MUSIC IN THE AEGEAN BRONZE AGE

BY

JOHN G. YOUNGER

PAUL ÅSTRÖMS FÖRLAG
JONSERED 1998
STUDIES IN MEDITERRANEAN ARCHAEOLOGY
AND LITERATURE

Pocket-book 144

Published by Professor Paul Åström, Jonsereds herrgård,
William Gibsons väg 11, S-433 76 Jonsered, Sweden

Front cover: Fresco 43-44 H 6 from ‘Nestor’s’ Palace at Pylos (Cat. 31).
Color drawing author.

Back cover: The Ayia Triada Sarcophagus (Cat. 29): phorminx player
on the north side. Color drawing author.

DEDICATION

This study is dedicated to
Mabel Pitinger

my music teacher at Tamalpais High School, Mill Valley, California;
her love, patience, and music have never left me.

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ISBN 91 7081 124 5
Printed in Sweden
by Elanders Graphic Systems AB
Published by Paul Åströms förlag,
William Gibsons väg 11,
S-433 76 Jonsered, Sweden
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ACKNOWLEDGEMENTS

This study was first suggested to me by my colleague Professor Tilman Seebass well over a decade ago; since then, several undergraduate students have assisted gathering the evidence. Kathryn Leigh Eward and James Cowan prepared the initial catalogue; Tracey Kogan created a summary of Near Eastern and Egyptian music that has helped me put in focus the unique contributions of Aegean music; and Andrea Remyn alerted me to possible depictions of dance other than just those that have received common acceptance. Finally, I am grateful to the Trustees of the British School of Archaeology in Athens for the permission to consult Cameron 1974.

Several colleagues have taken the time to read drafts of this study, and I am grateful to them all: John Bennet, Bo Lawergren, Martha Maas, Thomas Mathiesen, James McKinnon, Jane Snyder, Peter Williams, and especially Paul Rehak. I am also indebted to Lawrence Richardson, jr., for his help on sistrum. In addition, I have had enjoyable conversations about Aegean music with many friends and colleagues, including David Creese.

Last, but not least, I wish to thank Paul Åström for accepting this manuscript and for his patience while I prepared it.
ABBREVIATIONS

In the text, Cat. refers to Ch. 3, the catalogue of extant musical instruments and their representations. I have seen the asterisked items in the catalogue.

Measurements are in centimeters.
   L. = length; H. = height; W. = width; D. = diameter

For the chronology, standardized abbreviations indicate periods; for the dates of these periods and their subphases, see Fig. 1, the Chronological Chart.

<table>
<thead>
<tr>
<th>EH</th>
<th>Early Helladic</th>
<th>MH</th>
<th>Middle Helladic</th>
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<tr>
<td>EM</td>
<td>Early Minoan</td>
<td>MM</td>
<td>Middle Minoan</td>
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<td></td>
<td></td>
<td>LM</td>
<td>Late Minoan</td>
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<td></td>
<td></td>
<td>LH</td>
<td>Late Helladic</td>
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The following abbreviations are used, in addition to those listed in the American Journal of Archaeology 95 (1991) 1-16:

HM      Herakleion Archaeological Museum, Crete.
NMA     National Archaeological Museum, Athens.
### CHRONOLOGICAL CHART OF AEGEAN MUSIC
Conventional Dates (Recently Proposed New Dates)\(^1\)

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<td>EM II</td>
<td>Prepalatial</td>
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<tr>
<td></td>
<td>EC II</td>
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<td></td>
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<td>Auloi (48)</td>
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<tr>
<td>1900</td>
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<td></td>
<td></td>
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<tr>
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### LATE BRONZE AGE

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1. LH I (1700) 1550
Singing (53, 60)
Triangular Lyre (28)
Sistrum (53)
Triton Trumpet (61)
Aulos (27)

1. LH II (1610) 1450
Phorminx (34)

1. LH IIIA1 (1490) 1400
Phorminxes (29, 30)
Auloi (29)

1. LH IIIA2 (1410) 1325
Large Phorminx (35)
Chelys Lyres (10)

1. LH IIIB1 (1365) 1275
Lyres (3-5)
Cymbal (26)

1. LH IIIB2 (1300) 1250
Phorminx (31)

1. LH IIIC (1200)
Phorminx (36)
Cymbals (25)

1. LH III end 1100
Kithara (37)
INTRODUCTION

For the music of the Aegean Bronze Age, we can be certain, from the archaeological record, of only a limited range of instruments representing, however, most of the major modern organological categories plus singing (Chart, p. x): voice, strings, reeds, horns, and percussion.

