The **kithara** was the highly advanced, large wooden lyre favoured by only the true professional musicians of ancient Greece, which reached its pinnacle of perfection during the "Golden Age" of Classical Antiquity, circa 5th century BCE. My album "The Ancient Greek Kithara of Classical Antiquity" features the wonderfully recreated Kithara of the Golden Age of Classical Greece - hand-made in modern Greece by Luthieros:


Since late 2014, I have been collaborating with Luthieros in their inspirational "Lyre 2.0 Project" - dedicated to reintroducing the wonderful lyres of antiquity back into the modern world, to make these beautiful instruments accessible to each and every modern musician.
This new series of recordings hopefully demonstrate why the kithara was so venerated in antiquity, as the instrument of the professional musician - perfect for both accompanying the human voice and for as an incredibly versatile solo instrument.

In particular, I attempt to demonstrate the wonderfully reconstructed 2500 year old vibrato mechanism, for which there is an almost overwhelming body of visual evidence to support this theory.

THE OVERWHELMING BODY OF VISUAL EVIDENCE FOR THE VIBRATO MECHANISM

All original illustrations of the ancient Greek kithara clearly show what appear to be 2 tiers of inverted ‘U’ shaped curved springs beneath the yoke to which the strings are attached, with the top of the arms carved almost wafer thin, (often with projections which could certainly be interpreted as actual articulated hinges), which almost certainly was to allow for lateral movement of the yoke and the attached strings, complete with 2 vertical levers either side of the yoke, which if light lateral pressure was applied, would certainly have an eerie vocal vibrato effect. The mechanism could also be operated by pushing in either of the discs protruding either side of the yoke.

In the image below, both the curved structures, the hinge-like structure and the 2 vertical levers can be seen:

The image below also shows the same structures, again with the vertical levers, springs and hinge-like structures:
Although there is no explicit reference to the vibrato mechanism seen in virtually all illustrations of the ancient Greek kithara, there are indeed subtle hints to its existence in some surviving examples of descriptive ancient Greek texts. Indeed, the term καμή, which means literally ‘bend’, but is used of regarding modulating. The term is used by Aristophanes for instance of boys who in their lessons were introducing bends in the style of Phrynis, a famous concert kitharode in the 440's BCE. The boys of course must be using tortoise shell lyres; but it would make sense if they were trying to reproduce what they saw the “rock stars” doing, and it is of course physically possible to bend the frame (arms, yoke) of the amateur lyre in a rough imitation of the vibrato mechanism of the kithara of the professional musician of ancient Greece system.

Other academic articles which describe the feasibility of interpreting the complex structures seen on all illustrations of the ancient Greek kithara include a paper by Pavel Kurfurst, “The Ancient Greek Kithara” (1992):


“The ancient Greek kithara makers devised a number of systems for enabling the crossbar and weights to move in relation to the arms of the instrument. Judging from the dating of the iconograms in which type of kithara is shown, all of these systems seem to have been in use at the same time. But first let us turn to a description of how the instrument and its individual parts functioned. The crossbar and the weights, attached at the joints to the ends of the kithara arms, were able to rock out in both directions from the vertical axis of the instrument. Whenever this happened, the crossbar, which passed through the weights in such a way that it could move, shifted a few millimetres towards the body of the instrument. This resulted in a temporary shortening of the strings (or rather a decrease in their tension), and had the effect of lowering their pitch. Depending on how far the weights were rocked out, the pitch of the strings could be lowered smoothly by almost three tones, which meant that the player could employ endless number of tones ranging from the highest to the lowest pitched strings. The stability of the basic tuning of the kithara strings, i.e. when the weights were more or less perpendicular to the crossbar, was ensured by the continuous pull of the strings in the direction of the longer axis of the instrument as well as by the operation of the symmetrical
spring mechanism linking the individual weights with their arms. The main function of the spring mechanism was to maintain this stability and to speed up the return of the weights to their original position after they had been rocked out.”

