Staldophone - Explanations on this in six disciplines

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The Staldophon also simply explained, one cannot avoid the following disciplines, these are:

- History of the origin of the saxophone
- Physics
- Instrument making
- Music theory
- Anatomy and psychology

The following explanations are based on self-taught things and personal experience with the Staldophone. It is therefore a legal necessity to add something, otherwise there will be scolding again:

Everything without guarantee!

History of the origin of the saxophone

The history of the saxophone tells us that Adolphe Sax originally equipped the saxophone with a cup mouthpiece - which was common for overtone instruments at the time (19th century). It is also undisputed that Adolphe Sax had his sights set on military bands around the world with the new instrument, because a lot of money could have been made with it. This means that such an instrument shouldn't place too high demands on the musician (ashes on my head). Consequently, Adolphe Sax turned away from building a pure overtone instrument (author's personal conclusion). Ultimately, he even equipped the saxophone with a reed mouthpiece. As a logical consequence, he developed a complicated mechanism that made it easier for the musician to play the upper register. This is so that the musician does not have to worry about the more than 20 individual tone holes that have now been created.

Perhaps it is presumptuous to say that the Staldophone actually corresponds to the originally planned saxophone. In other words, from saxophone to Staldophone and back again. However, with even fewer holes and buttons. For the Staldophone, this meant that the fingering chart developed away from that of the saxophone.

Physics

In order for a pipe to produce a sound, the air in the pipe must vibrate. With wind instruments, this is done by blowing air into the mouthpiece (whereby the air is also made to vibrate).

From a physical point of view, the saxophone, and consequently also the staldophone, is a closed tube (technically: covered). One also has to accept the fact that due to the conical construction of the tube (here the horn), the end of the tube with regard to the sound comes to lie far outside the tube construction. This causes the tenor saxophone to sound about 30 Hertz lower than the calculation results in. The same condition applies length-relevant to all other notes where the horn end is forced by an open key. If you take the length of the stretched horn (all keys open) and calculate the lowest note, the instrument effectively sounds an octave lower than the calculation results (since closed-end tubes only oscillate a half-wave). In order for the end of the horn to be recognized as such, a sufficiently large hole is a prerequisite, or a corresponding sequence of holes is necessary. Otherwise, the tone will only be lowered or only the timbre will change. Ergo, the further up the hole is, the smaller it can be. As a blow-over aid (into the overtones), the saxophone has small holes at the top that can be opened with keys. These were entirely omitted from the Staldophon.

The overtones are another important topic, these are also called partials. Tones generated by a musical instrument always sound with several tones, in other words, each tone is a tone – from this the series of overtones is formed. This means that the overtones always resonate from the fundamental tone, but with different intensities depending on the instrument. Overtone instruments use this effect to play in the upper pitches (namely with over-blowing). Here is an example: if a fundamental tone is played on an overtone instrument (saxophone or Staldophone), the next overtone (the octave) can also be played (ie over-blowing) without changing the grip. The next overtone is then a fifth higher (the twelfth), it continues with the double octave, etc. Conclusion, the distances from overtone to overtone become smaller and smaller as you go up. In relation to the horn, it is a reality that each instrument has its own preferences (preferences) in the upper register at which frequency it sounds. In other words, not every overtone can be played so easily (this can even be different within the same instrument group). Anatomy and psychology come into play so that the intonation can still be played correctly.

The statement mentioned at the beginning that the horn is closed on one side needs to be specified. In the case mentioned, it concerns the physical vibration behavior of the horn. The "closed" side is effectively closed by the almost closed mouthpiece. With woodwind instruments, such as the Staldophone, a connection to the player is created via the mouthpiece with the vibrating wooden reed, and this forms the relationship between the instrument and the human being. Again, refer to the Anatomy and Psychology chapters to understand the implications.

Instrument making

The Staldophon has a simple key and flap mechanism, which also results in less weight. In addition, the Staldophon has only ten perforations on the instrument. In order to make the handling of the Staldophon safer, the upper thumb rest was also realized with a sliding thumb hook.

The physical and music-theoretical conditions make it impossible to position the tone holes in the correct place in every case and for every octave (see also the chapter on music theory). In addition, the theoretically calculated holes should be infinitely small anyway. This is in contradiction to the previously mentioned necessary hole sizes. On the Staldophon, each key is assigned to a tone hole key. Each individual hole can therefore be opened or closed as desired. This makes it possible to let different timbres sound. In addition, poorly responding overtones can be helped a little by slightly lifting a single key. Conclusion, practically every wind instrument is the result of many compromises.

Music theory

Today's keyboard instruments, such as the piano, are based on tempered temperament. This means that the error compared to a "pure" intonation of a scale is somewhat distributed over all tones. In principle, horns make it possible to play "purely" (for the reasons mentioned, however, the tone holes cannot be in the theoretically correct position in this regard). Seen over several octaves, this problem is also amplified. Since, as already mentioned, the distances from overtone to the next higher overtone of the same fundamental tone are becoming smaller and smaller, it is theoretically possible that an overtone falls exactly on a "tempered" tone. In practice, however, sometimes the overtone of another fundamental has to be played. This means that the fundamental tone on which it is based not only has to be grasped, but the announced overtone must also be "pulled" to the desired level (more on this in the next chapter).

Anatomy and psychology

The mouthpiece is the interface between the wind instrument and the human being. With the reed mouthpiece, this is placed against the upper incisors and enclosed with the lips. This is the basic requirement that air can be blown into the mouthpiece at all. Since no two mouths are the same, the individual application technique begins here. And how do you basically learn the overtone technique?
A good prerequisite is to already have the intended tone in mind. So, shape your mouth into a pointed kissing mouth, like blowing out a match - or rather a storm lighter! Blow loosely into the mouthpiece until you hear a tone without straining. Now simply push the larynx up a little – but who knows how to push the larynx up? This succeeds to some extent by thinking an "iiih", downwards an "oooh" and a different timbre an "uuuh". A clear case of self-defeating. And don't forget to bulge your stomach outwards with a lot of air (do not press). To do this, let your arms hang relaxed and dreamily close your eyes and practice, practice, practice. Hopefully you have found a suitable mouthpiece for your skill level with a wooden plate that is not too hard. Mouthpieces and wooden plates are available in a wide variety of designs. These must be adjusted from time to time according to the skill level, but there is no guarantee of rapid improvement.
Teeth and bones conduct vibrations differently, and the positions of the lips and jaws are also different. Tongue, throat, larynx, lungs, chest, diaphragm and abdomen also contribute to sound. In addition, the player's idea of the sound comes into play. So if you want to learn the Staldophone, it's a good idea to give yourself plenty of time.

Although it is primarily the fingering that determines the tone in the lower pitches, the pitch can already be changed (pulled) here with the embouchure technique. Even the timbre can be changed by different approach techniques. And in the highest pitches, the Staldophone player's idea of the sound weighs more heavily than the fingering done. To put it bluntly, including all components that make overtone play possible in the first place, we have already gone far beyond psychology and have come very close to occultism. I wish you lots of fun and perseverance with the Staldophone.

Subject to change without notice.

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