

## PARTIAL SUCCESS

### Natural trumpet – the march forward

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A trumpet is a cylindrical tube, with a mouthpiece at one end and a flared 'bell' section at the other, which resonates when vibrating air column is passed through it. I will discuss three types of trumpet:—

i) the natural trumpet (without holes) – simply a brass tube as above, approximately 2.3 metres long (in D), with two bends; referred to as the 'holeless nat'.

ii) the natural trumpet with holes – similar to the natural trumpet, with finger holes drilled through tubing to adjust tuning; referred to as the 'holed nat'.

iii) the modern trumpet – a contemporary chromatic instrument, shorter than a natural trumpet (between approx 0.7-1.4 metres), with valves which change the length of tubing; referred to as the 'modern trumpet'.

The tessitura of the natural trumpet was divided into two sections:

*Principale* – the lower two octaves: for a trumpet pitched in D (DD fundamental), *d*, *a*, *d1*, *f#1*, *a1*, *c2*, *d2*, which can be played quite loud and was the register used for military signals.

*Clarino* – *d2* to *e3* (or higher, depending on the player) following the harmonic series, sounding like a slightly strange major scale with a *c3* and *c#3*. This register is played quieter, with an inbuilt 'chirruping' but a vocal quality.

Historically informed performance of early music has progressed immensely in the last half a century or so. One of the biggest challenges facing musicians at the beginning of this revival was the natural trumpet – simply a brass tube which resonates to the partials of the harmonic series (God's scale). The natural trumpet was extremely difficult to play because these partial harmonics are so close together, and the 11th and 13th in particular are out of tune with the temperaments used. Playing these instruments has been compared to trying to play golf on stilts.

This was a problem, especially when encountering the challenging clarino repertoire of JS Bach etc which is difficult enough on the modern 'piccolo' trumpet. To facilitate performance, players drilled vent holes into their instruments to adjust tuning and generally tame these characteristics. The first in the twentieth century was a three-holed system by the German maker Helmut Finke in

the early '60s, followed by a four-holed 'English' system developed in a garage in London, SW20 by Michael Laird in 1978. Both systems are in standard use today.

Because of tireless research, experimentation and refinement by players and makers, some players are now able to play these instruments without the holes. It is generally accepted that in the next 20 years, with the adoption by ensembles of friendlier temperaments, many natural trumpeters will be playing without holes. At the moment, however, the only place in the world to learn this art is the Schola Cantorum Basiliensis in Basel, Switzerland, with Jean Francois Madeuf, the only person teaching who has really cracked it so far.

Very few natural trumpeters can rely solely on work in that field and so need to play modern valved trumpets as well. To facilitate transition between instruments, the holed nat is designed to be closer in its playing characteristics to a modern trumpet (often using a modern-sized mouthpiece) than a holeless nat. Most trumpeters who own a holed nat have practised without holes because, despite the soul-destroying beginnings, it helps immensely with accuracy and gives an insight into phrasing, articulation and the possibilities (or limitations) of the instrument. Because of the similarities of the holed nat to modern trumpets, even if it is played without using the holes, the player lacks the freedom to bend notes sufficiently in the upper clarino register. For this, we need a trumpet built for the purpose, with smaller, lighter hand-made tubing and a large mouthpiece, some 10mm bigger (an awful lot when you consider how sensitive the lips are).

The larger mouthpiece gives more freedom of movement and allows more energy into the trumpet, which is absorbed by the stresses in the tubing, creating the *frisson* required to bend notes and resulting in a richer but quieter sound. With applied vocalisation and breathing techniques, the player creates the desired resonances within the body and head, making the trumpet effectively a glorified megaphone. The holeless nat feels like a very different instrument, requiring a Zen-like concentration on the sound and breath. The more one tries to impose one's will, the more difficult it gets. Played properly, the sound of the holeless nat has real 'soul'.

The quieter, chirruping quality of the holeless nat has a natural balance in ensemble, adding a golden sheen to textures with strings and winds, and it is a magical complement to voices. Skilful scoring and the abundance of

overtone in the sound allows separate clarino lines to be heard through more complicated musical textures.

An entertaining aspect the holeless nat is the spectacle of a player holding an instrument to his (or her) mouth with just one hand and no finger movement, the other placed casually about their person. Audience members and fellow performers often comment along the lines of: 'What, you do all that with just your mouth?' To which the reply is usually 'Well, you can sing, can't you? How do you do that?' So why isn't everybody doing it?

