

A few more notes on silk lute strings

In support of John Downing's Comm 2013, it may be noted that Patrizio Barbieri, in his important paper on instruments strings in *The Galpin Society Journal* lix (May 2006) has actually discovered a documentary reference in a book published in Brescia in 1686 to silk lute strings, quoted below. In New York, Alexander Rakov has been making silk lute strings for some years, and Jacob Heringman gave a public trial of these at a meeting of the Lute Society in London in 2002. In the spirit of music society speaking unto music society, the following pages import short articles from *Lute News* on this subject, the first an essay by Rakov himself from *Lute News* 58 (June 2001) and (printed a long time after the fact) *Lute News* 78 (June 2006).

You can search for previous Comms from the *Fomrhi Quarterly* on the subject of historical silk strings, and read them online, by going to <http://www.fomrhi.org/pages/communications> where all the 2000 Comms to date are listed, and use the 'Search' function.

See also Alexander Raykov's 'How to make silk strings for early instruments' at <http://www.silkqin.com/03qobj/strings/raykovstrings.htm>

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A trial of silk lute strings, with Jacob Heringman

Lute-family instruments have always been strung with silk in the Far East, and the suggestion has sometimes been made that they may have been used in the west, though some experts flatly reject this (see: *Lute News* no. 58, p. 15, no. 60, p. 26 and no. 61, pp. 26–27). In fact a new historical reference to silk lute strings has recently come to light, quoted by Patrizio Barbieri in a recent issue of *The Galpin Society Journal*. Francesco Lana Terzi, *Magisterium naturae* . . . (Brescia, 1686), vol. 2, p. 433, writes that while sheepgut is mainly used, some people prefer silk strings for the lower courses ('ovinae maxime in usu sunt . . . fides serica crassiores in testudinibus aliqui maxime approbant'). So they *did* have silk lute strings in the 17th century!

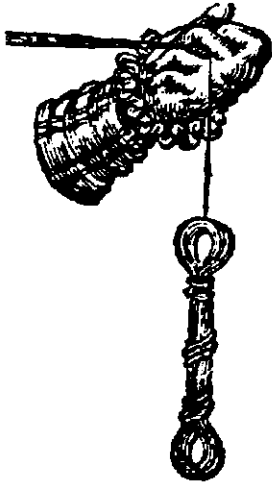
Alexander Rakov of New York makes silk lute strings and finds them to work extremely well. He kindly donated a set of strings, and the lute player Jacob Heringman demonstrated their sound at a meeting of the Lute Society. The silk lute strings certainly sounded very good, and worked well as a set. As usual it is practically impossible to describe musical timbre in words; their sound was neither markedly better nor worse than other materials, merely slightly different. Jacob remarked that they take some time to settle down after being put on the instrument; he had strung his lute with silk strings four days before the meeting, and they perhaps still had not quite finished settling [slower to settle than gut, or nylon, though of course nylon takes some days to settle down—Ed.]. He could not answer the question how long they would last: the first top string he had put on had broken almost immediately—which can happen with gut if you are unlucky—but the replacement

he had put on seemed to be in good condition. The bass strings, at least some of the ones in the set he was using, perhaps tended to fret a little sharp, though this was not apparent to the listeners when he played. Jacob played a few arpeggiated chords, and then a contrapuntal fantasia by Francesco da Milano. This was most attractive; the timbre of the strings was pretty consistent across the range of the instrument. The bass strings sounded a little more 'metallic' and sustaining than gut strings would, but not excessively so, as is the case with some modern synthetic strings. The bass strings have a rough texture; one has to adapt one's plucking technique, and Jacob said that he had not yet found a way to get a strong attack on the bass strings. The upper strings are also physically quite rough in texture, and, as with gut strings, produced quite a lot of 'chiff', but their tone is sweet. They did not seem appreciably louder or softer than other string materials. The strings for the top four courses are twisted in construction, like gut strings; the basses are overspun (seemingly silk on a silk core). As for the gauge of the strings, Jacob had simply given details of the gauges of the gut strings he would use on that lute, and the string maker, Alexander Rakov, had supplied strings that would work at the same tension: Jacob thought that they were of a slightly finer gauge than their gut equivalents. He closed with a short piece of Scottish lute music. In short, the demonstration showed that silk lute strings certainly do work and make an attractive sound; silk could not be ruled out a historical material on simple practical grounds, whatever the historical evidence, or lack of it, for the widespread use of silk strings in the west in past centuries.

