an obstacle for making flutes of more than one arm's length. With the invention of the revolutionary Theobald Böhm key system this problem has been, however, solved. But whereas, saxophones and manifold builders succeeded with very large instruments, the weight of the instrumental flute was overbearing. A not unimportant cause, the rather negative observations of Philip Bate in its book 'The Flute' concerning the flute of the Italian Albisi is quite true. This flute made at the beginning of twentieth century, was listed as the first flute larger than bass flute. Bate mention that this flute would take large amounts of air and produce little sound, which was no encouragement for other builders to try taking the process any further. A copy of the 'Albisiphone' is in the Bate collection, Oxford. (1) Now the contrabass flute has started to become popular, and has conducted a respected position between the other wind instruments. Well established names of low flute builders from the beginning of the 20th century are: Rosen in France, Jäger in Germany and Emerson in the United States.



(Image: Jelle Hogenhuis assembling headjoint on hyperbass flute)

Large Flute Blowers

The current generation of 'large flute blowers' (lage-fluit-bouwers) are inspired by the Japanese Kotato and Fukushima, and of course our own Eva Kingma. The high quality of these instruments has contributed to an improved image of the contrabass flute (and all low flutes in general). It was Kotato who was the first to design the subcontrabassflute, which played three octaves lower than C-flute. Unfortunately the price of these instruments is still rather expensive for the average player. With the arrival of these subcontrabasflute's a new range down to 32 Hz has become possible. In the years 1990, I myself have developed a cheap alternative: a plastic flute with very considerable performances opportunities. I personally find it not a particularly 'musical' instrument to say. If I am in my studio and want to play a nice tune, then I do not choose the subcontra. But there other players who think completely different! Virtuoso player Peter Sheridan is someone who has turned the playing (and performance) of the low flutes into his specialty. This flutist with an Irish and American passport lives at present in Australia and travels the world with a respectable weight of flutes (up to 40-50 kilos). 3

Sizing the Pipe

Sheridan ordered a subcontrabasflute from me in 2009. His thoughts and dreams were turned to even lower depths, when he asked me to develop an instrument that played an octave lower. If no other one has he the capacity for the musical possibilities of the instrument, he would. Inspired by the very low instrument of the Italian Fabricciani, Sheridan put forward the idea of the development to me. This new instrument would have to be twice as long as the subcontrabass flute. Fabricciani's flute however has no key system; the tone holes can be closed alternatively by a hand gesture with latex gloves. The task for me now was to put an instrument length of almost 10 meters (32 feet) complete with a chromatic Böhm-key system. The lowest frequency, the D under the lowest A, of the piano, lies then wide under the spectrum border of 18 Hz. After the experiences with the subcontrabass developments, the key movement was not the most difficult problem; selecting a workable drilling (or diameter) was still much more cumbersome.

On First experimentation, I failed with a tube diameter of 75 mm. (see image 1 below) Not that I expected direct result, but the partials of the pipe as well as the turnings did not work correctly. It was surprising that the lowest tones sounded rather easily even at this smaller pipe size.

Octaves were however not possible; the first partial which I could isolate was a mix of the fourth and the fifth. At 90 mm diameter the success was greater which made progress much better. For this reason I decided I will build more seriously with a diameter of 125 mm! (see image 2 below)



(Image 1: 75mm diameter)



(Image 2: 125mm diameter)

At this diameter finding the octave was possible. In fact honestly a tube of 150 or 170 mm probably would have produced a better result, though the transport of a monster this size would have been impossible. On the other hand the advantage of the smaller bore provided a rough range of four octaves.

Key System

To simplify respectively F# and G# the octave key of E and F I introduced. The distance of the playing hand to the where the keys were concerned is sometimes as much as two meters; that is why I chose for a system with brake cables to bridge this wide span! A workable solution, on other keys, such as the D#, which let through venting air however, also needed a connector, and hence that is why I chose the cables to serve this awkward mechanical challenge. Truth is, if tube does become any larger, then I would have to devise an electric service for the solution.



(Image: Octave key with cable connector)



(Image: C and C# key)



(Image: Maker Hogenhuis assembling hyperbass flute)

Future Thoughts

What Sheridan eventually produces with the instrument will be quite interesting. It will be no 'Flight of the Bumblebee,' though should have artistic and sonic interest to all musically involved. Sheridan has already invited composers to write for the instrument. The question is if he is satisfied with reaching a tone of 18 Hz, or in the future, once more with the question comes, if it is not possible to go an octave lower.....

NOTES:

1. www.bate.ox.ac.uk/flute.html
2. www.oguraflute.com/kotato.html and
www.hogehuis-flutes.com/pages/subcontrabaseflute.html
3. Peter Sheridan's website: www.lowflutes.com
4. Wikipedia Article dedicated to Fabricciani Hyperbass:
http://en.wikipedia.org/wiki/Hyperbass_flute

Images

1. The Hyperbass flute Image
2. The cables for C (inch) and Cis run as veins concerning the tube
3. Following on an octave flap