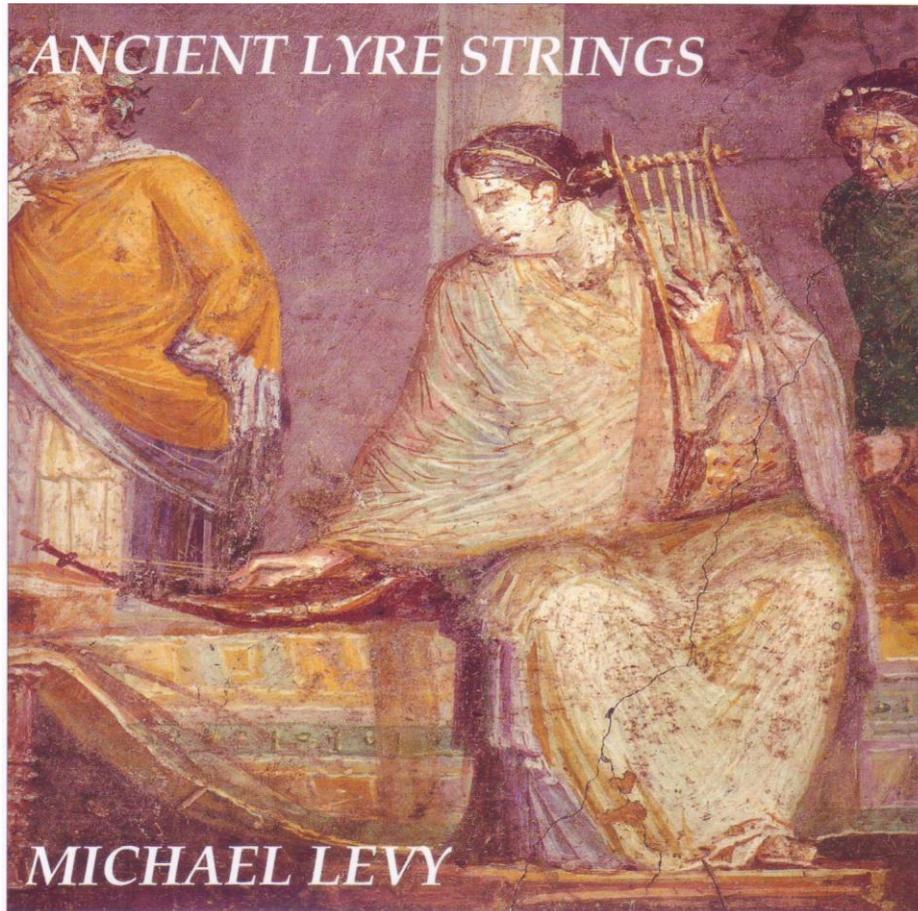


ANCIENT LYRE STRINGS



This experimental extended length single is actually a practical "archaeo-musicological experiment", in both recreating a truly authentic ancient timbre for my lyre & discovering what playing techniques are possible to perform on a Kithara-style lyre of antiquity, when strung with authentic natural fibre strings. To further recreate the ancient musical timbre in this recording, the lyre is also tuned to the wonderfully pure-sounding [just intonation](#) of antiquity.

Trying to find authentic sounding strings for my lyre has so far been the most difficult challenge - although gut was generally used in antiquity, the polished gut harp strings used today, bear little in common with the closely wound gut fibre strings of antiquity. String expert [Peter Pringle](#) (a regular contributor to the fascinating Facebook Group "[The Lyre](#)") suggested that natural fibre wound silk strings would sound closest match to the unpolished gut used on the lyre strings of antiquity & kindly made some for my lyre...

ANCIENT MUSICAL STRING TECHNOLOGY



Peter explains some fascinating facts about the little discussed subject of ancient musical string technology:

"Silk strings are traditionally made by twisting pure silk filaments together using binders and glues of various sorts to produce a stable cord with the appropriate hardness and density (which is similar to a dried gut string).