This is how Kurfurst theorized how the vibrato mechanism could be set in motion:

“Basically there were two means of achieving this, each qualitatively different. In the first — the commoner, to judge by the iconograms — the player used his chin, nose or cheekbone to push against the disc fixed to the end of the crossbar, in this way moving it and the weights away from himself. At the same time, he kept the instrument in the same position relative to his body. At first the kinetic inertia of the relatively heavy weights would be too great for the force being exerted by the player, but once this had been overcome it would itself contribute to the smooth and relatively slow movement of the crossbar. When playing the instrument in this way, the kitharistes had two possibilities. He could either shift the crossbar to certain points, thus producing precise tones (within the compass of the THE ANCIENT GREEK KITHARA), or achieve a glissando effect by continuing to move the crossbar smoothly. At the same time, the spring mechanism and the continuous pull of the strings would act to return the crossbar to its position of rest. With the second method of playing the kithara, a tremolo could be created, with either very slight variations in pitch or larger vibrations covering a range up to approximately three tones. The speed of vibration of the tremolo would have been proportional to the range it covered: the less the variation of pitch, the more rapid the tremolo and vice versa. When using this method, the kitharistes would set the weights oscillating by moving the whole instrument at right angles to his body, in this way making use of the inertia of the weights, which would have a tendency to remain in their initial position. After they had been set in motion, the weights and crossbar would be kept moving by impulses from the impact of the spring mechanism, as well as by occasional movements of the body of the kithara by the player. Of course it would also have been possible to play the instrument without making use of the movable mechanism; in this case, it would have been played like the lyre, barbiton or phorminx (which, in terms of its construction, was the kithara’s closest relative).”

In this section of his paper, Kurfurst theorised that the vibrato mechanism could be operated by the momentum of the player maybe throwing the kithara forward. I would tend to disagree, due to my own practical experience of actually playing one — due to the strong downward pull of the combined tension of the strings (even with low tension gut, this would still be well over 100 Lbs), in order to let inertia displace the yoke and set into operation the spring vibrato mechanism, the discs either side of the yoke would have to be very heavy and made of metal: speaking as a practical musician rather than a musicologist, this would render the beautiful light and resonant construction of the kithara so top-heavy that the instrument would be virtually unplayable!

Also, if metal discs were used, then these would have survived the ravages of time and many such discs would have been found in ancient Greek grave goods, where it is likely that revered musical instruments such as the kithara may well have been placed (surviving examples of the fragments of ancient Greek tortoise shell lyres have been found as grave goods, for example the remains of the Elgin lyre preserved in the British Museum) — no such curious metallic discs have ever been found in any grave goods, in any ancient Greek tomb so far excavated.

Regarding any original visual artefacts which could possibly be interpreted as visual evidence for the vibrato mechanism of the ancient Greek kithara actually being used, here is a fascinating illustration of an actual ancient Greek kithara player, who actually appears to be displacing the crossbar of the
lyre to either achieve this vibrato or pitch shifting effect - the crossbar has clearly been displaced by the player, so that it is lower in the left than it is on the right:

![Image of a lyre with displaced crossbar](image)

**EVIDENCE OF COMPLEX ARTICULATED PROTO-KITHARAS**

**I. THE ANCIENT GREEK PHORMINX**

Popular during the time of Homer (circa 8th - 6th centuries BCE), the phorminx was an earlier form of kithara, illustrations of which clearly with striking visual evidence of articulated arms, *which looked like they moved on hinges*: 

![Image of a phorminx illustration](image)
Also, many examples of the ancient Greek phorminx are shown with eyes painted around the sound-holes – maybe to give the impression that the instrument was almost human in the way it could create its haunting vocal vibrato effect?
2. THE ANCIENT MINOAN LYRES

Going even further back in time, to the ancient Minoan civilization, circa 1500 BCE, there are illustrations of lyres with curious circular structures at the bottom of each arm, which certainly could be interpreted as flexible, articulated joints. As the specialist ancient musical instrument luthier Peter Pringle (http://www.peterpringle.com) pointed out:

“Below is a picture of a seven stringed lyre painted onto the famous limestone sarcophagus known as the “Hagia Triada”, now in the Heraklion Archaeological Museum in Crete. This instrument is Minoan, and is 1000 years older than the Golden Age kithara we are familiar with.