There are several reasons why we are unable to hear the holeless nat in public. The rarity of its use creates a chicken-and-egg situation for people likely to be inspired to learn it. Most baroque trumpeters are reluctant to learn the holeless nat. In the words of Ray Allen (my modern trumpet teacher at the RAM), when I mentioned learning the natural trumpet, he looked at me with incredulity and said, 'We have valves now, why make it more difficult for yourself?' It requires quite a leap of faith to spend time and money on equipment, lessons and yet more practice. Players may be worried about the possible adverse effects of using such a radically different mouthpiece. It took Madeuf about five years to adjust at the leading edge. I had about five months of hard labour with Madeuf's enlightened guidance and a couple of the students at Basel managed it virtually overnight. However difficult this transition seemed, the positive effects on the playing of modern trumpets (and the holed nat) were instant and significant for me.

In mainland Europe (not really applicable yet in the UK), if a trumpeter plays the holeless nat, he tends to be overlooked by fixers as someone who is incapable of playing anything else – a bit like saying 'You can climb a mountain so you can't use the escalator' or 'No holes, no gigs'. Although the trumpet profession is different abroad, an underlying prejudice exists. One can understand players wanting to protect their hard-earned work. I have gone to engagements in this country with both trumpets, played with no holes at first in the rehearsal and then offered the conductor a choice. Usually, they are pleasantly surprised and stay with it.

A few British trumpeters already perform without holes. David Staff, mainly with Jonathan Impett, has been playing classical repertoire with Franz Bruggen's Orchestra of the 18th Century (based in Holland) for the last 20 or so years (probably the current world record). Crispian Steele-Perkins has performed and recorded some works (including a stunning *The Trumpet Shall Sound* on the original c.1717 Harris trumpet from the Bate Collection in Oxford), sometimes playing a half-tone slide trumpet. David Hendry also plays some works holeless with the Gabrieli Consort. Notably missing is the main baroque clarino repertoire of JS Bach, Handel, Biber etc.

The pure intonation of the natural trumpet has interesting qualities. A major third, (for instance D-F#), will create a

resultant D two octaves below. Fifths are the same (lower note) and sixths (A-F#) result in a D (giving a triad from just 2 notes!) The prominence of these resultant notes from trumpets underlies the power of the sound. Most interesting is the fourth (A-D), giving a D two octaves below – the reason why it was considered a consonance 300 years ago and (with modern equal temperament) a dissonance today (Persichetti, *20th Century Harmony*).

According to Altenburg (publ. 1795), organs were originally, at times, tuned to the trumpet and other musicians would obviously then adjust to the ambient intonation. Within this tromba-centric system, woodwind players had simpler fingering than is required today to adapt to the industry standard Vallotti, which, ironically, was first published in 1779. As late as 1756, in Leopold Mozart's *Treatise on the Fundamental Principles of Violin Playing*, fiddlers were encouraged to practise pure tuning.

Temperaments, both human and tonal are a challenge in this next exciting stage of performance practice. Despite the ability to bend notes on the holeless nat, it is only possible to an absolute maximum of 45% flat and 15% sharp between partials (according to Dr Murray Campbell, Edinburgh University Acoustic Research Dept.). Trumpet-friendly temperaments are therefore essential. We will become as familiar with hearing them as we are now with the standard use of meantone in 16th & 17th century music. Ensembles will need valuable rehearsal time to adjust to these new parameters, something that the consummate musicianship of professional players will take in its stride. Audiences will need to cast aside expectations and listen with open ears.

The advantage of study at places like the Schola Cantorum is the time available, the presence of like-minded musicians, and the resources available to rehearse in great depth and address these matters. We have many opportunities to perform in mixed-instrument ensembles and it is taken for granted that the trumpets will not use holes. Solutions are found.

There is a Buddhist saying 'the only constant is change'. I find it inspiring that, although we have spent the last 50 years developing historically informed performance, there is still the enthusiasm for progress by searching backwards. String players are beginning to use unwound gut, more original temperaments adopted, and trumpets are sometimes played without holes. Mistakes occur – they happen to us all. Strings will break, pegs slip, notes split, reeds clog and voices dry up in the pursuit of the beauty we all love. We cannot let the fear of such mishaps interfere with our intent. Players and ensembles need to embrace the future. Sure, there will be the odd surprising moment – that is what makes live music so engaging. If we expected perfection, we would all listen only to machines!

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