The ancient string makers guarded their recipes and techniques with all the secrecy of modern industrialists. They added all sorts of things to their binders - powdered silver and gold, and minerals like rock crystal, jade, lapis, etc. - in order to impart certain sonic properties to the finished product.

Much of that was, I believe, based on the rather romantic, folkloric notion that the music would ultimately take on the metaphysical qualities of the substance used in the string making process. For example, if you were to use powdered pearls in your silk binders, the string would manifest the characteristics of the sea, while a small amount of the dried and finely ground heart of tiger would make your music more powerful and compelling. There are equally fanciful ideas of this sort associated with Chinese traditional medicine.

Interestingly, some of the substances they used (such as powdered metals) actually did change the acoustic properties of the string but they did so for physical, and not metaphysical, reasons. Putting silver into your string may give it a clear and incisive tone but that's because of the metal's specific gravity, not because it transmits the qualities of the moon!

The entire output of the very best silk string makers in China was often bought up by the Imperial Palace, so the finest strings were usually not even available to the general public and could be heard only in the Forbidden City. This was the case with the so-called "ice string" which is a translucent pure white silk"

Having now experimented with the sound of these silk strings on my lyre, I have discovered a whole new world of sound & have come one step closer to the actual sound of the lyres of antiquity.

THE JUST INTONATION OF ANTIQUITY

[Just intonation](#), is to me, one of the little known wonders of the ancient world! First devised some 5000 years ago, during the development of the first fretted lutes in ancient Mesopotamia, in just intonation, the ratio of each interval of a musical scale is precisely calculated in rational numbers, so that each semitone is unique and very slightly different in proportion to the other semitones in the scale.

The result is a wonderfully pure sound - intervals played in just intonation have an almost 3 dimensional depth, when contrasted with the same interval in modern equal temperament. In equal temperament, all the semitones are artificially made equal, so that it is possible to seamlessly transpose from one key to the next, without any change in the proportion of the intervals. However, this is at the expense of the purity of the sound of the musical intervals!

For example, whenever a triad is played on a piano tuned in equal temperament, the 3 tones are always very slightly out of phase with each other, resulting in noticeable "wooowooo" -sounding beat waves.

Music in just intonation is, thanks to the purity of the intervals, magically at the same time more calming to the ear, yet also inspiring! In short, compared to just intonation, equal temperament is like a rose without its scent...

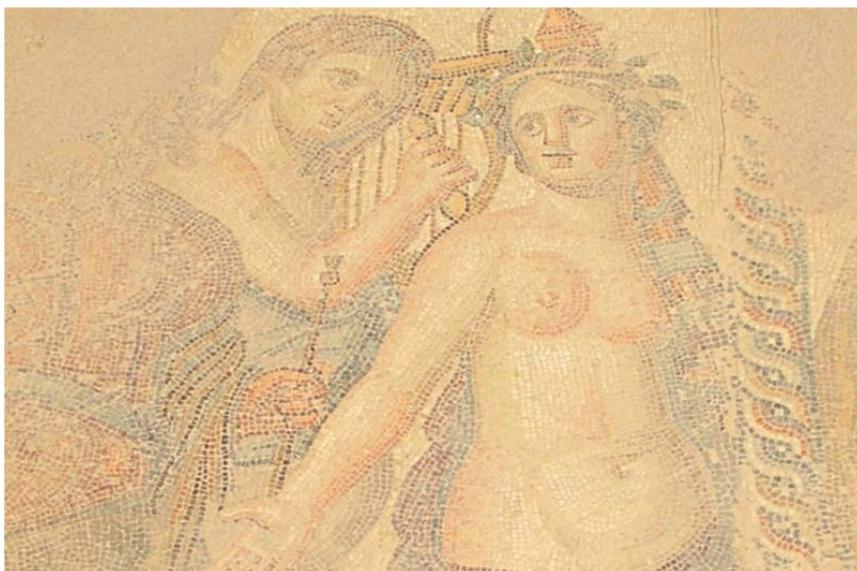
ANCIENT LYRE PLAYING TECHNIQUES PERFORMED ON NATURAL FIBRE LYRE STRINGS

The diverse range of ancient lyre playing techniques I use, are based on both an inference of playing styles depicted in ancient illustrations of lyre players, observation of lyre playing techniques still practised today in Africa, as well as an imaginative "process of elimination" - *to see what is actually possible to play on the lyre, given a little musical imagination...*