Notice the unusual construction of the two pillars of this instrument with their large ring-shaped, curiously jointed, configurations. Remind you of anything? To my eyes, this instrument is obviously articulated, just like the kithara of 500 B.C.

I have looked over the writings of archaeologists and musicologists who have examined this marvellous artefact, and not one of them has suggested that the ‘O’ rings have any purpose whatsoever beyond simple decoration.”
Archaeologist C. R. Long, who wrote an extensive treatise on the sarcophagus in the 1970’s, says in regard to this lyre, ‘Size is a matter of space available rather than proportion in Minoan/Mycenaean art. We cannot tell how large the Minoan lyre was…. The player holds it in his left arm, assisted by a sling around his wrist and around the outer arms of the instrument so that his left hand fingers are free to pluck or damp.

EVALUATING THE EVIDENCE FOR THE DEVELOPMENT OF ARTICULATED ANCIENT GREEK LYRES?

The circumstantial body of evidence for articulated ancient Greek lyres is so extensive and whose prototypes dates back so far into the ancient Greek archaeological record, that to me, applying the philosophical method of Occam’s Razor here, given the available overwhelming circumstantial archaeological evidence we have in the form of countless, detailed ancient illustrations, the simplest explanation for these complex structures seen on these ancient Greek lyres, is that the ancient Greeks had developed an intricate vibrato mechanism based upon the idea of articulating the arms of their lyres, refined over a period of at least a thousand years, before reaching its most advanced form, in the glorious kithara of the Golden Age of Classical Greece.

To say that these structures seen on all of these images of ancient Greek kitharas and proto-kitharas are ‘purely decorative’ is like imagining an archaeologist of the distant future, in a world where the common wheel had been replaced by an instant transport system of teleportation, arguing that the ‘curious circular structures’ seen in pictures of late 19th century bicycles were for decoration...
From the point of view of epistemology (the philosophical theories on how we are able to gain knowledge), in order to gain knowledge about any facts, we must already have a certain amount of experience of similar facts in order to interpret the new facts - with no experience of hearing or seeing an ancient Greek or Roman kithara performed for over 2000 years, we are in a very similar position to our ‘future archaeologist scenario’ in his inability to interpret the fact that the 'curious circular structures' seen on late 19th century bicycles were, in fact, the things we currently call 'wheels'!

THE LUTHERIOS RECONSTRUCTION OF THE ANCIENT GREEK KITHARA

To my knowledge, besides the Luthieros replica “Kithara of the Golden Age” there is only one other replica of a fully articulated ancient Greek kithara, which I have seen in a video presentation by Michalis P. Georgiou:

https://vimeo.com/69801992

The Luthieros kithara is also beautifully hand-made, by their master Luthier, Anastasios Koumartzis. The real beauty of the Luthieros replica kithara, is affordability – thanks to the dedication of the Luthieros team in their mission to enable any modern musician to learn to play the beautiful lyres of
antiquity, it is now possible for any curious musician in the modern world, to own a hand-made, working replica of the kithara of the Golden Age of Classical Greece, for about the same price as a regular Fender electric guitar! Below is the wonderfully reconstructed working replica of the ancient Greek kithara, hand-made in modern Greece by Luthieros, complete with its fully operational vibrato mechanism:

The vibrato mechanism can be operated either by light lateral movement of either of the vertical wooden levers at each end of the yoke, or a more subtle vibrato can be achieved by pushing the discs either side of the yoke. The adjustable metallic structures beneath the 2 vertical levers, (the ‘weights’ described in Kurfurst’s paper) resting directly above each of the springs balances and supports the full tension of the downward pull of the strings to equally match the upward force of the springs. Rather than relying on adjustable weights, (the system theorised in the paper by Kurfurst), the balancing mechanism on the Luthieros kithara can be adjusted with a simple screw thread. When the system is perfectly balanced, it only takes light finger pressure on either of the vertical levers to create a haunting vocal vibrato effect!

