

Below Bridge Bars in Lutes - A Missing Link?

Over the course of the years, I have come across three examples of instruments - an ud, a mandolino and a guitar - with barring systems that include a full length, transverse bar located between the bridge and bottom of the belly. These bars, unlike the small bass bars often found in surviving lutes of the 16th and 17th C. are of substantial depth - comparable to the main bars supporting the belly.

Sketches of the barring arrangements on these instruments is as follows:

Fig. 2 - North African Ud, date unknown but probably late 19th early 20th Century (author's collection). See also Comm #75.

Fig. 3 - Mandolino by Giovanni Guiseppe Fontanelli, Bologna 1736.
Charles van Raalte Collection, Kilmarnock, Cat.#39

Fig. 4 - Guitar by Grobert, Paris, early 19th C.
Musee Instrumental du C.N.S.M. Cat.# E.375 C278.
(See also note 1)

These below bridge bars may be just another form of bass bar producing a similar acoustic effect.

Fig 5 illustrates one of the classic forms of late 16th C. barring found on a tenor lute by Michael Harton, Padua 1599 (see note 2). The distance between the centre of the rose and bottom of the belly is divided into 5 equal parts. The first two parts measured from the bottom of the belly are, in turn, divided into 3 equal parts. The bass bar is located on the first of these three parts and the centre of the bridge on the second.

Comparing this layout with that of the ud in Fig. 2, it can be seen that there is close agreement in the barring arrangement and that the below bridge bar of the ud is in the same relative position as the bass bar of the lute - suggesting that the two bars perform basically the same acoustical function. However, the physical differences between the bars - in particular, the structural significance of the full length transverse bar - might suggest that the function of this bar was to effectively shorten the vibrating length of the belly below the bridge - equivalent to lowering the bridge position.

I am not aware of any surviving European lutes that are fitted with these full length bars but one might speculate that the modern ud, representing as it does an unbroken tradition extending back to a time predating the European instruments, may still be barred today according to earlier traditions copied in the early lutes of Europe.

The geometry given by Figs. 2 and 5, locates the bridge at 1/6th of belly length. In Comm 1 and 196 it was proposed that some lutes of the early 16th C. might have been constructed with bridges positioned lower than this at 1/8th belly length i.e. if the vibrating length of belly between the centre of the rose and the bottom of the belly is divided into 5 parts, then the bridge will lie on the first part and the distance between the centre of the rose and front edge of bridge will be 4 parts. (See Figs. 6 and 7)

It was further suggested in Comm 196 that the earliest known design of lute given by Henri Arnault de Zwolle c1450 which, from its external appearance,

seems to have a bridge located at 1/6th of belly length, in fact (if the presence of the large bottom block is taken into account) had a bridge position equivalent to 1/8th of the vibrating length of the belly. (See Fig. 1). The bottom block is a redundant feature and its elimination by the 16th C. luthiers might have led directly to a low bridge position lute design. This block is not a feature of any of the surviving lutes from the 16th C. as far as I am aware.

Returning to Figs 2 and 5, if the distance between the centre of the rose and the front edge of the bridge is divided into 4 parts then it will be noted that the below bridge bars are located 1 part below the bridge which is the relative position of the edge of the bottom block on the Arnault de Zwolle lute.

Also, note that the shape of a typical bass bar is curved where it meets the edge of the belly - as if its original purpose was to re-define the lower edge boundary of the belly.

Perhaps the bottom block, low bridge, below bridge bar and bass bar are all features of lute design developed one from the other - a kind of Darwinian evolution of lute design?

The instruments represented in Figs 3 and 4 are not lutes but are related within the same organological classification and, therefore, may be of some relevance to this discussion.

Applying the same geometrical analysis to these, we find that the below bridge bar on the guitar is located in relatively the same position as that of the ud.

The bar on the mandolino is located at 1/8th belly length above the bottom of the belly - quite a bit higher than that of the ud. The bridge location is however, in the same relative position as that of the ud. (The position of this bar was measured through the soundhole, the rose being missing. I assume that I correctly recorded this measurement to represent the true bar location)

Conclusions

Based on the sketchy evidence presented here, it might be concluded that there is a connection between the design of lutes with high and low bridge positions - the link being provided by the presence of below bridge bars.