Besides the “*block & strum*” technique still practiced by the Krar players of Eritrea & the tremolo technique still practiced by the Simsimiyya players of Port Said in Egypt previously mentioned above, I also experiment with an ancient Mesopotamian percussive lyre playing technique, whereby the strings are hit with a small wooden baton like a hammered dulcimer. This can clearly be seen in illustrations of lyre players found in the Bas Reliefs from the ruins of the Palace of Nineveh, c.700 BCE:



The same playing style also can be seen 1000 years later, in illustrations of lyre players in the ruins of the Roman villas at Paphos, Cyprus. In these wonderful mosaics, instead of *plucking* the strings with a plectrum, the lyre players all seem to be depicted *hitting* the strings small wooden baton similar to a bodhrán stick:



Other possible styles I experiment with, include a hypothetical ancient Greek lyre playing technique proposed by the musicologist [Curt Sachs](#), called "*string stopping*" - by using a knuckle of the left hand thumb as a fret on the strings, it is possible to play the accidentals clearly indicated in ancient Greek musical notation, on a diatonically strung lyre.

Evidence of this same technique can also be found 1000 years before the rise of Classical Greece, in a depiction of an ancient Egyptian harpists, who can clearly be shown to be bending one specific string to presumably raise its pitch by the required semitone or microtone - the illustration is of a relief from tomb 11 in the Ta-Apet (Thebes) area (New Kingdom 1520 BCE) which actually seems to illustrate this unique ancient harp-playing technique : a harpist shortens the string with one hand, and plucks with the other - this is surely the first unambiguous pictorial evidence of the technique of string-stopping from the ancient world! The bent string is clearly shown:



String stopping works almost seamlessly on these low tension strings and sounds far better with their crisper attack, than bland, uniform tone of softer nylon.

Other lyre playing techniques I experiment with in this recording, include harmonics, created by lightly stopping the centre of the strings with my left hand whilst plectrum plucking them with my right hand & creating [heterophonic](#) development in using a combination of guitar-like, plectrum plucked tones and harp-like, finger plucked tones to vary the tonal texture in almost limitless combinations.

MY EXPERIENCE OF PLAYING MORE AUTHENTICALLY MADE LYRE STRINGS

There are several conclusions I discovered about using these fascinating "practical archaeomusicological experiments" at playing more authentically manufactured lyre strings....

The basic tone of the lyre remained almost the same - this demonstrated that the most important component in the quality of the sound of a lyre *is the actual quality of the wooden soundboard upon which the strings vibrate*. This is, of course, a common sense observation - even the most expensive hand-crafted gut violin strings will still sound like elastic bands, if strung on a cheap fiddle with a thick soundboard made from cheap, poorly seasoned wood with poor resonance!

However, due to the harder nature of wound silk compared to nylon, *there is a much more interesting & crisper attack when the strings are plucked*. The tone of natural fibre strings is also much more colourful & individual, in comparison to nylon. This is due to the production process of nylon musical strings, as Peter Pringle explained to me:

"the nylon monofilament strings are made by the extrusion process (forcing the liquid synthetic through a small hole, like toothpaste or spaghetti, so that it makes a single strand of absolutely consistent diameter). In ancient time, strings were not made this way and they were not quite so even. Regardless of whether they were of gut, hair, or some other natural fiber, slight inconsistencies gave the strings certain sonic characteristics - a certain "personality" resulting from the added overtones and harmonics produced by minute variations in thickness and density - that you will not hear from extruded strings whose sound may be far more pure but decidedly less interesting, not to mention less authentic. Even modern factory made gut strings are polished on a centerless grinder (a technology the ancients did not possess) which makes them far more even than gut strings would have been in Greece or the Middle East 3000 years ago. The only gut strings made today that might be comparable to ancient gut strings would be those made by African and Indian artisans for indigenous instruments like the adungu, the begena, the sarangi, etc."

