

## Old Techniques to Evolve New Musical Expressions – Historical Bassoons and Their Reeds

Welcome to a short half-hour talk about reeds! Usually such conversations between players of double-reed instruments threaten to never end, and are total gibberish to outsiders. But today, thankfully, we get to finish after 30 minutes.

No bassoonist or oboist can escape reed-making, it is a vital part of our career. Our next gig or job might depend on that very thing that is stuck on the end of the bocal. That small piece of artfully transformed cane connects us in our reed-making fate, and obviously has the power to bring us together today.

So how do we get the perfect reed most suited to us? The centuries-old tried and tested method: we copy our best reed! And then we just need to stick to our measurements and repeat these, and all will be fine. And to get exactly the results we want we have to buy the best machines, not leave anything to chance, and at best try to eliminate entirely human error. After all, machines cannot produce faulty reeds, as they perform each task exactly the same, every time. Are you still having problems? Ah, that will be the quality of the cane, it isn't what it used to be.

And so goes the usual narrative when it comes to reeds.

William Waterhouse is meant to have said "the invention of the gouging machine was the death of reed-making". With all our useful machines and gadgets of today, surely we are better off than ever before. There's everything out there, all sorts of more or less useful tools to change a tube of cane into a playable reed. And as part of this package comes the promise of maximum reliability and perfection for *your* reed-making.

But do all these wonderful machines and precision extras really make our professional lives any easier? Do we really spend less time making good reeds that will last? Well, one thing is missing: apart from the odd instruction manual or some other kind of reed-making book, you cannot buy one thing – and that is the cumulative and collective reed makers' hands-on experience, as it has grown from generation to generation over the centuries.

As must be expected, each bit of new technology that comes onto the market means we face losing this knowledge completely. And because we lack the experience of our reed-making ancestors, we are instead consoled by a forest of metal we have become dependent upon, and which can influence the type of reed we play, and that not of our own free will. The machines used not only decide for us which type of cane to use, but what kind of shape and size we end up with, as *they* need a specific diameter or density to get usable results.

So if the style of reed is already chosen for us through the construction of the tools we use, what remains as our only choice in the matter, is which manufacturer of tools to buy from.

So how on earth did they manage in the past to play all that demanding literature, seeing as they didn't have the advantage of our advanced technology?

Until the end of the 18<sup>th</sup> century reed-making, as well as how to obtain cane material, was passed on solely by word of mouth. Only through the rise of printed didactic methods do we have a written archive of the old techniques. One of the first proper and still existing descriptions for the making of bassoon reeds was by Étienne Ozi in 1803, "Nouvelle Méthode de Basson", a work that was repeatedly copied and up-dated for decades afterwards. More in-depth descriptions followed, most notably by Joseph Fröhlich in 1811 and Carl Almenræder in 1842.

In all of these works, even the later ones, there are small pieces of information missing, which would not have been a problem in those days because the student bassoonist or oboist could simply ask his teacher for more information, as he would have grown up in the ancestral reed-making fold.

However, this half-hour won't be a history lesson, it will be more of a demonstration of alternative reed-making techniques.

### Picture of tools?

Firstly, a tube of cane was sawed to the correct length. There was no tube splitter, they used a knife. No gouging machine – they placed the cane in a gouging bed and used a hand gouger and a scraper. The binding was done by hand, and the reed was cut open with a blow to a sharp knife with a hammer. The bark was then removed with a knife using quill-cutting techniques, and a file was used for the scrape. How can such prehistoric methods keep up with precision reed-making, and why should we want to turn back the clock at all?

Cane is a natural material, no one piece is like another, and by using standardised tools and gouging machines there is no way we can get the optimum out of every piece of cane. There is no room to manoeuvre and to react to the differences in the material. With the standardised tools we use today, we end up with a production chain based on quantity rather than quality. Without the piece of cane that exactly fits the machines in size and density, the amount of reeds produced increases so that somewhere, at the end of the rainbow, we *will* eventually get that super-reed!

I am not saying that all the tools and machines we use nowadays are in any way bad or are a hindrance for how we make reeds. I only wish to give you an idea of how reliant we have become on the tools we use, and to make you, the reed maker, a more critical person who is aware of the many options that exist of how to make a reed.

Gouging by hand gives the maker a feel of the quality of the piece of cane they are gouging and can influence the way the rest of the reed is made. However, the maker has to learn to work precisely and slowly, as haste often can ruin a reed. Some tools like the guillotine have no influence on the final result, whereas others like the tube splitter cannot take the outer structure of the bark into account.

Not only were the tools used different, but also the method: a hand-gouger was only used on the inside of the cane, there was no gouging tool for the outside. So the profile, which is what we use to control the cane's vibrations and is today gouged on the outside of the reed, is located with hand-gouged reeds on the inside. In the conventional reed-type the layer of the longest fibres that vibrate along the length of the reed are to be found on the evenly gouged inside, whereas with the hand-gouged reeds these fibres are located just below the outer layers. Scraping or filing was *only* done on the outside to remove those stiffer, outermost layers to increase the proportion of the more easily vibrating fibres.

So not only is the method of manufacturing different, but also what is used of the raw material. Conventional reeds use only the innermost fibres, the white somewhat spongy layer the plant used to transport water. Hand-gouged reeds rely on multiple layers, from the ones on the outside that acted as the support structure to the stalks, to that same spongy layer of the conventional reeds.

That means each type of reed – conventional and hand-gouged – have *different* vibrational and tonal properties. Each has their own character, and their own advantages and disadvantages.

For instance, not only does the *type* of those long vibrating fibres have a fundamental effect on how long a reed lasts, but also on the reed's own frequency (that is: the time it takes for the tip to close or open completely). As the vibrating fibre layer is located with hand-gouged reeds much further towards the outside of the reed in comparison, the hand-gouged will need more time until its tip has shut, so it's frequency will be longer in spite of the use of the same shaper. The reed is consequently too low!

If I wanted to copy a type of conventionally built reed I knew well into a hand-gouged version, I would have to reduce my shaped cane at the first wire by approximately 10%.

Because a hand-gouged reed uses more of the dense fibres than a conventional reed it can quickly reach the point to be used in a concert, but the disadvantage is that it takes longer for it to arrive to a final, stable stage. Response is more varied with hand-gouged reeds, but generally, more direct, and you need less air. They can seem somewhat quieter than the conventional type, but the low and high

registers are equally good. Only the very highest, stratospheric notes are best obtained with a conventional reed, or with one that has more of the white spongy layer!

Nowadays, perhaps due to the influence of the early music scene, there is a new interest in hand-gouged reeds and their flexibility and variety of tone on a *modern* instrument. Reed-making is not a static art – the curiosity of reed makers will always add new techniques to an already large palette. Reed-making is also an extremely individual matter: each player has their own physiognomy and tone preference.

*Taste* also plays – and always has played – a part in what kind of reed we choose to play on, as well as what instrument we use, what music we play, and in which pitch and room we play in. And cane quality and availability does have an influence, regardless of the method of building, but less so than often assumed.

In the end, awareness of what tools we use, paired with a basic knowledge of the structure and life of the plant, will help us deal with the ever on-going choices we are faced with when building our next super-reed.