

# Brief Recollections of Different Collar Shapes

## **Stuart Young**

Every reed instrument follows a universal "cut" from the tip to the collar. This tapering cut is universal, with every member of the reed family utilizing it. There are many reasons and years of history behind the making of the modern bassoon reed, but one minuscule characteristic that sets a bassoon reed from the rest is its collar shape.



The **collar** is the area of bark between the first wire and the shoulder. As the vibrations travel up and across the blades, the collar defines the vibrating surface. Much like a brick wall, the collar stops a substantial amount of vibrations.

The first and second wires also share a role in dampening the vibrancy.

But why the shape? Over the past several decades, bassoonists and reed analysts have been experimenting with the collar dimensions to obtain a higher understanding for the acoustic effects in a reed. **Square collar** is the name I give for the most common collar shape of reeds. Having a square collar creates a "fixed" vibrating surface, making it the most effective at damping the vibrations. The square collar reduces the vibrating surface and creates a "mellow" tone. Defined by Lewis Hugh Cooper, Damping is used to characterize how much acoustic friction there is in the reed's vibration. In respected but simpler terms, "resistance" is the same acoustic characteristic as damping. The amount of damping depends on how deep the shoulder is compared to the blades.

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The square collar has proven to be the most effective in overall production of sound quality, and is widely used on bassoon reeds today. A case in point to note is that not all woodwinds use the square collar method — single reeds have their collar cut in a U-shape. Which raises the question for any reed analyst — why don't bassoons do that?

The concave, or rounded, collar increases the vibrating surface, and increases the length of the spine and has less damping (with only the first and second wires being the only damping points). Increasing the length of the spine allows for a better projecting and response in the high register.

An interesting account of a convex collar shape was published by The Double Reed, Volume 5, No. 2: 1982, in a document by **Gary Echols**. In his article, Echols mentions the effects of having different collar shapes, and provides handwritten images of his reeds. Echols claims that the convex shape provides more comfort and ease in the high register than when using the concave shape.<sup>2</sup>

## Gary Echols's diagram of Convex (Fig. 1) and Concave (Fig. 2) collars



As discussed earlier with damping, resistance is a key factor in designing collar shape. Resistance in the back of the reed affects the tone and response of the high register, and if adjusted poorly can result in an unstable, unbalanced reed. Thicker spines amplifies higher frequencies of vibration, which is needed for high register response. At the same time, a thick spine will diminish the low register's tone. Depending on either convex and concave collars, response and resistance in the high or low registers will be altered significantly.

### **Conclusion**

Square or round, concave or convex, the shape of the collar helps dampen the vibrancy. While the upper register is most supported by the spine, a defined collar cut is just as essential in supporting higher frequencies — all while reducing the vibrations traveling past the shoulder and first wire. Stuart Young Bassoonist and Reed Analyst Project Blue Studios, May 2021

#### **Footnotes**

Cooper, L. Hugh, *"Reed Contribution,"* The Double Reed, Volume 13, No. 3, 1990.

<sup>2</sup> Echols, Gary, *"Using a Curved Collar on Bassoon Reeds,"* The Double Reed Volume 5, No. 2, 1982.

Clarke, Dale, "*Points of Resistance on Bassoon Reeds*," The Double Reed Volume 23, No. 4, 2000.

Eubanks, Mark, "Advanced Reed Design & Testing Procedure for Bassoon," Portland, 1991.

