Taking Care of your Lute

The many surviving documents and pictures, especially from the 16th and 17th centuries, suggest a widespread existence of the lute and similar instruments at that time. However, if one were to count the all the instruments which have survived the test of time, the number would amount to little more than 500 examples.

One reason for this incongruity among others is the fragile nature of original lutes. They tended to get damaged or destroyed far more easily than other instruments. The lute makers of the time tried to create the best sound possible by constructing lutes from thin, delicate materials, an approach which most modern lute makers also take. For this reason, lutes are glued together with animal glues and often finished with traditional oil or spirit-based varnishes, with all their advantages and disadvantages. If one wants a lute to last a long time, there are some basic principles regarding maintenance and care one should bear in mind. These principles can naturally be applied to other instruments, too. Adhere to these principles and you will hopefully avoid subsequent problems.

1. Humidity

Extreme changes in humidity can the pose the biggest threat to your instrument. It is important therefore to be aware of this problem.

Wood increases or decreases in volume as humidity rises or falls. No treatment of the wood can prevent this. The process can be slowed down, but it cannot be stopped.

The main problem is the change in size of the wood grain, depending on its direction. While the size barely changes along the grain, change running across the grain could be considerable.

The difference in the rate of change is the biggest problem in the case of lute and guitar soundboards, because of the transverse bars glued across the grain on the underside. While the soundboard can shrink with a decrease in moisture, the length of bars is almost constant. The tension between the soundboard and the bars could therefore cause it to crack along the grain or cause the bars to come loose from the soundboard. Even with extreme care you cannot hope to preserve an instrument where the relative humidity ranges from 25% to 100%.

Earlier lutenists like Thomas Mace obviously suffered from the same problem of high humidity. In his book ‘Musick’s Monument’ (1676), he recommends keeping your lute in a bed.

> *And that you may know how to shelter your Lute, in the worst of Ill weathers, (which is moist) you shall do well, ever when you lay it by in the day-time, to put It into a Bed, that is constantly used, between the Rug and Blanket; but never between the Sheets, because they may be moist with sweat…*
>
> Thomas Mace, ‘Musick’s Monument’, 1676

Our problem is just the opposite. Modern houses are well insulated and most have central heating. The central European climate is also is much drier, especially in winter. Humidity levels reach their lowest on frosty, sunny days, when there is a temperature inversion.

I can only recommend that the owners of lutes and similar stringed instruments buy a hygrometer and try to control the humidity in the room where the instrument is normally kept. Cheaper digital hygrometers are not reliable and can often show a false reading. Hair hygrometers are better, though from time to time they need some maintenance. The hair bunch should be cleaned with a hairbrush. Wrap the hygrometer carefully in a wet cloth and wait about an hour. The level of humidity should be about 100%. If not, adjust it with the screw.

An optimal level of relative humidity is between 60% and 80%, although a level of around 50% poses no threat to the instrument. Bear in mind that the term “relative” means the humidity as

affected by air temperature. If, for example, the cool air in a room is warmed up, the relative humidity decreases dramatically. A fundamental mistake is therefore to imagine that opening a window (especially on a frosty day) will cause humidity to increase – quite the opposite! As the cool air warms up, the relative humidity falls, sometimes to as low as 25%. Such a drop in humidity could have disastrous effects on any wooden object.

If the humidity falls below 45% you should use a humidifier in the room where the instrument is stored. Try also to find the storage place rather closer to the floor than, say, on top of the wardrobe, where the temperature is usually higher.

The reverse problem is when relative humidity levels exceed 90%, which usually happens on rainy days and in cool rooms (castles, churches, etc.) in the summer time. Minor alterations to the soundboard etc. can lead to warping and in turn to damaged or broken bars. Furthermore, the action can become higher and the pegs can become difficult to turn. You should not to store an instrument in such a room longer than is absolutely necessary for your musical purposes.

Minor changes in humidity (within the given limits) should not pose a great problem. Effects caused by changes in humidity can be somewhat reduced by wrapping the instrument in a cloth.

2. Cracks

Cracks, chiefly in the soundboard, are usually caused by changes in humidity or by impact.

This may not necessarily be such a tragedy, as even with cracks you can continue playing, providing no other alterations occur. You can cover the crack with a good quality thin plastic tape (which is also a good solution for later repairs). A loose bar inside is usually more trouble, because it frequently causes buzzing, sometimes only on a certain tone. A loose bar can be detected by pressing down *gently* on the soundboard around the edges. You will often hear a creaking sound at a certain point. In this case, repair work is necessary. Similarly, if a crack appears around the area of the bridge and it is affected by the tension on the strings, the instrument must be repaired immediately.

3. Moving the instrument

If the instrument is not in the hands of the player, the best place for it is in its case. If you must lay it down anywhere else, lay it on its strings. Due to the shape of a lute, it would be sheer foolishness to lean it against the wall.