FEATURES

Strings of Silk and other Textiles, by Alexander Rakov

Regular readers of these pages, or of the Fellowship of Makers and Researchers of Historical Instruments Quarterly (FoMRHIQ), will be aware of the ferocious arguments between lute-string makers over the nature of historical lute bass strings. How were they made? None of the solutions offered today seems to fit all the historical evidence comfortably: as gut-string maker Oliver Webber has recently conceded, in an article in 'The Consort', 'there is undoubtedly still some mystery surrounding lute stringing'. String holes in surviving bridges, and paintings of lutes, seem to show that lute bass strings were quite thin. The only way to fit plain gut strings (made with a roped construction) through such small holes is to use thin strings at very low tensions, which has seemed unsatisfactory to some performers, and seems to contradict evidence that all the strings on a lute were supposed to be at equal tension (see Lute News 55, pp. 17–18 for arguments that descriptions of equal tension are to be taken literally). Another option for a reasonably thin bass string is to 'load' a gut string with a solution of metal salts to increase its density. Coloured bass strings do seem to be shown in paintings from the late 16th century to the late 17th (after which metal wound strings started to come in). But this seems to contradict a 17th century account of bass strings as 'clear', and anyway almost certainly does not apply to the period before the 1580s. Some players are unconvinced by either roped strings at low tension, or 'loaded' strings, and moreover, modern commercial recreations of both types do not seem to behave exactly as strings in Old Master paintings, which show spare lengths of string falling in soft coils from pegboxes, or kept in tight figure-of-eight knots, which would wreck many a modern string:



But how many of the historical accounts of lute strings actually say what the strings are made of? In the following paper, which appeared recently in FoMRHIQ, Alexander Rakov suggests a solution to this historical puzzle. Could he have found a missing part of the jigsaw? We would welcome correspondence on this subject. I [CG] propose, incidentally, to order a set of these strings, so that a trial can be made at a Lute Society meeting. Now read on . . .

This account of my string adventures follows reading the lively discussion between Ephraim Segermann, Mimmo Peruffo, John Catch and John Downing in FoMRHIQ.

My Russian friends from the Moscow University Baroque Orchestra complained to me through the years about their string problems. In particular the high e string of gut was losing its pitch during the concerts, and breaking altogether. The A string

faired better, but the D string had different problems of its own. They tried all sorts of solutions pertaining to gut strings, and asked me if there were synthetic strings in existence, equal in sound quality but more reliable. There were other musicians with the same question on their minds, groups playing a lot outdoors in places like Florida and Texas. Finally, armed with some knowledge about Chinese and Persian silk strings, as well as some exotic horsehair strings from the Soviet Asia, I launched the twisted part of my life.

Formerly, in emergencies, I twisted some strings using fishing monofilament, with direct twist, so I just picked up from that. Soon I realized that no matter how small the diameter of monofilament, the twisted string had mechanical problems. So I switched to nylon floss, or thread, and employed a rope twist which produced very reasonable strings. Twisting strings under working tension made them very stable pitchwise and produced a quite rich sound quality. Using alcohol-based soaking sealed them up nicely and gave them the appearance of nice gut strings. I started getting comments of sort: 'This is the best string I ever used' (of course I used my students and colleagues as guinea pigs). This was the first time I had some very heretical thoughts. I kept returning to Peruffo/Segermann arguments about lute bridge hole sizes, loaded and pigmented basses, gut catlins etc. By this time my Moscow friends were happy with their e, A and D strings, especially since the sound quality could be fine-tuned by adding Mimmo Peruffo's Nylgut (thank you, Mimmo), or ZYEX, or other polymers. I was dealing, however, with gambas and lutes, and now needed matching basses. Twisted basses were coming out huge, in the manner of gut catlins. I knew already that metal wound basses would not match the fine quality sound I was getting. Chinese silk string makers were wrapping their strings in silk gauze for at least two thousand years. So I wound mine with nylon. They came out just a bit larger in diameter than metal wound basses, but were flexible, and felt like a solid gut string, say for the harp. What's more, using cotton, linen or hemp for wrapping reduced the diameter even farther and made them so responsive under a bow, that it felt like you did not have to work at all! I started using these strings in concerts and had listeners comment on 'how much better my instruments sounded'. I made couple of sets for my lutes, and had an eye opening experience, where I could not stop playing for a couple of weeks, thoroughly enjoying how it all was making sense, especially voice leading in the midrange and bass. Using metallic pigments allowed the basses to be even smaller, while amazingly supple and flexible. (Oh yes, I did paint some basses bright red; they sounded just fine). I made a few basses with copper pigment; they came out brown, quite nice looking, and at that point I had an amazing realization. I had held in my hands strings like this about ten years ago, but very old and somewhat fragile. Franz Streitwieser, then the owner of Trumpet Museum in Pottstown, near Philadelphia, asked me to take a look at some stringed instruments in the basement which he was going to sell. There were a few peculiar instruments (which probably attracted his collecting fancy), like viol-cello-bodied types, some very old crwths, and some viola d'amores, lutes etc. A couple of these instruments (most in very poor condition) had what then appeared to me to be some textile cords attached in place of the strings. They looked graduated in size, like real strings would be, but I assumed them to be decorative rather than musical, because in