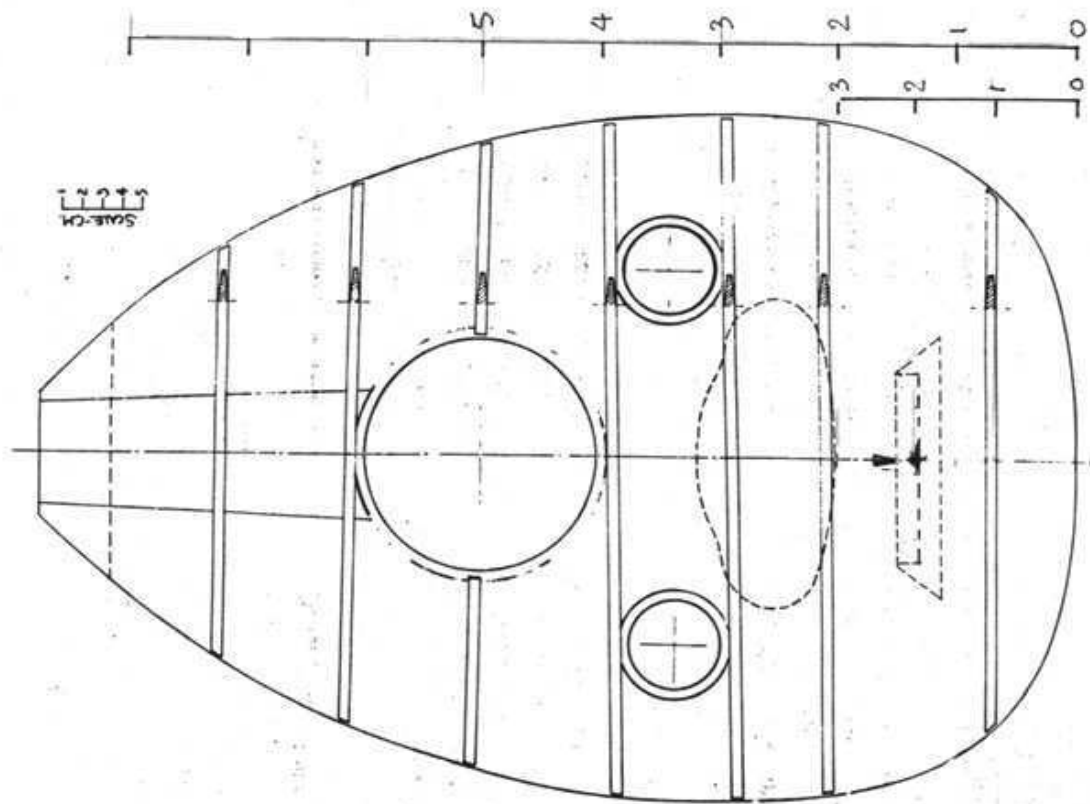
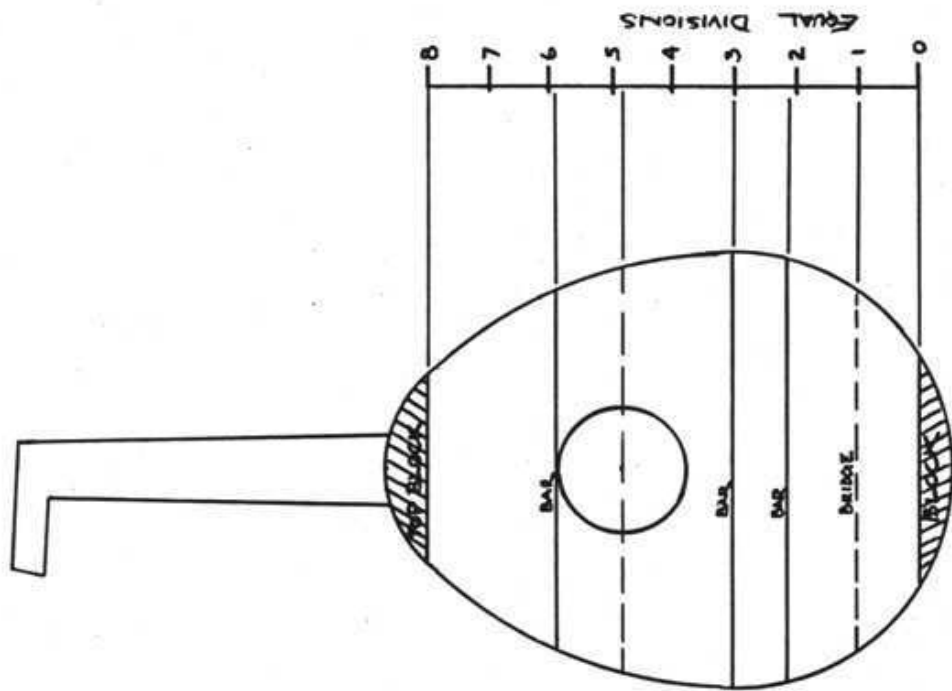
I am not certain about the relative acoustical implications the various arrangements of bars and bridges discussed. However, it can be stated that bridge position will influence "tone colour" as it determines the relative plucking point on the strings - a high bridge position resulting in the strings being plucked closer to the bridge than those associated with a low bridge.