Novice theorbo players especially should check the size of doorways before transporting their theorbo in haste! Be careful also if the room you are playing in is cramped or confined.

4. Instrument finishes

Traditional varnishes are usually sensitive to spirit, even in the form of distillates. (Wine and beer do not such a problem, but try to avoid spilling these on your instruments, too!)

Some owners try to polish their instruments with oil or wax preparations. I can only advise against this. Oils penetrate through the microscopic cracks in the finishing coat and are absorbed by the wood. The surface quickly becomes dull, which means applying more and more of the preparation until it no longer has much effect.

If the instrument gets dirty, you can clean it with a damp cloth and a drop of detergent. Afterwards, rub it dry. Larger defects in the finishing should be discussed with a specialist.

One should pay especial attention to the soundboard on lutes. Traditionally, lute tops were not varnished but sealed either with oil-based varnishes, waxes or with egg white. Modern lute tops are

usually lightly varnished to protect against soiling, especially caused by the little finger of the right hand being placed upon the soundboard.

You can clean a dirty soundboard to some degree using white spirit or pure turpentine oil, neither of which is particularly aggressive. Again, leave the larger defects to a specialist. Do not use wax polishes to clean the top. If the soundboard becomes clogged with wax, you will be unable to glue the wood again properly if any cracks appear.

5. Pegs

Every peg has its own hole, so avoid getting the pegs up (which is why I usually number them).

If pegs no longer turn smoothly or they become stiff, a thin coat of the dry soap rubbed onto the shaft should help. If a peg slips too much you can use chalk, but do this with care. I cannot recommend you use toothpaste or other such commercial pastes for violin pegs. Lute pegs are generally thinner and longer than on bowed instruments and you can end up destroying the shafts if you apply a more aggressive paste to them. For a peg to work well, the shaft must be perfectly rounded and tapered precisely to fit more tightly into the larger hole than the smaller one. "A good pegs doesn't need the help of a tuning fork", as the saying goes. Some lute players try to improve the peg shafts, which can be necessary from time to time. However, without the proper know-how, it is better left to a specialist.

In order to assist tuning, it is important to study the way in which the string is wound upon the peg shaft. This is explained in detail later.

The diameter of the string hole should be at least 0.3mm bigger than the diameter of the string. It can be enlarged quite simply using a standard drill bit. This problem often occurs when using gut basses on theorbos and archlutes. Otherwise, the 1.2mm diameter drill bit I use is big enough.

6. Strings

A topic regularly discussed by lute players is the correct choice of strings, especially by those players concerned with authentic interpretation. Indeed, this topic seems to be more relevant to lutes than any other stringed instrument.

Lute strings in general have a lower tension than nylon strings on modern guitars and other stringed instruments. Table 1 below shows the modern standard string tensions for lutes.

	1st course	2nd course	other courses	octaves
Renaissance lute	36 N	30 N	28 N	26 N
Baroque lute	37.5 N	32 N	28 N	26 N
theorbo	35 – 45 N	*all strings*	"	
archlute	*like*	*Renaissance lute,*	*diapasons*	ca. 36 N
guitar	40	others	32 – 35 N	

Tab. 1

The shorter the string length, the lower the string tension. Smaller lutes will have a higher string tension (especially for the left hand) than larger ones, if the same tensions are used.

Some players use different tensions according to their own experience. Do not experiment too much with string tensions if you lack experience. Keep in mind that the total string tension on a 13 course lute, even using standard tensions, exceeds 75kg!!

Theorbos with extended necks are also more sensitive to the higher tensions of longer strings. The neck extension can bend considerably (although a slight bending of the neck is normal), increasing the distance between these strings and the fingerboard by as much as 5cm. Under these

conditions it is much harder to keep the instrument in tune, and the bridge is consequently under far more tension than normal.

For this reason the distance (d) between the strings and the fingerboard near the nut should be between 5 – 10mm. (see fig. 1).