my mind strings were either gut, metal, or metal wound. To satisfy this belief, some of these instruments did have gut strings. But now, in the middle of my string-twisting adventure, I was holding in my hand something looking and feeling exactly the same, that was actually a very good working string! So I started making twisted silk strings, using thread (I'm still not prepared to go all the way, using raw silk, and cooking in potions). They worked as well as the synthetic ones, but had more of an organic quality to their sound, very beautiful, somewhat gentler than gut. The thread cooked in fish glue (one of the main ingredients of Chinese potions) has a transparent look, more so than a gut string. The durability of silk string, however, depends tremendously on the quality of the material and the proper twist and processing, especially for the high, hard working ones. But this started taking me out of my original intent which is making working synthetic strings. I am a musician first of all, and would rather put my time into making music.

My direct experience with textile strings made me to ask the same question as John Downing in one of his *FoMRHIQ* communications: maybe the strings in the Renaissance were predominantly of silk, and changed to the gut with the general change in attitudes to sound [with the Baroque, rise of the orchestra etc?—Ed], everything growing heavier and louder, with less need for refinement, and more for reaching out to more people. I tried an old scientific method, accepting a theorem for an axiom, at least for a couple of days to see how the already existing data fits. I also had the luxury of, sort of, keeping a score, with E. Segermann's and M. Peruffo's arguments. My silk strings definitely were 'well twisted', anyone can see that, while gut strings appear to be a uniform body (Mace speaks of a twist on every turn). I had to take care 'to keep it from ruffling, or running upon crosstwists . . .' (Mace again)—a gut string has to be broken, or of very bad quality to present such concern. 'Clearness of the string to the eye . . .'—here is passage from Chinese zither tutor (the Mei-an Ch'in-p'u), describing properly made silk strings:

Tightly twisted and translucent ch'in strings are the best . . . All must be transparent like glue . . . If tightly twisted, they will be pliable and tough, not easily spoiled; if loose,—weak, these are easy to see.

I can tie the ends of my strings into the knots, or any small curls, like in period paintings. I can wrap the bass string on a lute bridge twice around itself, again as in paintings. Neither can be done with gut. I can use the same set of strings to play at a = 440, 415, 390. Only the dynamic output changes, not the quality of the sound, because the twist picks up the slack.

Then I just went to the library and looked for the information on the silk trade. Apparently silk-craft was introduced in Sicily by Arabs in the tenth or eleventh centuries, and at around the same time or somewhat earlier in Spain. (What about the exceptional quality of Spanish strings?). Arab stringed instruments at the time almost invariably used silk strings for the highs, guts for the middle and wrapped silks for the basses. In Italy Venice was the center of silk industry (Venice catlins?), Pistoia was one of the earliest, but dealing mostly with silk threads and cords, not materials (Pistoy basses, anyone?), Lyons came in strong, but quite late, at the beginning of the sixteenth century. Could this explain why Mace's 'Lyons' were 'not too good'? I tried to find any business reference on gut production in the same places at the same time, and could not. Any references to these cities being centres of gut string production seem to be based on the names of the strings, not the other way around. Moreover, the same craftsman responsible for making the musical strings were supplying the 'military complex' with bow strings. The materials they used? Silk, hemp, linen, cotton, not gut. How did they seal their bow strings? With fish or animal glue.

I thought I did pretty well (it might be subjective, of course), and I did not end up to having to say things like 'The artist depicted string colour and size just right, but took a liberty in showing the ends in tight curls.' or 'Maybe only lute bridges with large bass holes are the original ones.' (By the way, for some reason the sizes of my lute basses correspond exactly with the measurements given by Mimmo Peruffo, thank you again, Mimmo). And if my soul ever hardens and I want to wind my basses with metal wire, I could use the same machine as I use with textiles. The transition from textile to metal winding may have occurred in the Renaissance without changing the technology.

And one more thing, to me the most important one. There are certain qualities and connections of the sounds that I worked so hard to achieve and sustain on gut strings. They are produced naturally on my instruments with twisted textile strings. Those same qualities I failed miserably to achieve on any sort of monofilament lute strings.

I do wonder now if with the gut strings, we focused on only one possibility to the exclusion of others. I do wonder also if other people would enjoy the possibilities given by twisted textile strings.

Alexander Rakov
22 Elm Street
Cortland, NY 13045
U. S. A.
e-mail: vokaria@yahoo.com