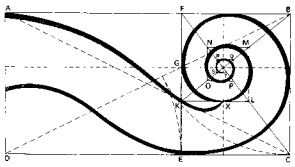


From the Maker's Bench

A Few Notes on the Bass Bar

by Laurence Anderson

"Perhaps no part of the violin has been more assailed by the inventors of vagaries applied to the violin than the bass bar."

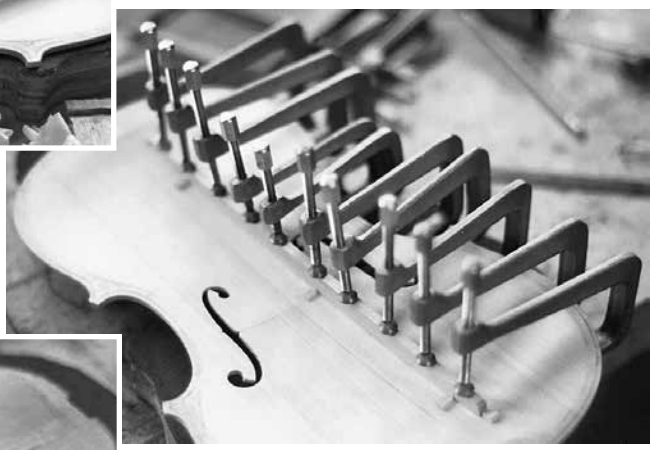
Edmond Heron-Allen 1884

What Heron-Allen observed well over a hundred years ago still holds true today. No single component of the violin has evolved so much and has been experimented with so often as the bass bar.

The bass bar is the long narrow strip of wood, glued to the inside top of the violin underneath the left bridge foot, running parallel to the G-string. Its length is in proportion the length of the instrument and its position is determined by the width of the instrument and the position of the bridge.

Measuring the top to position the bass bar

A bass bar ready to be fitted to the top



Gluing the fitted bar to the top

A finished bass bar

The function of the bass bar is to transmit to the entire top plate the vibrations created by the left foot of the bridge and to prevent the top plate from entering into a series of segmented vibrations. It works in tandem with the sound post, which communicates to the back plate the vibrations of the strings and keeps the top and back plate vibrating in the same phase.

The bass bar does not, as many assert, serve to strengthen the arch. A well-carved arch of seasoned spruce should be able to support the tension of the strings on its own. A weak arch will collapse even with a strong bass bar.

A modern violin bass bar is about 270 millimeters long, 5.5 millimeters wide and 11 millimeters high. Bass bars for violas, cellos, and basses are proportionally larger. A bass bar that is too long dulls the tone; too short and it fails to efficiently direct the vibrations. The highest point is in the center, it drops off rapidly to about 8 millimeters then continues with a long graceful sweep ending at about 2.5 millimeters high. Violins with a high arch have a proportionally lower bass bar and violins with a low arch have a higher bass bar.

The thickness of a bass bar can vary between 5.5 and 6.0 millimeters. The shape of the bar has a more dramatic effect on the sound of the instrument than the thickness. When matching the bar to the instrument, violinmakers usually experiment more with the height and sweep than the thickness.

Original bowed instruments had no bass bar. Instead, makers left the left side of the top plate much thicker than the right side. Bass bars did appear in the earliest violins and over the centuries, as the pitch of a tuned violin has risen, they have evolved to counter the increased tension of the strings. The original bass bar for a violin of Nicolo Amati (1596-1684) was 130 mm long and 3 mm high. The bass bars of his earliest student, Andrea Guarneri (1628-1698) were 155 mm long and 5 mm high. The only instrument of Stradivari that retains its original bass bar is the Medici tenor viola of 1690. Records do show that his original bass bars were 230 mm long and 6-8 mm high. The bars of the 16th and 17th century Italian instruments were not nearly so tapered; they had a gentle sweep dropping only a millimeter or so at the end. By the middle of the 19th century, the original bass bars were, one by one, replaced by the longer modern bar.

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Many of the old Italian instruments are graduated so that the tops are slightly thinner on the bass side of the instrument. Contemporary makers argue whether this asymmetrical graduation was the original intent of the maker or the result of the scraping to the top by restorers who replaced the original bass bar a century later.

Bass bars also vary with the age of the instrument. The bass bar on a new violin, with a stiffer top, is slightly shorter and straighter than the bass bar on an older instrument with a more flexible top. The wood for the bar on older instruments is somewhat stronger with slightly tighter grains than the grains of the top plate. With new instruments, the grain width on the bar usually matches the grain width of the top plate.

Fitting the bass bar is one of the most technically challenging aspects of violin making. Not only must it be perfectly positioned it must be carved to conform to the curvature of the plate and fitted with slight tension at the ends. A poorly fitted bar will distort the top.

In 1852, the first American patent for a bass bar was given to William Tilton for a design in which a second bar was fixed to the plate extending from the top block to the end block. A quarter of a century later, Stone & Meeson received a patent for an elliptical tension bar. About every 25 years since a patent has been given for one kind of bass bar or another. None has ever gained acceptance. The modern maker Peter Zaret currently is attracting some attention with a new patented design, much more geometric than the traditional bar, it decreases in a series of steps rather than a gentle sweep.

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