

## Guitar bridges

As you noticed, the soundboard of the guitar is perfectly flat and of constant thickness, opposite to a violin soundboard which combines the volume given by the arching and the thickness of wood. The function of the bracing is to modify the density and the mass of this flat soundboard at specific places, to allow vibrations to express at their best, thus giving the instrument its balance, range and volume. The bridge is not only a useful ornament for fixing the strings at the right place, but in fact the keystone of the soundboard + bracing architecture, an important and technical external element which will pull the soundboard outwards and oppose the action of the braces inwards. It will thus actively take part in the luthier's quest of good sound.

On original bridges of baroque guitars that we have observed, the characteristics are the same : a thin bridge, glued on the soundboard, similar in most cases to the concept of lute bridges. It is made of hard stringy wood, often from fruit tree, more often made of two different parts : a kind of deck with a good contact surface with the soundboard, and an upper part much narrower, pierced with small tunnels for fixing the strings. A harder material (ebony, ivory, shell, flint, etc.) often caps the top of this bridge to oppose the wear caused by the strings on the angles. As early as 16th century, two small marquetry patterns, "moust" frame the bridge and enhance its action.

At this location on the guitar, the soundboard is free of any brace, and the bridge tightens it, giving it some spring and mass. Early bridges are pierced with simple holes for the strings, one hole per string, but soon replaced, in France, by kinds of tunnels for both strings (courses), dug in such a way as the player can, to some extent, adjust the height of his strings.



Small holes for 10 strings on a baroc guitar

During the 18th century, no real change is observed in guitar bridges ; instrumentalists play the guitar, either equipped with gut strings on a glued bridge, or -but almost only in Italy - the " chitarra battente " equipped with metal strings, with a mobile bridge like a mandolin's bridge, a folded soundboard and the strings attach



Mobile bridge for battente guitar

At the end of the 18th century, a big change occurs in the guitar with the 6 strings around 1780. Silk strings covered with metal will give the player a louder volume and a widened range. Luthiers will make those new 6 single stringed instruments and bridges will develop with the rest of instrument making. Those strings, more resistant and louder sounding will therefore bring about several great changes in guitar design. First of all the frets which will no longer be mobile and made of gut, a material too fragile for those new strings, but made of bone, then silver or brass, and finally after 1830 of nickel silver. Then a new brace appears just above the bridge, except in Spain where luthiers stick to the fan shaped bracing, but the important change will be the bridge itself.



parisian bridge, circa 1765

For luthiers, the choice of guitar bridges is closely connected with the bracing of the soundboard : they are the complement thereof. From the 6 strings, they will evolve in several directions according to the wishes of the composers : France, England, Italy, Germany, Russia and Austria then Spain. In each of those cases, the bracing is modified according to the bridge, or more accurately the bridge is adapted to the bracing style of each school.

In Italy, we can notice two very different cases : Naples and their glued bridges, framed with large moustaches adding density to the soundboard, and as early as 1800, they pierce the soundboard whereas in the north, Milan, Turin, the bridges are glued without holes, wider and longer forming a kind of external brace.



Turin style



Naples style

In France, Pons then Lacofe will install bridges with holes, with small moustaches, but these luthiers will add a brace located between the bridge and the low end of the soundboard, with quite a special design, which will stiffen the soundboard and allow a better sound production. It is quite obvious that French luthiers of that time, so rich with music and changes, will be influenced by their Italian colleagues, as much in the instrument making techniques as in aesthetics and this new brace that other luthiers will adopt later replaces the large and decorative moustaches of Neapolitan guitars.



Mirecourt style before the nut



Parisian style with nut



Mirecourt style with nut

After around 1815, an ultimate change modifies the bridges : the mobile saddle which allows adjusting the height of the strings, therefore the accuracy and the musician's ease of playing. In Austria, Germany and Russia, bridges and bracing will follow almost the same pattern as in France and Italy. But luthiers will look for other solutions and modify bracing, bending and thickness on the soundboards and the backs alike. They will not use the system of mobile saddle ; the bridge with small moustaches compensated by thicker braces will have a stable height which will not be modified and the whole neck itself will be adjustable by a screw in the heel.

In England, with the influence of Panormo, the bracing remains like in Spanish guitars, the " fan shaped bracing ", but strangely, the bridges are still pierced with small pegs that firmly tie the string to the soundboard with such precision that the holes come in between the elements of the bracing with great accuracy.



Stauffer style with a very small nut



Panormo style without nut

In Spain, the special setting derived from the lute will be kept, with a 5 or 7 element fan shaped bracing and a glued bridge, wider and longer, and this always applies to all models from all luthiers. But of course this is not in systematic usage, and luthiers have played with "the exceptions that prove the rule". So, Pages decorates his guitars with beautiful and rich moustaches with inlaid mother-of-pearl ; Monzino of Milan puts a pierced bridge with large moustaches and Fabricatore in Naples puts a bridge for tied strings without moustaches. Later, Fleta uses a parallel bracing under a wide and flat Spanish bridge.



spanish bridge

The combination bridge + bracing has always allowed luthiers to influence the soundboard, straining it at strategic places, leaving it free at others. Since the Torres experiment with his cardboard guitar, there is no need to prove that the soundboard, its bracing and its bridge are the essential elements in the tonal quality of a guitar.