

Translation of the IWK thesis of Thomas Jöbstl
then principal horn of the Vienna Volksoper (2001)
now of Die Wiener Philharmoniker

The Vienna Horn

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Introduction

Why does the Vienna Horn player not sound like all the others?
Does it lie with the instrument or the player?

These questions have been posed for a long time by many horn players, for double-horn players are not excluded from this fact. I speak here of Vienna Horn players because I am concerned with them at work at

the Volksoper. Already I often hear statements such as: “He plays so brightly it must lie easily on his instrument”, or “Whichever instrument he plays he always sounds equally beautiful”. In this project I want to investigate more precisely what influences the instruments and the players have on the resulting sound.

The project can be organised into three sections.

- a The first is dedicated to to the instrument makers, and gives a short overview of when and by whom Vienna Horns have been produced.
- b The second deals with the construction of the Vienna Horn and the resulting particularities and differences in contrast to the normal double-horn.
- c The third and largest part deals with sound recordings of ‘test’ players made in ‘dead rooms’ and the analysis of the resulting information.

Each musician has a different musical point of view. Each is very different in articulation and style. In this project we will be dealing with the partials and overtones within the sound at various volumes, and the differential dynamic realms of the individual ‘test’ musicians.

I would like to thank all the members of the Institute for Viennese Sound Style (IWK) for their advice and help. The musicians who placed themselves as ‘test’ individuals for the project were, of course, very important. A special ‘thank you’ to all those who lent me books and other documents, and to all those who I was allowed to interview.

1. The sound of the Vienna Horn

The Vienna Horn is the instrument which most sets apart the sound of our Vienna orchestras. This special sound is instilled in by two components which are as follows:

1.1 The musician.

For the listener there are not only tonal differences between Vienna Horn players and their double-horn counterparts but also big variations between the Vienna Horn players themselves. From my own experience I can say that no individual Vienna Horn player sounds quite like another. The various techniques of making music with the instrument are a matter of taste and cannot be divided into better or worse categories. But certain stylistic similarities between the Vienna Horn players can be established.

- a The musical environment in which the horn player grows up is a very decisive factor. Firstly we draw attention to the player’s family and the parents, who in many cases are themselves musicians or even

actually horn players (e.g. Berger, Tomboeck, Janezic, Ramser, Hoffman...). A parent is often the pupil's first instrumental teacher and moulds the young hornplayer for the rest of his life. The student's main horn teacher and the pupil's classmates are very important for further development. The student is inspired by his teacher and tries to emulate him. Much will be made clear by the more senior students and other colleagues above him. The hornplayer is at his most impressionable in the early stages. He tries to transplant whatever pleases him into his own technique. This is how the musician develops his own sound concept.

Inevitably wider musical influences arrive on entry to professional life (orchestra or freelance); through lady colleagues (!) and the traditions of making music in the particular ensemble. Everyday exchanges with other musicians develop the hornplayer ever further.

b The tradition of making music which exists in the musical environment can to certain extent be consciously learnt, but to a greater degree can only be experienced and learnt unconsciously.

c The mentality of the player. The emotional personality of a musician is certainly reflected in his musical behaviour.

As a consequence of the reasons outlined above, one can recognise a quite precise pattern in any hornplayer, irrespective of instrumentation. If a Vienna horn player experiments with a double-horn, it will nonetheless still sound more similar to his Vienna horn than if a double-horn player does the same thing. The hornplayer tries to project his personal imaginary ideal sound. Much can be masked by playing technique. This mostly happens, mind you, unconsciously.