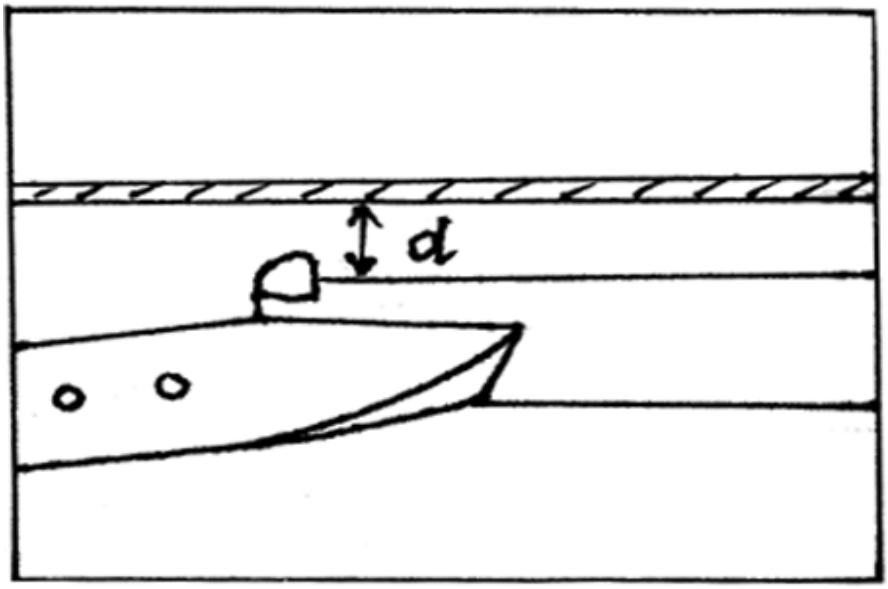

Fig.1

This distance can be regulated by the lowering the upper nut. A careful shaping of the grooves is necessary to make tuning easier. The tension of the long basses should not be too high. In my experience around 35 – 45N (3.5 – 4.5kg) per string is optimal. If you know that the instrument is not going to be played for a long period or if you are making a long trip with it, de-tune the long bass strings or even remove them, so that the neck is not under unnecessary stress.

7. Tying on the strings

Besides having good lute pegs, one of the secrets of being able to tune the lute precisely and without effort lies in the correct tying and winding-on of the string. It is odd that a large number of lute players pay this basic practice little regard. Instead, they accept the ensuing difficulty tuning their instrument during performances.

Tying the strings onto the bridge of a lute (fig. 2) is almost identical to tying on classical guitar strings. In the case of lute strings, is not necessary to make a loop in the end of the string because, thanks to the shape of the bridge, the end of the string does not slide out. Be careful that the end of the string is tucked under the rear edge of the bridge. The correct procedure is to form a kink in the string about 1cm from the end so that, when pulled through the loop made by the other section of the string, this part of the string fits snugly under the rear edge. Knotting the end of a string is usually only necessary when you are using the thinnest nylon strings (2a); on other types of strings this is unnecessary (2b). Be more careful when tying on gut and thin wound strings; they are more delicate and can easily get damaged while sliding over the edges of the bridge. As the damage often occurs to the part of the string directly in front of the bridge, the sound of the string may also become impaired. A better solution is to shape the whole knot before tying the string on and then to stretch the end of the string slightly beyond the partially-tightened knot (2c). The end of the string need not be too long; about 5 - 10 mm is enough for a good knot.

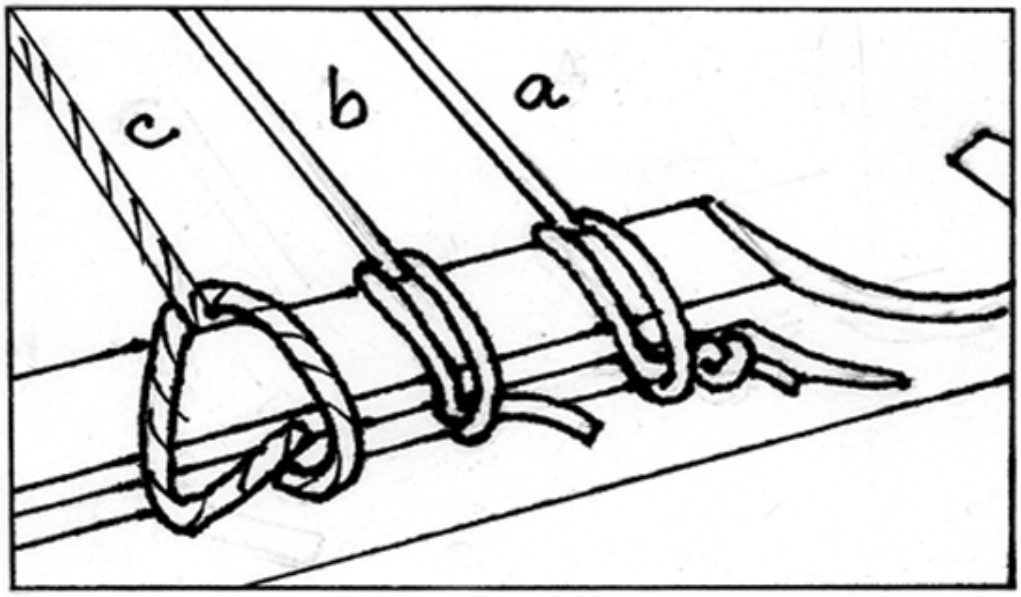

Fig. 2

You may well experience difficulty tying the thickest gut and 'Nylgut' strings on. Thicker strings are less flexible, making it more difficult to form the usual knot. To solve this problem, a small section near the end of the string, where it is tucked under the rear edge of the bridge, can be made thinner using a sharp knife. Although softer in this section, the string is still strong enough. The end of the string should not be made thinner (see fig. 3).