A fascinating feature I discovered, *was that this pleasant crispness of attack was most prominent in the bass strings of my lyre* - the higher pitched treble strings were, in fact, *almost indistinguishable from the tone of the nylon strings*. The bass silk strings, though, sounded far richer in character & nuance than nylon & superior in tone. This is again a parallel phenomenon to violin strings - even if all the strings are made of the finest gut, the top E string is almost always made of steel: yet it still manages to match the tone of the other gut strings almost seamlessly.

The main drawback of any form of natural fibre or twisted gut musical string, though, *is the lack of both tuning stability & durability compared to modern nylon harp strings* - my lyre now only stays in tune for about 10 minutes at a time - I have a new-found empathy to the devotion to the constant retuning required by the lyre players of antiquity, in their efforts to attain "the Music of the Spheres"!

Another fascinating observation, is that the variety of lyre playing techniques I have inferred from my study of ancient illustrations of lyre players & the styles of lyre playing still practised today in Africa & Egypt, *work even better on the low tension, crisper-sounding silk strings* - these include the "*block & strum*" technique still practiced by the [Krar](#) lyre players of Eritrea, whereby basic rhythmic chords can be strummed, by blocking strings not required to sound in the chord with the left hand whilst strumming rhythm with a plectrum in the right hand:



I also use the tremolo style of lyre playing still practiced today by the [Simsimiyya](#) lyre players of Port Said in Egypt:



Harmonics can also be effortlessly played on silk lyre strings by lightly stopping the centre of the string. The combination of finger-plucked & plectrum-plucked tones on these strings is also virtually limitless - either finger plucked intervals to accompany a plectrum plucked melodic line, or a finger plucked melody with an accompaniment of single plectrum plucked notes.

I now feel that any ancient lyre player from antiquity, with any sort of musical imagination, would surely have used these very same lyre playing techniques, in their efforts to extract, as I have strove to do, every conceivable possibility that the instrument is actually capable of.

GUT STRINGS VERUS SILK STRINGS?

Peter Pringle explained to me more about the fascinating history of gut & silk musical strings, in relation to the music of the ancient Near East & Mediterranean:

"King David did not string his harps with silk because the silk-making process was unknown in the Middle East until roughly 500 A.D. when it was introduced to the Byzantines via the so-called "Silk Road". Still, I do believe that the closest sound you will get to handmade (as opposed to machined) gut strings made from the intestines of sheep or goats, of the sort that David would have used on his instruments, is probably going to be silk.

Like gut strings, silk is brittle once it has been subjected to the hardening process. With both silk and gut, one must be careful when putting a new string onto an instrument not to bend, crush or crack any part of the the vibrating length between the peg and the bridge. The same thing is true with wire. If you accidentally get a kink or a twist in brass or bronze wire it can never be

perfectly straightened and you will compromise the purity of the tone of your string.

A "filament" is the single strand of raw silk spun by the mulberry silkworm and in order to make a single .050" (roughly 1.25 mm) pure silk string, it takes nearly 11,000 filaments (the thickness of a human hair would be the equivalent of about 150 filaments). I know that sounds like it must be a humongous task but it isn't. Once you're set up and have all your materials on hand, it's actually quite fast. The most difficult and exacting task is done by the "bombyx mori" - the silkworm itself. Anyone can make a silk string but only the worm can make silk!"

CREDITS

Special thanks to [Peter Pringle](#), for the time and effort in manufacturing these wonderful wound silk lyre strings, which made this unique "archaeomusicological experiment" at creating a truly authentic ancient lyre timbre possible.

Special thanks to [John Wheeler](#), for providing me with the just intonation tuning tones to tune my lyre to, created by the SCALA program.

Finally, special thanks to the pristine production skills of [Dominik Johnson](#) for so masterfully mixing & bringing to life the raw audio of this experimental recording.