In the whole world there is only one orchestra that has a complete section of Vienna horns: The Wiener Philharmoniker (Vienna Philharmonic Orchestra), which is drawn from the orchestra of the Vienna State Opera. In the State Opera it is an admission audition condition to play the Vienna Horn. As a result Vienna Horns can also be found in the stage bands of the Federal theatres. The Vienna Volksoper has a mixed section at present. Similarly in the Wiener Symphoniker (Vienna Symphony Orchestra) and in the Orchester der Niederösterreichischer Tönkünstler (Lower Austria Musician's Orchestra) both horn systems are used. Otherwise one can only find a Vienna horn here or there (e.g. in Graz). Everywhere else in the world double- and triple- horn systems are used.

1.2.1 Instrument makers

A Johann Tobias Uhlmann and his son Leopold Uhlmann

Leopold Uhlmann was born the son of Johann Tobias Uhlmann in 1806. His father (1776-1883) was a very well known instrument maker (and oboe player) at the 'Theater an der Wien' in Vienna. His two year elder brother Jacob was oboeist in the KK Hofkapelle (Royal and Imperial Court Chapel) and, from 1857-1871, a member of the Wiener Philharmoniker. Jakob Uhlmann was also Oboe Professor at the Wiener Konservatorium 'Gesellschaft der Musikfreunde' (Society of the Friends of Music). Leopold himself learnt horn playing at the Wiener Konservatorium.

In 1833 the father opened the instrument workshop 'Tobias Uhlmann and Sons' with his two sons. They became one of the most important firms for woodwind and brass instruments. They supplied the Austrian army and exported their instruments to Egypt, Brazil, Persia, and to the British army in Malta. Furthermore their instruments were used in all the Viennese theatres.

Leopold Uhlmann can be described as the father of the Vienna Horn. In 1830, and now under his own name, he first built the Vienna Horn's characteristic pump valve system, which were called 'Stechbuechsenventilen' (literally: stab-can-valves). He achieved a Royal Patent for the manufacture of this new type of valve. All types of Uhlmann brass instruments were fitted with them.

In 1870 he made the first attempt at the construction of a twin-key 'double' horn. Uhlmann used rotary valves for this experiment on the ground of weight.

In 1874 he was appointed 'K & K Hof-Blasinstrumentenmacher' (Royal and Imperial Court Wind Instrument Maker). He supplied woodwind and brass instruments for churches, theatres and the military. His instruments were used in all the Royal theatres.

After his death in 1878 the firm was continued by his son under the Leopold Uhlmann name until 1904. But already by 1900 the new 'Erste Produktivgenossenschaft der Musikinstrumentenmacher Wien' was the dominant force.

(source: The New Lindsay Langwill Index - William Waterhouse; 1993).

B Erste Produktivgenossenschaft der Musikinstrumentenmacher Wien
(First Production Co-operative of Musical Instrument Makers, Vienna)

At the beginning of the Twentieth Century many craftsmen worked together in a community under this name. The co-operative had two workshops; one located at Kaiserstrasse 55, Vienna VII, and the other on the Wiedner Hauptstrasse, Vienna XI. One of the craftsmen there was a Herr Siegel. After the First World War he worked for Dehmal (see below) and then later with Klimesch (see below), and was one of the most significant craftsmen in the Vienna Horn building tradition.

(source: from an interview with Ernst Ankerl (see below))

C Anton Dehmal

Anton Dehmal apprenticed in the firm of Leopold Uhlmann. Between 1875 and 1882 he was foreman at the large Austrian musical instrument makers 'Bohland und Fuchs' of Graslitz. Later Dehmal started out on his own and took over the workshop from Daniel Fuchs.

(source: The New Lindsay Langwill Index - William Waterhouse; 1993).

D Anton Dehmals Nachfolger

(Anton Dehmal's successor)

Franz Klimesch (1882-1957), a Bohemian musical instrument maker worked from 1904 in the firm of Anton Dehmal. In 1907 he took over the firm from Dehmal and conducted business as Anton Dehmals Nachfolger. In 1924 he bought the Royal Patent (K & K Privilegierte Hof Musikinstrumenten Fabrik) from Daniel Fuchs of Bohland & Fuchs.