Fig. 3

Unlike a guitar, a lute bridge has no adjustable saddle. The shape of the lute bridge nevertheless allows for some adjustment to the height of the string. Simply pull the string up slightly just in front of the bridge (even with the string at full tension) and it should remain in its new position (fig. 4). This can often help reduce buzzing caused by low action. Some players of the baroque lute also prefer having the bass strings and their octaves at slightly different heights to one another, making it easier for the right hand to navigate its way around so many strings. Lowering the action of the string unfortunately means having to tie the knot again.

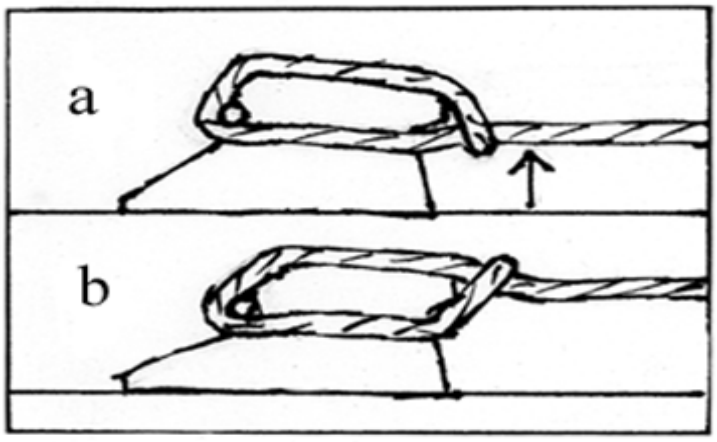

Fig. 4

Figs. 5 & 6 show you how to wind the string onto the peg. The knot is basically the same as the one used on the bridge.

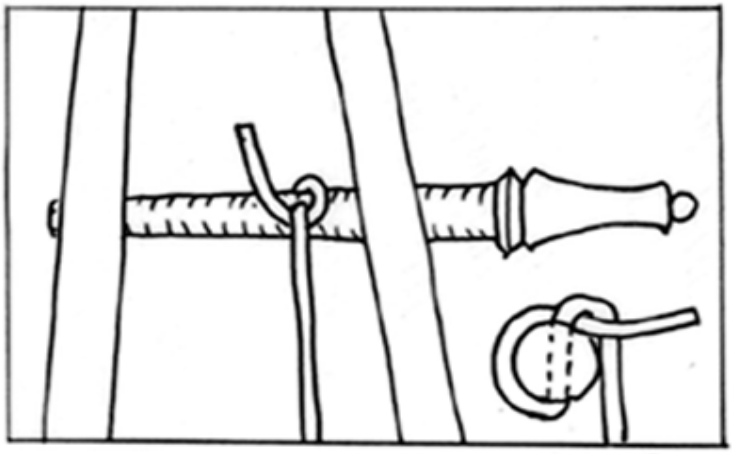

Fig. 5

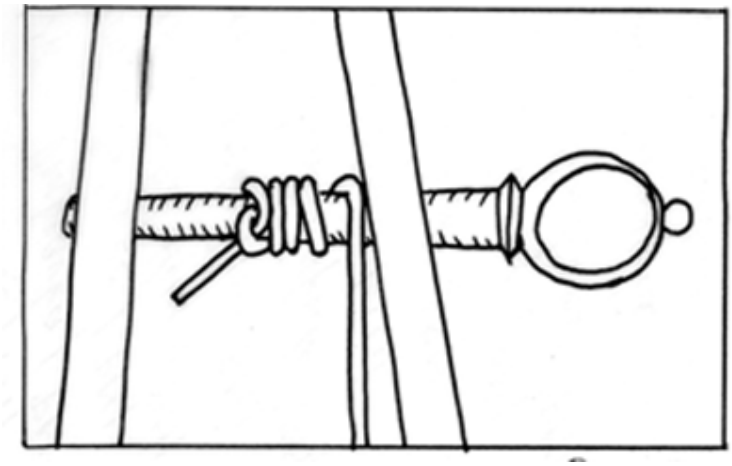

Fig. 6

I consider this to be the best method; as one can use both sides of the peg shaft next to the string hole. This is especially useful when the peg shaft is too short for a thick string (in the case of theorbo basses). It is easy to tie and the string can no longer slip. The end of the string can be left a little longer so that it can be handled properly. It is far easier to physically demonstrate this process than to describe it, but here is nevertheless an attempted description.

Pull the end of the string through the hole in the peg. Leave about 10 – 15cm spare and cut the rest off (fig. 7). Pull the string back through again, so that only about 1cm protrudes out of the hole. Now, wind the string approximately five times around the thinner end of the peg shaft and then cross over the hole towards the thicker end. Wind the string tightly, then pull the peg out of its hole a little, pressing the windings together. The last winding before finally tuning the string is made so that it gently touches the wall of the peg box, leaving a gap between the last and the previous windings (fig.8), if further tuning is necessary. The last turn helps to keep the peg in the conical hole and prevents it from slipping out. After several days, when the string tension is more stable, the final tuning is done using the last winding only. If the peg becomes too tight, pull the peg out slightly to move the last winding slightly away from the wall of the peg box.

