

Secondary floating-bridges regulate playing action and scale-length on Lyre-guitars and other instruments.

I was asked recently by Taro Takeuchi (Takeuchi, 2015) to review the problem of a low playing-action on an Apollo Lyre-Guitar, one of a group of instruments he was due to play and record for the museum owners. The instrument was in very good condition and the neck and general structure showed no signs of warping or distortion, yet the bridge configuration would not allow a high enough action for efficient playing. The bridge was a tie-on type similar to bridges used by maker Alexander Barry (1777 - 1841) and others. It had a main rectangular block with holes drilled through, similar to an historical lute bridge, a flat top, an 'apron' extension behind and pointed ends.(FIG 2). Taro suggested that there was some feature of the bridge that was unknown or unconsidered.

I had been conserving another Apollo-Lyre Guitar of similar design belonging to Taro and I made some accurate measurements of the scale-length, fret arrangements and the action. I applied a straightedge along the frets surfaces towards the bridge face and found that the top of the bridge was only about 1mm higher than the projected straightedge. It was obvious that a working action could not be achieved by just tying strings on to the low bridge. The bridge appeared to be complete and original with its paint intact and matching the rest of the guitar. There were no signs of a supplementary block or saddle on the bridge and although the top-nut had been reduced in height slightly it did not account for low action overall, or offer a solution to the mystery.

The scale length on Taro's own instrument was unusual, being 8mm longer in the 12th fret-to-bridge section than the nut-to-12th fret section which measured 220mm. The (original) ivory fret placements were accurate to within normal tolerances. It is normal to allow a 'compensating' factor in bridge placement, perhaps 1-4mm at most extended string-length distance after the 12th fret, to allow for regulation of string behaviour when fretted at higher positions. However, 8mm extra length seemed inconsistent with well-known and applied experience.

Taro mentioned that when he purchased his instrument there was another separate 'floating-bridge' associated with it. The extra bridge was suspect and the vendor presumed it to be a late addition fitted for reasons unknown. I remembered seeing a similar secondary bridge on an 'arch-harp-lute' instrument in Edinburgh, Reid collection No;306. (Edinburgh University, 2015) and presumed it to be a spurious feature as there appeared to be no corroborative examples. Further research revealed a 'Lyre-Organisée' wood engraving in Vulpani's book illustrating an unusual form of Lyre instrument with three necks(!) and an small 6-key keyboard thrown in, supposedly designed by Adolph Ledhuy around 1802. (Vulpani, 2007). The engraving shows a typical fixed-bridge design, but with small secondary bridges in front, over which the strings lie. The bridges are apparently thin and slight with the main fixed-bridge taking all the string-tension. (FIG 1)

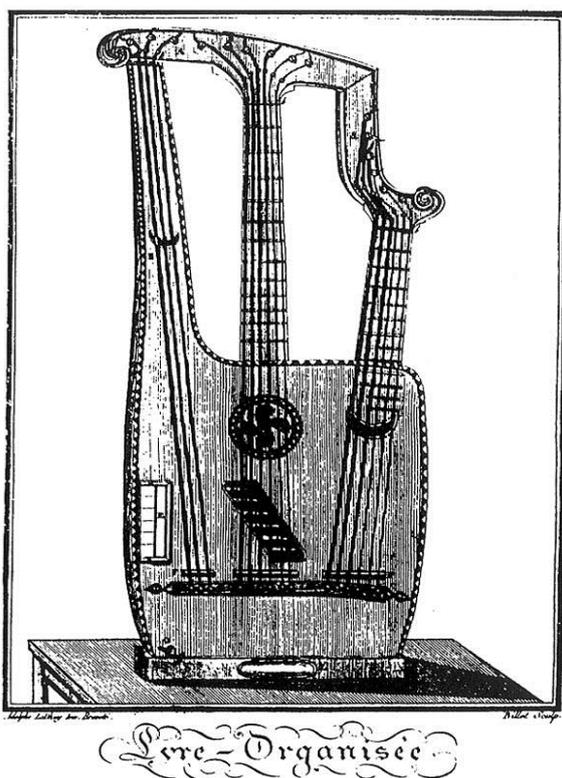


FIG. 1: Lyre-Organisée



FIG. 2: Apollo Lyre-guitar bridge,
about 140mm long

In the case of Taro's own instrument, a thin secondary bridge of 6-10mm thickness placed in front of the fixed-bridge, would be quite feasible and could be adjusted in height to give an appropriate playing action, simultaneously correcting the string vibrating-length. The museum examples could probably function in a similar way, but precise measurements are needed to verify the theory that secondary floating-bridges were also used on those instruments.

Further thought about secondary bridges raises questions about their possible use on other 17th, 18th and 19th century stringed-instruments and guitars more generally. The modern classical-guitar bridge with its distinct 'tie-block' and a 'saddle-block' sections has a form that suggests it may have evolved from the two-part bridge arrangement as discussed. Although it is accepted that fixed-bridges were commonly used on early lutes and guitars: is it possible that small secondary-bridges were employed to regulate string-length and action when other adjustment options were not available? Old guitars presented for restoration sometimes have apparently incorrect bridge placements and heights that could be mistakenly diagnosed as accidental or careless work. Could the unusual placements and heights be deliberate? Could the secondary-bridge system apply to other fixed-bridge forms such as those used by Panormo or to 'moustache' bridges commonly seen elsewhere?

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