In about 1950 Herr Klimesch developed a completely new 'cut' for the Vienna Horn with a few prominent horn players, notably Professor Josef Veleba (VPO principal). This new 'cut' was very narrow and resembled that of a hunting horn. He could not however carry it through to fruition. At that time the firm was very large. About 17 employees worked there and everything was made by hand.

Klimesch had a daughter who married a craftsman from the firm called Herr Kiefmann. Kiefmann took his 'Masters Diploma' in order to be able to take over the workshop. In 1957 the firm's ownership transferred to Kiefmann. His wife led the business, continuing under the same name, Anton Dehmals Nachfolger. Herr Kiefmann remained in charge until 1966. In those days, everything in the firm was watched over as if a trade secret, so that the apprentices and young craftsmen could only learn that which the elder craftsmen (who had worked under Herr Klimesch) directly demonstrated to them. In this way only as few things as possible were lost to the knowledge and tradition of manufacture.

(source: from an interview with Ernst Ankerl (see below))

E Ernst Ankerl

Ernst Ankerl began his training in the firm of 'Anton Dehmals Nachfolger' under the leadership of Herr Klimesch. He made his Master's Examination in 1962 under Herr Kiefmann. In 1970 he opened his own company which was conducted under the name of Ernst Ankerl.

In this firm it was again valued that everything in the entire instrument should be made by hand. Ernst Ankerl himself specialised in the preparation of the bell branch and flare which was produced in a single piece length from tuning slide to the bell end. The production of Vienna horns was established in 1973. The causes for this delay were growing cost pressures and competitive difficulties. Under Kiefmann in the middle of the 1960's, Vienna horns could be bought at about 18,000 Austrian Schillings (£900/\$14,000). At the end of Ankerl's production the price had climbed to about 30,000 Schillings (£1500/\$2,250).

In 1977 the firm was taken over by Anton Küstner. The firm exists up to date and is still directed under the name 'Ernst Ankerl'. However Vienna Horns are no longer in production.

source: from an interview Herr Joebstl conducted himself with Ernst Ankerl on 27/1/2000

Ernst Ankerl; formerly at A-1160, Wien Haberlgasse 11, Ecke Herbststrasse)

F Robert Engel

Robert Engel learnt his skill at the instrument makers, Franz Zischek, who also built Vienna Horns. Later he took over Zischek's firm and made himself independent. He built a large number of Vienna Horns. In the 1980s he experimented with members of the österreichischer Rundfunk (ORF) - Orchester in a development of a double-horn in 'Wiener Mensur' (Vienna bore). Robert Engel led the firm until 1998.

Robert Engel Musikinstrumenten-Erzeugung: formerly at A-1160 Wien, Koppstrasse 94

G Hermann Ganter

The musical instrument maker Hermann Ganter, located in Munich, Bavaria, began to make Vienna Horns in 1979. A model of the Produktivgenossenschaft (see above) was taken as pattern. The horn was given the name 'Modell Stiegler-Pizka'. But sadly Vienna Horns were not produced for long. Natural horns were also produced in Hermann Ganter's workshop following the Viennese pattern of Uhlmann, and Wagnertuben were also produced in the smaller Viennese style.

H Yamaha of Japan

In the early 1980s the Japanese firm Yamaha decided to develop a Vienna horn model. They used a Produktivgenossenschaft instrument in the possession of Wolfgang Tomboeck Sen., (principal in the VPO) as a basis for this project. Guenter Högner and Willibald Janezic (principal and second in the VPO respectively) took a decisive part in the instrument's development. They tested the horns, drew attention to faults and pointed to new objectives and adjustments.