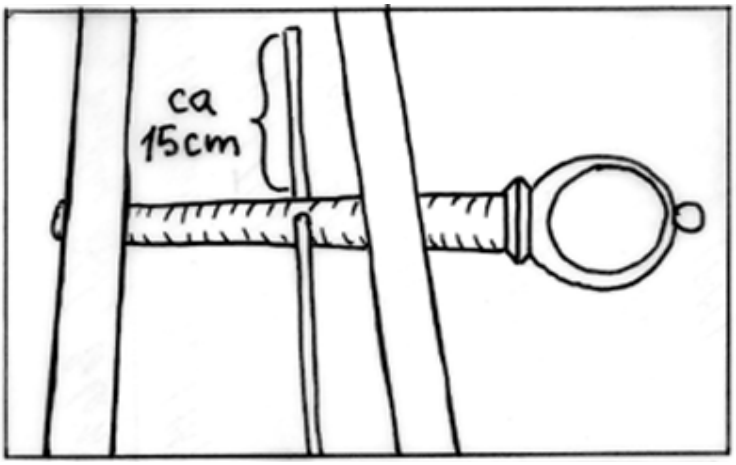

Fig.7

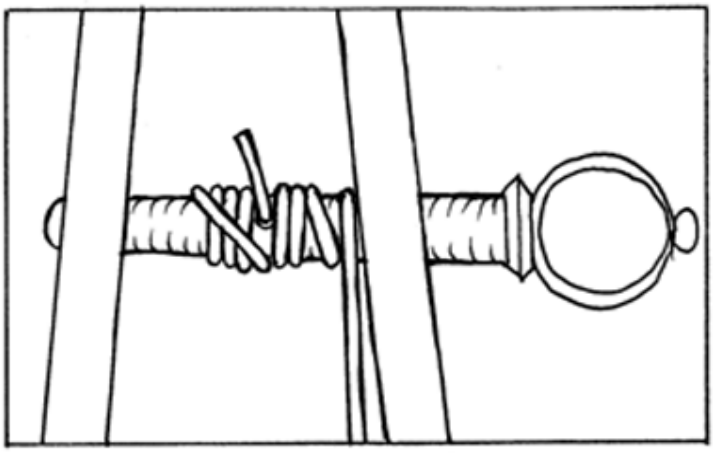

Fig. 8

There are several examples of pegs where this approach can prove somewhat problematic, especially on the theorbo and archlute where some of the strings lie obliquely.

There may also be problems with the first and last courses, which often lie at a more oblique angle to the peg box. A thin string can get wound so far inside the peg hole, so that the peg is forced out of its hole. Using something like a smooth steel rod, you can help guide the string until the last winding is made (fig. 9). On some lutes, the first and/or last courses are sometimes wound onto the pegs *outside* the wall of the peg box. This is not necessarily a satisfactory solution, as pegs tend to break more easily if holes are drilled into their weaker parts.

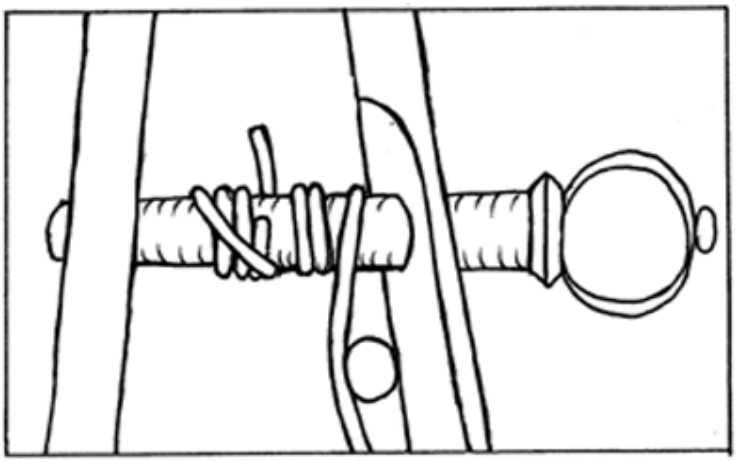

Fig. 9

Similarly, try to put the strings on a baroque guitar so that the last winding touches the headstock (fig. 10). You will not only make tuning easier, you will also ensure that the strings sit properly in the grooves of the nut, consequently improving the sound of the instrument. The first and last courses are usually wound in the opposite way (fig. 11, showing a simple knot). In general it is not good to have too much winding on a peg (about 5 – 10 turns is enough). Try to keep the excess string protruding from the peg to a minimum; this will help to avoid the otherwise inevitable problem of the strings getting tangled up or knotted together, especially on lutes with many courses.