Below are some closer up photographs providing more details of the recreated vibrato mechanisms:
Here is a photograph of me playing the wonderfully reconstructed Luthieros Kithara, on location, in an ancient Greek burial site in the mountains of Europos and in Thessaloniki during October 2015, when I had the pleasure of meeting the talented and dedicated Luthieros team:
Another incidental observation, regarding the 'rock star' status of the kithara player in ancient Greece, is a possible explanation to account for the curious vertical sash seen in almost all
Illustrations of ancient Greek kithara players, which hangs below the player's left hand and is often quite ornate in decoration. Below is an illustration of a kithara contest, with the judges either side of the kithara player, whose vertical sash is clearly evident, hanging behind the kithara.
A similar vertical sash can be seen in the illustration below, again, hanging behind the instrument:

I have my own theory regarding the vertical sash. As mentioned by Franklin, the ancient Greek kithara player was exalted just the way rock guitarists are in our own times, so much so, that actual kithara contests were common, in which the virtuosity of the kithara player was judged, as can be seen in this actual illustration of a kithara contest on an ancient Greek vase, clearly showing the two judges sitting either side of the performer:

The same vertical sash is also clearly present in the image above. I think that instead of playing any practical role, (unlike the cord known as the 'telamon' which was used as a hand-strap to hold the instrument), the fact that the sash was often also quite ornate, may imply that it actually was an indication of the kithara player's status as a professional musician, in much the same way that a Judo belt indicates the proficiency of a Judo athlete?

If there are any Classics scholars out there who could verify my theory regarding the sash, from any snippet of ancient literature which mentions it, do please let me know!

For full details on all my research into the kithara of ancient Greece and Rome, please also see my blog:

http://www.ancientlyre.com/the_kithara_of_ancient_greece_rome/
THE TRACKS ON THIS ALBUM

The main musical concept of the album is to imagine the sort of melodies which once may have accompanied recitations of some of the classic legends and epic poems of ancient Greece, which would have almost certainly have been accompanied by the kithara; the lyre of the true professional musicians of Classical antiquity. Indeed, almost all the great works of literature from ancient times were originally meant to be sang; the music giving weight and emotional emphasis to the text and in doing so, helping to convey its true meaning...

All the tracks in this album are original compositions, in a selection of some of the original ancient Greek musical modes, in the wonderfully pure just intonation of antiquity. Also, to subtly add to the exotic timbre of the replica Luthieros kithara, I have tuned the kithara with A at the slightly lower reference pitch of 432 Hertz – although I certainly do not adhere to all the ‘New Age’ nonsense currently clogging the Internet about this particular reference pitch, the subtly lower pitch certainly does enhance the richness of the lower register of this wonderful instrument, with its authentic gut strings. For more details on my philosophical investigation into the multiple claims made about 432 Hertz, please see my blog:

http://ancientlyre.com/blogs/is_432_hz_new_age_schmertz/

The ancient Greek kithara was quite literally, the ‘guitar’ of Classical antiquity – indeed, it is actually from the word “kithara” which we derive our modern word ‘guitar’. Therefore, in this release, for the first time, I decided to include some simple vocal lines, as just like the modern guitar, the kithara almost begs to accompany the human voice. However, as I am certainly no professional singer, my intention to include these basic vocal lines was to accompany the sound of the kithara, rather than vice versa.

1. Meditations of Polyhymnia

Polyhymnia (Πολυύμνια; “the one of many hymns”), was in Greek mythology the Muse of sacred poetry, sacred hymn, dance, and eloquence as well as agriculture and pantomime. Her name comes from the Greek words "poly" meaning "many" and "hymnos", which means "praise".

She is depicted as very serious, pensive and meditative, and often holding a finger to her mouth, dressed in a long cloak and veil and resting her elbow on a pillar. Polyhymnia is also sometimes credited as being the Muse of geometry and meditation.