At first a wider bell was used, but this experiment showed that the the tuning and the attack on several notes were considerably improved if a narrower a narrower bell branch and flare were used. But no one wants to make unnecessary sacrifices to achieve the desired 'veiled' quality ('Wolken') that is alleged to come from a larger bell system. It was then shown by experiments in the Musikverein concert hall and the Wiener Konzerthaus that the impression of a very large and soft tone (leading to the desired veiled quality) was only really noticed by the player himself and those listeners located close to him. At a little distance, the horn fitted with a narrower bell branch and flare sounded just as soft and round, and as an aggregate result is generally more satisfactory to listen to.

Yamaha Vienna Horns are now built by Rudolf Fröschl in Vienna. He obtains the tubing and a few pre-manufactured parts from Japan. At present the Yamaha horn is no longer under research and development, except in terms of the F crooks, which are produced in Vienna by Robert Fröschl in any event. Between six and ten Yamaha Vienna Horns are built each year.

Source: The information above is based on an interview with Rudolf Fröschl on 11 January 2000 by Thomas Joebstl.

Yamaha; Rudolf Froeschl, A-1100 Wien, Schleiergasse 20, AUSTRIA
tel: 0043 1 602 03 09 0

J Haagston Austria

Since 1996 Herr Alois Meyer has made Wiener Horns under the name of 'Haagston Austria' (named after his firm's location, Stadt Haag, near Linz). The 'cut' is based on the original Leopold Uhlmann design. Mayer wants to try to combine the origins of the instrument with modern technology.

Haagston Austria A-3350 Stadt Haag Stummerstrasse 3 tel: 0043 7434 439 130 Fax: 0043 7434 439 1320
e-mail: office@haagston.at web page: <http://www.haagston.at.com>

K Gebrüder Alexander

The musical instrument makers Alexander are a family concern that are now in the seventh generation. The 'founding father' was called Franz Ambros. He came from an old French Huguenot family. In 1782 He moved from Miltenburg-an-Main to Mainz, was accepted in the Handwork Guild and then founded a small handwork firm for the production of musical instruments.

In 1971 Anton Julius Alexander, who embodied the sixth successive generation, took over the now world-famous firm on the death of his father. In 1997, he made the making of a Wiener Horn model an objective to be achieved before his retirement. From that time on, the firm has been led by his son.

Alexander Model 92M, D-55116 Mainz, Bahnhofstrasse 9 Tel: 0049 6131 28 80 80 Fax 0049 6131 22 42
48
web page: <http://www.musik-alexander.de/english/einfach.htm>

L Andreas Jungwirth

Andreas Jungwirth began to make Vienna Horns in 1997. He took an instrument of Anton Dehmals Nachfolger as a pattern. Wolfgang Tomboeck jun. (VPO principal) was very closely involved in the development work, and he tested and advised on areas of weakness.

Many experiments were carried out on dimensional and bore alternatives. In the beginning the valves were installed slightly un-airtight in order to make the horn seem artificially 'worn in'. This didn't turn out to be too effective. On the Jungwirth instrument the form of the third valve bow slide is noticeable, as it is built in the layout of the old Leopold Uhlmann instruments, and not swung across the front of the valve block as on

other maker's models. As a result, Jungwirth says, the intonation and speaking of the high Ab, Bb and top C are significantly improved.

This material comes from an interview of Wolfgang Tomboeck Jun. by Thomas Joebstl.

Jungwirth instruments are in use by 2001 Wiener Philharmonikers, Tomboeck jun., Vladar, Soellner, Horwath and Pfeiffer. Current price circa öS 63,000

Andreas Jungwirth Erzeugung von Blechblasinstrumenten, A-3564 Freischling 21 Tel 0043 2985 33032

Fax: 0044 2985 33032 4

web page: <http://www.french-horn.com/laden/jungwirth/jungwirth.htm>

M Kimura

Vienna Horns are also made in Japan by the firm Kimura. There is one Kimura in the 2001 VPO section.

Haruo Kimura, 3-17-19 Zosigaya, 171 Tokyo, Japan Tel: 0813 984 98 38

N Robert Worischek

Under the leadership of Hans Pizka, the principal hornplayer of the Bayerische State Opera, München, (a Gottfried Freiberg pupil), this firm has started to make Viennese Horns (as with the Ganter instrument above).