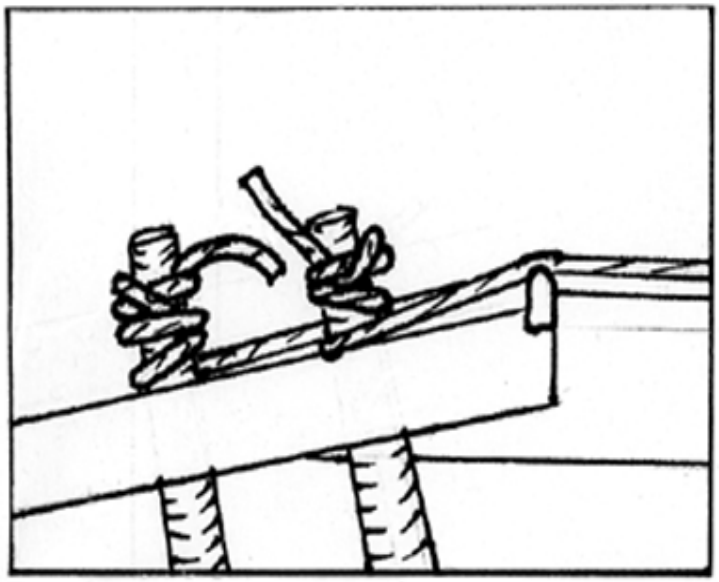

Fig. 10

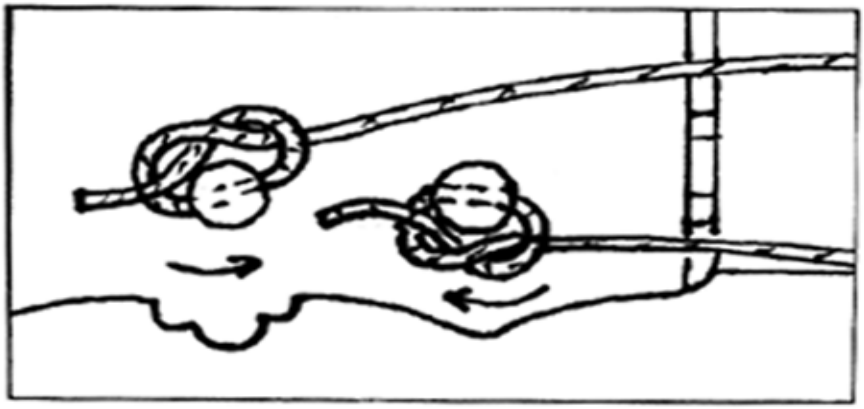

Fig. 11

If a string is too short to reach the peg, it is possible to extend it using a similar piece of string without any reduction in sound quality. The knot, shown in fig. 12, must be tied such that it lies somewhere between the nut and peg after tuning. Be aware that after the not is tied, the original string will be even shorter than before.

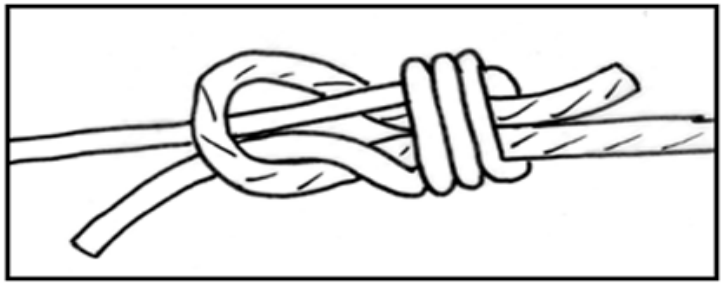

Fig. 12

If you change a whole set of strings, the best way to proceed is to start with the pegs nearest to you and carry on towards the end of the peg box, changing the strings on both sides at the same time.

8. The nut

The nut is usually made of bone or hardwood and the correct shape is essential to create a good, clear tone on an open string, without any buzzing. The grooves are very shallow on a standard lute so as to limit the amount of friction on the strings. In order to make sure that the strings slide through the grooves as smoothly as possible, one can rub a little soap or graphite (pencil lead) into the grooves. If you exchange a thinner string for a thicker one, check if the groove is wide enough.

Grooves in the nuts on archlutes and theorbos are more sensitive, due to the lesser angle at which the strings reach the pegs. Some buzzing can occur, even over a longer period of time, which is why some players need to remedy the problem themselves. Here are some important hints you may well find useful before you reach for a needle file.

a) It is important that the string makes full contact with the groove over the whole width of the nut, not only with the front edge of the nut.

b) The grooves are seldom parallel. Every string goes to a different peg at a different angle, so the angle of the groove differs from one edge of the nut to the other (fig. 13, 14).