Low bridge bars on lutes (and other related instruments) may have been introduced, therefore, to create instruments with the characteristic "tone colour" typical of a high bridge instrument but with the acoustic performance more closely associated with a low bridge position.

I would be interested to learn of other examples of instruments fitted with below bridge transverse bars.

Notes

1. Detailed drawing by Pierre Abondance is available from the Societ  des Amis du Musee Instrumental du C.N.S.M. 14, rue de Madrid, 75008, Paris price 100 F.F plus post and handling.
2. See "On the Construction of the Lute Belly", Friedmann Hellwig GSJXXI p129



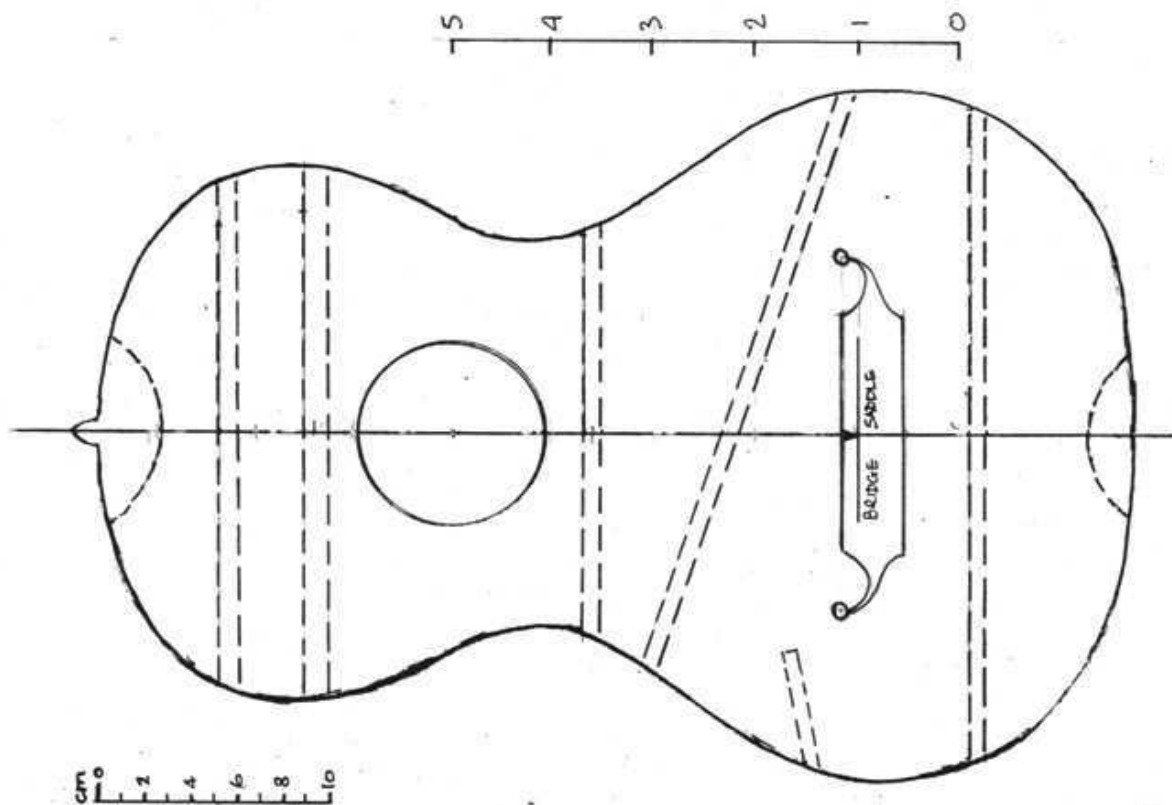


Fig. 4