The asked price is circa 3850 euros.

Web page: <http://www.pizka.de/PizClaDe.htm>

Makers of crooks

All current makers (see above)

Firma Weber:

Contact details?

Makers of 'authentic' Wiener Horn mouthpieces: (be careful of crook and shank diameters!)

Firma Breslmair eg model Berger

Contact details?

Others

1.2.2 The constructional particularities of the Vienna Horn

In this chapter we will deal with the method of construction of the Vienna Horn. Some of the consequences of these particularities will be written about further on.

The tube length.

The Vienna Horn (as with every other F-pitched horn) consists of a length of about 3.7 metres from mouthpiece to bell. When all three valves are depressed together the length increases by about another 1,5 metres to 5.2 metres. As a result of the tube length the energy requirement, the pitching security and indirectly the sound are all influenced. But about this later on....

The crook

In contrast to the typical double-horn, on a Vienna Horn a large part of the instrument can be removed or exchanged. This part is referred to as the crook (der Bogen: literally 'the bow'). It is plugged into the beginning of the instrument and is between 1.05 and 1.2 metres in length (crooked in F). The crook not only acts as a visual icon for the Vienna Horn but also has a very great influence on the properties of the instrument. As the crook can easily be removed on a Vienna Horn, and one can change between several differing crooks, one can very easily alter the character and properties of the entire instrument. The crook makes up one third of the total length of the instrument.

Before the introduction of valve systems the player had several crooks in differing keys, so everyone had become used to them from the days the Natural Horn. On the Vienna Horn hardly any other crooks are used today than those to pitch the instrument in F. In a few isolated cases a short A-crook is used. In any event, you can only play the natural tone series unless the three valve bows are also exchanged for shorter (compensated) ones. Here and there a straight Bb shank is used. This Bb shank is so described because it is too short to be bent into a bow. Today these two special items may be considered rarities.

The valves

A special marker of the Vienna Horn can be seen in its 'Pump Valves' (Pumpenventilen). They were developed by Leopold Uhlmann in the 1830s. The Vienna Horn is the only instrument which still features

these special valves today. On all other horns rotary valves are used. This is because pump valves would be very hard to make for a 'double' instrument, which must incorporate the double-stacking of the valvepipes. With the rotary valve it is possible to configure the valve so that a single rotor can be used for either of the two differing bore lengths.

The bore and internal diameters

In all horns the sequence of inner diameters is divisible into three stages:

a In a Vienna Horn the first conical section is about 150-300 mm long. The starting diameter is between 7 and 9 mm. On a double-horn the length of this section depends on the constructional detail of that make and model. The diameter however starts off between 7.5 and 8mm.

b The second section is essentially cylindrical. Its proportion of the total length of a Vienna Horn is about 43-48%. But a greater difference lies in the internal diameter. While Vienna horn's parallel tube diameter varies between 10.7 and 10.8mm (maximum 11mm), double-horns have a considerably larger diameter of 11.5 to 13mm depending on whether the instrument is 'smaller' or 'larger'.

c The third section includes the conically-expanding bell branch that flows into the mainly exponential-profile bell flare. Similarly to the second section, the bell 'branch' and the bell flare are more narrowly dimensioned than in a typical double-horn.

1.2.3 Properties that are the result of constructional peculiarities

As a result of the constructional properties outlined above, the Vienna Horn possesses special qualities which are decisive for both the musician and the listener.

Influences on the sound of the Vienna Horn:

a Tube length

Basically as a consequence of the length of tube, and indirectly as a result of the higher effort required to set the air-column in vibration, the longer air column will have a richer partial tone spectrum.

b Internal diameters

The narrower internal dimensions of the bore of the Vienna horn (compared with the double-horn) will have more overtones and will as a result sound 'brighter' or 'richer'. This fact is enigmatic to many people because one always talks of the full, saturated sound of the Vienna Horn while describing the playing of German colleagues playing double-horns as 'bright'.