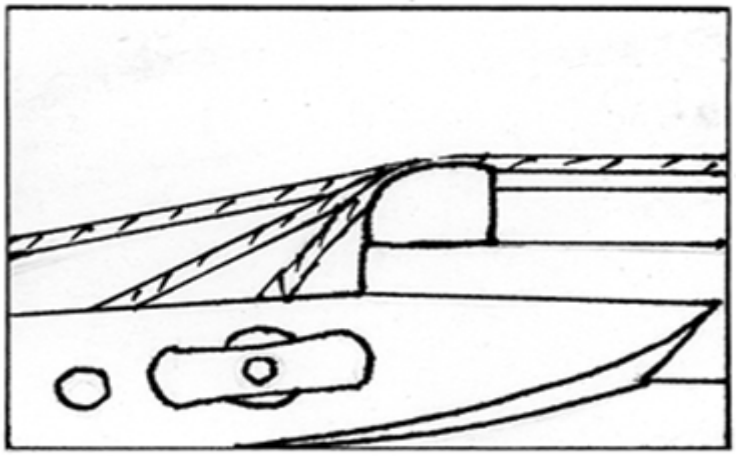

Fig. 13

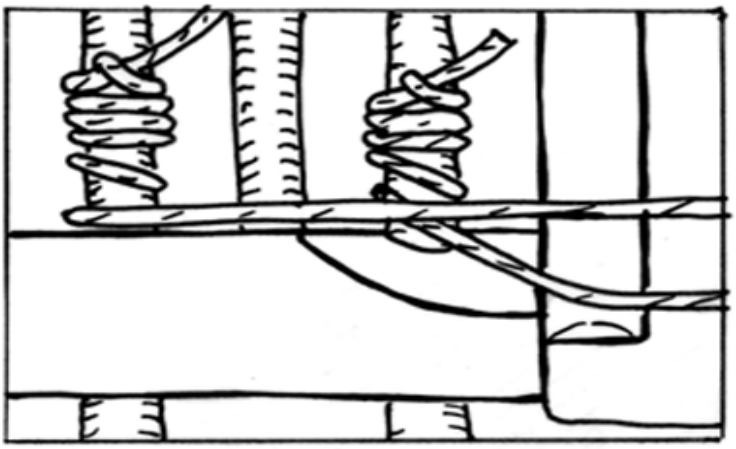

Fig. 14

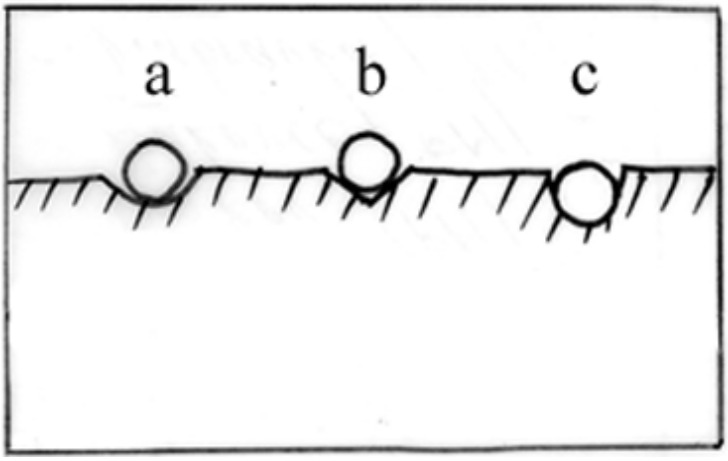

Fig. 15

c) The profile of the groove can be both round (fig. 15a) and in a wide V form (more than 90°), which can be seen on original nuts (fig. 15b). The groove should be as shallow as possible and a little wider than the string (fig.15a). Too narrow a groove and the string will break very quickly (fig. 15c).

d) The curve of the groove should be as smooth and even as possible. This is very important in the case of thin wound strings (the 'c' string in general) where a bad groove prevents the string from sliding smoothly, creating terrible stretching sounds when this string is tuned. Sometimes it is impossible to fully remove these sounds. Gut strings are even more sensitive and can soon become damaged or even break.

9. Frets

Frets are usually made of gut or, less frequently, nylon. Strings supposedly wear out much faster on a lute with nylon frets. On the other hand, nylon frets never wear out! Traditionally, the frets become thinner towards the bridge. Table 2 shows a list of possible thicknesses from the 1st to the 9th fret. If the action is higher, you can use the same diameter (ca 0.8mm) throughout.

Fret Nr.	Diam.
1	1,0
2, 3	0,9
4, 5, 6	0,8
7, 8, 9	0,7

Tab. 2

Frets thicker than 1 mm are harder to tie, and frets thinner than 0.7mm place a great demand on the left-hand technique of a good lute player and are therefore not suitable. The edges of the fingerboard should be rounded in order to create good knots. The thicker the fret, the rounder the edge should be.

Both single and double frets were once used on lutes; nowadays single frets are preferred.
If the fret becomes worn out by playing, it is possible to pull the knot round to the lower edge of the fingerboard. First, slide the fret towards the nut and then pull it round using the knot. Finally, slide it back into the correct position. At some stage, however, you will have to change the old frets for new ones.

The knot I prefer most is shown in fig. 16. This knot is small, secure and easily tightened. Moreover, hardly any gut is wasted after tying the fret. Again, it is easier to demonstrate the process of tying on a fret than describe it, however here is a description of the process.