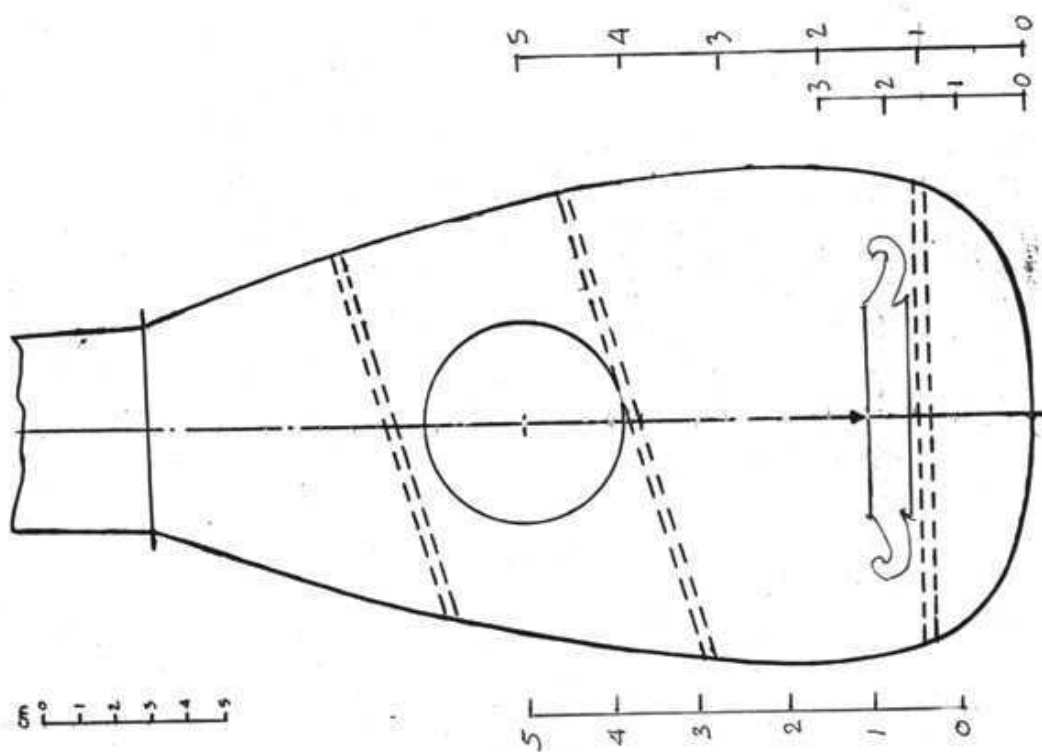


Fig. 3

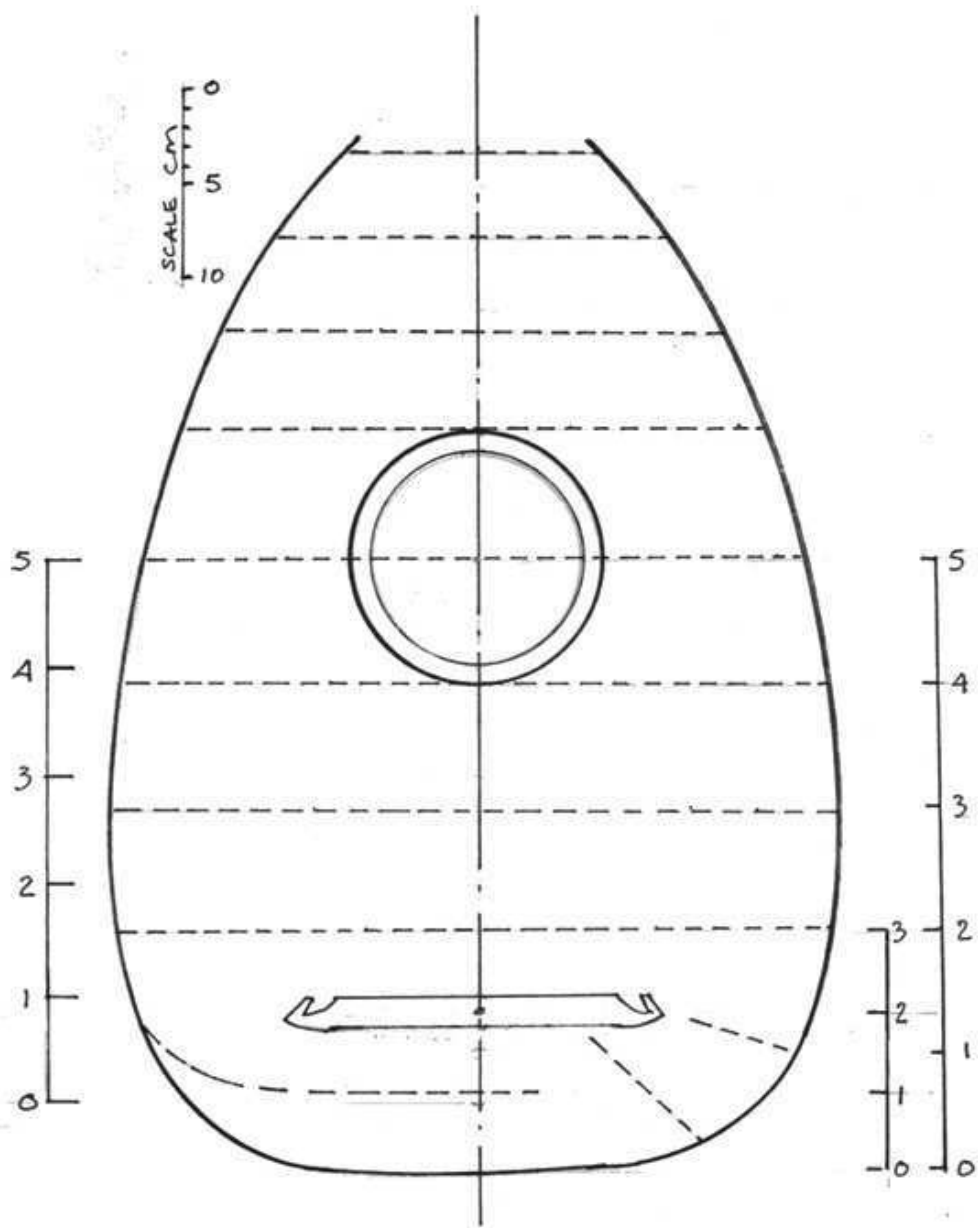


Fig. 5



Lute Player - 'Musica Getutscht', Sebastian Virdung, 1511

Fig. 6

— ORIGINAL BAR.

- - - ORIGINAL BAR, ESTIMATED POSITION

- · - - BAR, LATE ADDITION

LUTE BELLY BY LAUX MALER - CAT # M1.54
GERMANISCHES NATIONALMUSEUM, NUREMBERG

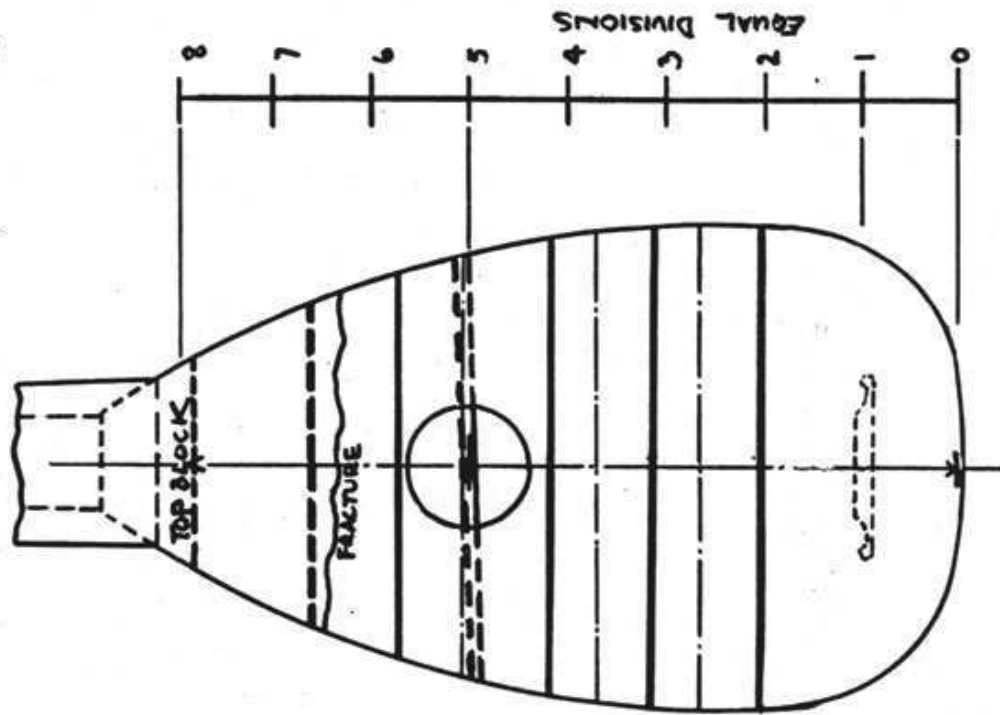


Fig. 7