An important characteristic of the Vienna Horn is its higher 'Spectral Dynamic'. This means that the instrument's sound colour can be changed to a greater degree freely and independently of the sound volume than is the case with the wider bore double-horn. This effect is a direct result of the narrower bore of then Vienna Horn and the resulting richer overtones and increased frictional losses in the tube's longer interior.

c The 'pump' valves

Because of the unusual location of the valve block in the air column of the Vienna Horn (proportionally much further from the mouthpiece in the Vienna Horn), the player is enabled to make soft and smooth slurs and legato. One pitch 'flows' into another. This 'interflow' between two tones is not however equally good at all pitches. Everybody used to think that it was mainly the 'pump' valves that allowed soft smooth slurs to be played. But research investigations have discovered the location of the valve block in the instrument is actually more influential. Nowadays problems caused by excess tracking of the valve plungers or other mechanical inexactitudes are no longer a theme with newer instruments.

With the double-horn's rotary valves there is always a short break or chop in the sound continuity. Although this break lasts only about 20-30 milliseconds it seems it is clearly perceived by the listener. This sound discontinuity is demonstrably less pronounced on the Uhlmann pump valve.

Safety and accuracy

Worries about safety and accuracy are the reason that many conductors, musicians and listeners (and above all horn players) reject the Vienna Horn. Perfection and safety are placed increasingly in the foreground; it is often less important how an instrument sounds than that the right pitch, rhythm and intonation are played. And safety and accuracy certainly are influenced by tube length. As the Vienna Horn is a very long instrument (3.7 metres in F), the fundamental tone lies very low and as a consequence, in the high range, upper harmonics (harmonics 10-16) lie very close together. For the Vienna Horn player this means that his lip embouchure must be more precise than that of his double-horn colleague. Playing in the high register on the Vienna horn requires rather more concentration and better working muscular 'motor-activity'.

The ease of changing the instrument's character with the help of the crook.

As the crook constitutes one third of the length of the instrument, the musician has the ability to entirely change his instrument by its substitution. The crook can strongly influence the sound, intonation and attack. And the playing perception of the musician himself will be influenced strongly as well. For example, if a horn is very hard to play with one crook, it may be easier with another. With a 'good' crook a 'bad' horn can be very much improved. Certainly a 'good' crook doesn't suit every horn corpus. And a particular 'good' crook will hardly possess every virtue. So the musician must decide for himself which crook to use in a particular piece. Some Viennese players always carry two crooks between which they choose depending on the requirements of the piece being played. The ability to change a large part of the instrument quickly and easily is a very considerable advantage.

Energy Expenditure

Playing the Vienna Horn takes rather more effort than the double-horn. This applies mainly to the first 15-16 milliseconds at the beginning of the note when the vibrations are being built up in the instrument's interior. Once the sound wave is established it needs only the energy to replace the projected sound (that is the vibrations that we hear as the instrument's sound) and the energy lost to internal friction within the instrument's tube. In contrast, for the high F horn (which has half the tube length of the normal F-horn) the required energy is at a minimum, as the so-called resonance nodes are much more easily revealed. As a consequence, the musician requires much less effort to set the air-column in vibration.

Volume and audibility

As the impression of loudness in horns depends as much on the sound colour as on the actual sound level itself, one can achieve the impression of a seeming 'fortissimo' at a rather lower actual sound level as a result of the high level of partials included in a Vienna Horn's sound.

Because of the higher partial content at the same actual sound level, the Vienna Horn is less 'covered' by other instruments. It is thus more audible in the total orchestral sound than a double-horn playing at the same sound level. On the other hand, in full 'fortissimo' (which is achieved at a lower actual sound level) the Vienna horn masks other instrument sections less than a double-horn.