This piece, therefore is fittingly composed in the intensively introspective ancient Greek Dorian Mode (the equivalent intervals as E-E on the white notes of the piano and misnamed the 'Phrygian' mode in the Middle Ages). This uniquely introspective characteristic of the ancient Greek Dorian
Mode is further enhanced by the use the pure, focussed musical intervals tuned in authentic just intonation...

2. Hymn to Persephone

Persephone was one of the most feminine of all the pantheon of ancient Greek goddesses - according to ancient Greek mythology, she was the goddess of Innocence and Receptivity and Queen of the Underworld:

"Persephone, a Greek goddess known in her childhood by the name Kore (or Cora, meaning young maiden), was the only child of the union of Demeter (goddess of the bountiful harvest) and Zeus, the mighty king of the Olympians. The Greek goddess Persephone was born when Demeter was Zeus' consort, long before his marriage to the goddess Hera.

By all accounts Persephone had an idyllic childhood, raised by her nurturing mother and played with her father's other daughters, the Greek goddesses Athena and Aphrodite. Always a cheerful and compliant child, the little goddess Persephone was a parent's dream.

According to Greek mythology Persephone's life was soon to change. As signs of womanly beauty began to shine alongside her childlike innocence, the adolescent goddess Persephone unwittingly attracted the attention of the Greek god Hades, brother of Zeus and ruler of the Underworld...

The god Hades, however, did not bother to woo the young Persephone, traditional goddess protocol notwithstanding. After asking for (and receiving) her father's approval for Persephone's hand in marriage, Hades simply abducted her one bright sunny day. When she stooped to pluck a narcissus from a field of wildflowers near her home, the meadow was suddenly rent open, and Hades simply reached up from the Underworld and snatched Persephone away, taking her to his Underworld kingdom and making her his queen.

Although the young goddess Persephone grew to love Hades, she remained lonely for her mother and the life she'd known on earth."

(www.goddessgift.com/goddess-myths/greek_goddess_persephone.htm)

To reflect the innocent, feminine qualities of Persephone, this piece is composed in the dreamy, sensual and feminine-sounding ancient Greek Hypolydian Mode (equivalent intervals as F-F on the white notes of the piano and misnamed the 'Lydian' mode in the Middle Ages).

3. Demeter's Grief for Persephone

The story of Persephone and Demeter is a classic example of an etiological myth (i.e. a myth intended to explain the origins of natural phenomena etc.), which beautifully and elegantly attempts to explain the actual cause behind the changes we observe in the passing of the seasons...

In Greek mythology, Persephone is the daughter of Zeus and the harvest goddess Demeter, and is the queen of the underworld.

One day while Persephone was gathering flowers, Hades, god of the underworld, captured her. No one had any idea where she had gone to or what had happened to her.
Demeter was sick with worry and grief. She asked Helios the sun god what had happened. When she learned that Hades had captured her daughter she became very angry. For a year she caused crops and plants to wither and die. A terrible famine gripped the earth.

Zeus commanded that Hades release Persephone. Persephone was overjoyed. However he tricked her into eating some pomegranate seeds before she left the underworld. He knew that if she ate anything from the land of the dead, she would have to return to him for a part of each year.

Demeter was delighted that her daughter had returned to her. However every time Persephone had to return to Hades, Demeter mourned terribly again.

This is why for a part of each year the plants and crops stop growing. When Persephone returns to earth, the land once again bursts with life.

The myth of the abduction of Persephone represents her function as the personification of vegetation, which shoots forth in spring and withdraws into the earth after harvest; hence, she is also associated with spring as well as the fertility of vegetation...

To reflect the poignant yearning of Demeter for her beloved daughter Persephone, this composition is in the form of a lament, in the mournful and distinctively poignant ancient Greek Phrygian Mode (equivalent intervals as D-D on the white notes of the piano and misnamed the 'Dorian' mode in the Middle Ages). I also tune my kithara in authentically pure just intonation to further enhance the distinctive characteristics of this ancient Greek mode.

I also experiment with creating rhythmic effects during the performance, by also sometimes using the greater mass of my replica ancient Greek carved bone plectrum as a baton to beat rhythm on the soundboard of my kithara, in much the same way that creative acoustic guitarists beat rhythm on the soundboard of their guitar whilst they play...