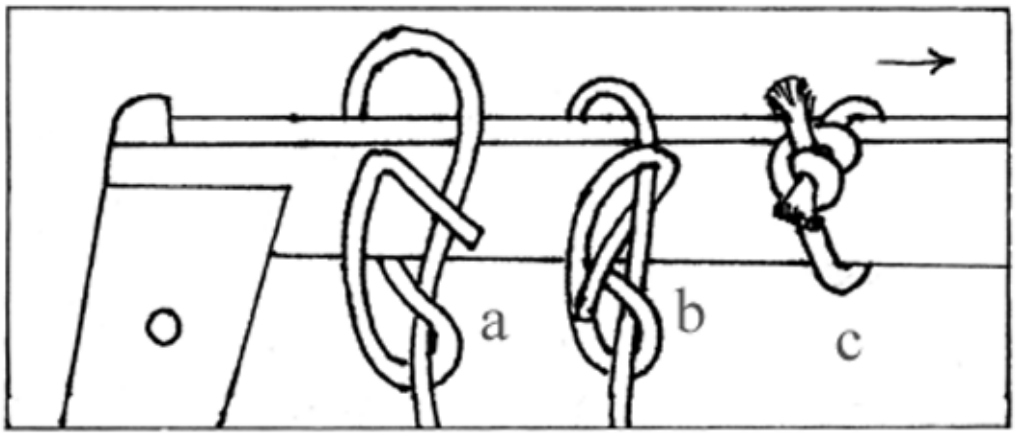

Fig. 16

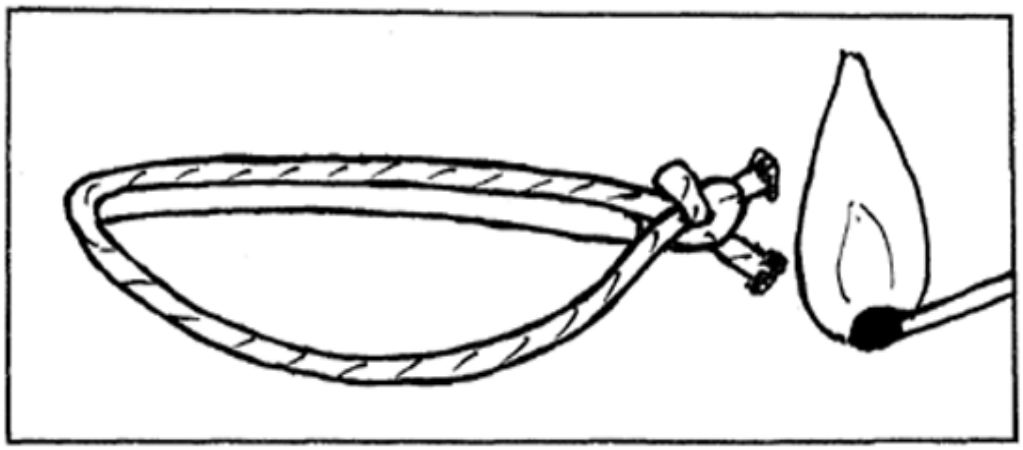

Fig. 17

When completely re-fretting an instrument, start with the fret nearest to you and work towards the nut. Hold the lute as if you were playing it. Tie the fret about one position lower than required.

Feed the fret gut under the strings from the bass side and pull it round the neck. Make a kink in the material, 1cm from the end (16a), so that when you tight the knot it will slide and stop at this point (16b). Pull the knot a little lower down on the back of the neck and then tighten it up by pulling the longer end. The knot should be positioned on the edge of the bass side of the fingerboard (16c). Leave about 2 – 3mm excess gut on both ends and cut the rest off. Burn these end using the *side* of a match or candle flame (fig. 17). Be careful not to damage the neck or pegs with the flame. An alternative would be to use a soldering iron. Do not use too much strength to tighten the fret; it tightens itself when you slide it up to the correct position, as the neck of a lute is tapered (16c). After some time the fret will loosen somewhat, so that you can move the knot a little to the back of the neck if necessary. Moving new frets can cause some damage to the neck. To avoid this, rub some dry soap on the edges of the fingerboard so that the frets can be positioned more easily. The biggest problem is always the first fret, especially on archlutes and theorbos, where it is not possible to tie the fret in a lower position because of the peg box. Here, you will have to tighten the fret as much as possible before sliding it into position. Sometimes the fret closest to the body must be tied at an angle, due to the shape of the ribs at the back of the neck. This can cause the fret to continually slip down from its proper position. The remedy for this is to make two small grooves in the edges of the fingerboard, with a blunt knife for example, which are usually enough to hold the fret in position.

I hope that the information provided here will be of help to you in looking after your instrument. With a little care and attention, it should remain playable and in good condition for many years to come.

Yours

Jiří Čepelák