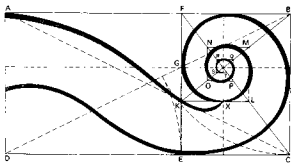


Maker's Bench

Designing a Personal Model — Old Masters, New Expressions

Part 2: The Shaft, Camber and Taper

by Roger Zabinski

In the first part of this article, I laid out a basic philosophical ideal, an approach for developing a new bow model from old master bows. Having considered the elements that go into the sculpting of the head, we will now continue our considerations with a discussion of the shaft.

The Shaft

Everybody knows how profoundly the bow affects the sound of your instrument; this common observation implies that the shaft is just as much an acoustic body as is the instrument. While difficult to quantify, it may not be excessive to say that the shaft vibrates as much as the instrument. At very least, the vibration of the shaft strongly influences the vibration of the string, therefore of the instrument. It is precisely the nature of this shaft's vibration that makes one bow sound so very different from another; its acoustics are substantive and proper to it, making it a unique acoustic member.

The shaft has two separate, but intimately related components to consider: the camber, or bend of the stick, and the graduation, i.e., how it tapers from end to end. Both of these markedly affect both the sound and playing characteristics of the finished bow. While it is true that the character of pernambuco itself has the single most powerful influence, these two factors of camber and graduation are powerful enough so that we can say it is these two that will define the degree of success of the bow.

Since we are speaking about developing a new pattern after historic models, the maker has to be aware of the habits of the period that he is emulating. Each epoch of bow making has an habitual way of approaching these two aspects, but not rigidly so. After all, we are dealing with the diversity of biological products and the human spirit, both of which bear an unending wealth of creative possibilities. Formulas are insufficient to satisfy the demands of art and artist.

The Camber

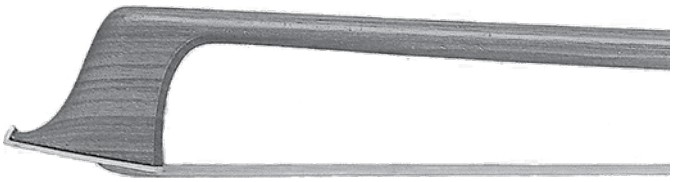
Over the years players have come to my studio and have said things like, "This bow does everything—it plays itself," or "My arm and this bow feel like they are one piece. It's like an extension of my hand; it makes me feel so connected." When a first-rate player comes and says something like that, I try to understand why. The only consistent thing I have found lies in the cambering; that it is smooth and even, with neither soft spot nor kink, and this with remarkable subtlety.

That being said, the ways are myriad that the camber can flow from end to end, and each approach powerfully bears its effects on tone quality and playing characteristics. Typically, the curve of a good student bow will slowly accelerate from the frog to the head, perfectly counterbalancing the increasing flexibility of the tapered shaft. However, on every fine bow I have ever seen, with rare exception, the camber is a bit flatter under the winding. This seems to hold true in every epoch of bow making.

The early 19th century French bow bears an interesting, additional deviation. As a norm, the camber of these early bows is a bit flat four to six inches behind the head. Since my model is that of the early 19th c. French, the cambering I use follows this detail. In contrast, makers of later periods, as the Lamy, all but universally add extra curve behind the head. The images provided below show the differences of approach.

The Taper

As is true of the camber, you can see many approaches to the taper of the shaft depending on when the bow was made; these too, powerfully influence sound and playing characteristics. His-



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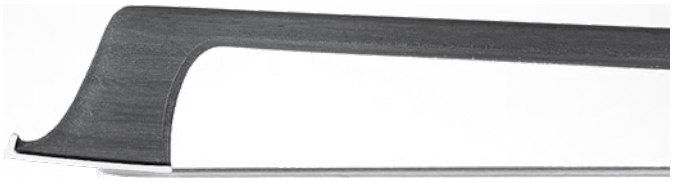
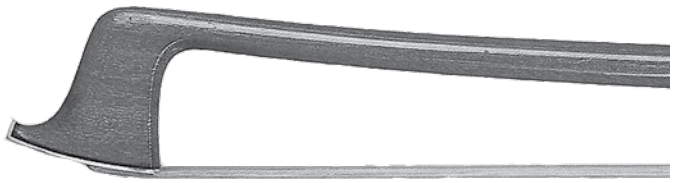


Roger Zabinski



Alfred Lamy

torically, there are two broad approaches that makers have taken: either make the thickest part of the shaft directly under the winding, slimming down from there to the head. Or he can put a "belly" in it, i.e., a bit slimmer under the winding and increasing the diameter, sometimes even as far as the middle of the shaft, them slimming again to the head. The early French makers seem to exclusively use the former approach; the earliest example I have seen of the "belly" approach was a Joseph Henry, ca. 1860. By the early 20th century this "belly" approach became the norm.

Though following the early 19th c. ideal, the maker has yet to choose how rapidly the shaft tapers. Of this early time period, the graduations will drop between 0.25 mm. and 0.9 mm., or more for the larger bows. The completed graduation is decided by a number of factors: the strength of the wood, its density, the type of sound the maker wants to develop, or the tastes and desires of the one who commissions the bow.

There is reason to believe that the early 19th century graduation closely approximates a mathematical model; a graph of these graduations will very closely follow a parabolic curve. I believe this is so, not because they took pencil and paper and calculated a "perfect graduation." No; these makers were fine craftsmen and artisans; due to their practical methods, a direct hand and eye execution automatically generates the mathematical model. For those of you who are interested, you can find a fuller explanation of this observation on my website blog http://www.zabinskibows.com/zabkinski-blog/.

In a third and final part of this article we will conclude with a discussion of the frog and the adjuster button. I will close the article with a few final comments.

Roger Zabinski works in Minneapolis and has made over 780 bows. He has won numerous awards from the VSA, including a Gold Medal for his violin bow in 1986. In May 2011, he was elected a member of the Entente Internationale des Maitres Luthiers et Archetiers d'Art.