4. Song of Selene

Selene, in ancient Greek mythology, was the goddess of the moon and the daughter of the Titans:

"She was depicted as a woman riding side-saddle on a horse or driving a chariot drawn by a pair of winged steeds. Her lunar sphere or crescent was either a crown set upon her head or the fold of a raised, shining cloak. She was sometimes said to drive a team of oxen and her lunar crescent was likened to a pair of bull's horns.

Selene's great love was the shepherd prince Endymion. The beautiful boy was granted eternal youth and immortality by Zeus and placed in a state of eternal slumber in a cave near the peak of Lydian Mount Latmos (Latmus). His heavenly bride consorted with him there in the night."

http://www.theoi.com/Titan/Selene.html

In my attempt to try and evoke a feeling of the cold and eerie characteristics of moonlight in sound, this piece composed in the wonderfully intense and mournful sounding ancient Greek Hypodorian Mode (misnamed the 'Aeolian' mode in the Middle Ages, this mode, heard here in authentically pure just intonation, is the equivalent intervals as A-A on the white notes of the piano). This ancient Greek mode, the basis of our modern minor scales is also sometimes referred to as the 'Natural Minor Scale'.
5. Paean to Ares

In Classical Greece, a Paean was a song or lyric poem expressing triumph or thanksgiving. Ares was the ancient Greek god of war. This piece is therefore in the ancient Greek Dorian Mode - which according to Plato, was the most manly of all the musical modes, capable of even inspiring bravery in battle, Misnamed the 'Phrygian' mode in the Middle Ages, the intensely introspective ancient Greek Dorian mode is the equivalent intervals as E-E on the white notes of the piano. I also use authentically pure intervals tuned in just intonation.

In his philosophical analysis of the 'manly' qualities of the ancient Greek Dorian mode "The Republic" by Plato, Book III (398-403), in a classic philosophical dialogue of argument and counter-argument between the characters in this passage, the text is as follows:

"The harmonies which you mean are the mixed or tenor Lydian, and the full-toned or bass Lydian, and such-like.

These then, I said, must be banished; even to women who have a character to maintain they are of no use, and much less to men.

Certainly.

In the next place, drunkenness and softness and indolence are utterly unbecoming the character of our guardians.

Utterly unbecoming?

And which are the soft and convivial harmonies?

The Ionian, he replied, and some of the Lydian which are termed “relaxed”.

Well, and are these of any use for warlike men?

Quite the reverse, he replied; and if so the Dorian and the Phrygian are the only ones which you have left."

https://theoryofmusic.wordpress.com/2008/08/04/music-in-platos-republic/

6. Ode to Achyls

In Greek mythology, Achlys (Ἀχλύς "mist") was, according to some ancient cosmogonies, the eternal Night (perhaps the Mist of Death, which fell before the eyes preceding death), and the first created being which existed even before Chaos.

This piece is in the wonderfully intense and mournful sounding ancient Greek Hypodorian Mode (misnamed the 'Aeolian' mode in the Middle Ages, this mode, heard here in authentically pure just intonation, is the equivalent intervals as A-A on the white notes of the piano). This ancient Greek mode, the basis of our modern minor scales is also sometimes referred to as the 'Natural Minor Scale'. The use of just intonation in this piece further enhances the distinctive emotional effect of this mode.
7. The Sack of Troy

In ancient Greek Classical literature, there was a lost ancient Greek epic by the title of “The Sack of Troy” - which was one of the Epic Cycle, which told the entire history of the Trojan War in epic verse. In creating this new composition for replica ancient Greek kithara, it was therefore my intention to evoke the sort of ancient Greek ‘paean’ style melody (an ancient Greek hymn of thanksgiving) to which that lost epic of ancient Greece could have been recited!

Regarding the ancient Greek Dorian Mode, this was misnamed the 'Phrygian' mode in the Middle Ages. This intensely introspective mode is the equivalent intervals as E-E on the white notes of the piano. I also use authentically pure intervals tuned in just intonation.