Of stringed instruments, the frame harp existed in the Early Bronze Age both in the Cyclades and, perhaps slightly more elegantly shaped, on the mainland; the Minoans apparently developed the frame harp and, during the first palace period, may have created a doubled version with two sets of four strings in MM II. Almost contemporaneously, the Minoans seem to have developed a distinctive type of lyre, which we call the phorminx -- a Linear B tablet from Thebes lists generic "lyre players".

In the Late Bronze Age lyres are common: many ivory fragments of unclassifiable lyres have survived, including one that must, by its decoration, be dated to LH I, the Shaft Grave era, and thus the earliest surviving example from the Aegean. Contemporary monkeys play a triangular lyre, perhaps a toy. The tortoise shell lyre is probably represented by fragments found in the Mycenaean Sanctuary at Phylakopi (LH IIIA-C contexts).

The harp apparently did not long survive; by MM II B (ca. 1725 B.C.) it had developed into the double harp before disappearing from the archaeological record, perhaps driven out by the contemporary appearance of the phorminx. It is this lyre which is the Aegean's distinct contribution with highly ornamental arms of equal length and a crescent soundbox. The most numerous representations of the phorminx appear on the Mycenaean mainland and during the Mycenaean occupation of Crete (within LM II-IIIA:1). A large phorminx also existed, though its sole representations in LH IIIA:2-IIIB may imply it appeared only in that one period, as its Egyptian cousin, the giant lyre, had appeared, "introduced by foreigners"1 slightly earlier, only during the reign of Akhenaten (ca. 1367-1350 B.C.).

Of wind instruments, the double reeded aulos is the only certain instrument. It is portrayed being played by a probably genuine Early Cycladic

male figurine; a possible ivory fragment from Mycenae may represent the only extant aulos; and the instrument is probably depicted on a seal that impressed a sealing from Knossos and on a fresco from Ayia Triada (both no later than LM IIIA1). The contemporary Ayia Triada sarcophagus depicts an unusual set of auloi, possibly the Phrygian aulos.

Of horns, only the triton shell trumpet may have been used; on an early Late Minoan sealstone a person may blow one at an altar, and extant shells and imitations in other materials with either the apex opened or a drilled appendix near the mouth were dedicated in sanctuaries and deposited in tombs at various dates throughout most of the Bronze Age.

Of percussion, we know only of Middle and Late Minoan sistra of several types, and perhaps in several media including terracotta, and of Late Mycenaean bronze cymbals.

Finally, the LM I Harvester Vase presents a trio of male singers and slightly earlier sealstones present individual male portraits of possible singers, perhaps soloists.

Regardless of differences, it is quite likely that all areas of the Eastern Mediterranean, including the Aegean, the Near East, and Egypt, produced music that would have been similar in some aspects. We can use evidence from the Eastern Mediterranean, therefore to see what might be missing in the Aegean. Both Egypt and the Near East, like the Aegean, had the harp and the lyre, while Mesopotamia also had the dulcimer and the asor (a horizontal harp). Both areas also had the double aulos, but Egypt also had the single pipe and the side-blown flute. Unlike the Aegean so far, both areas had the trumpet. And while both areas had sistra and cymbals, they also had drums and clappers, of which the Aegean has not yet produced an example. A variety of other kinds of noise-makers have not yet been reported from the Aegean, especially rattles and whistles, which perhaps have just not been recognized amongst the terracottas.

The most obvious kinship between Aegean, Near Eastern, and Egyptian music lies in the way it was organized. Common, apparently, to all three cultures was the basic division of sound into tetrachords of either the fourth or an interval close to it, as well as the octave; it is probable that, as in Egypt, Aegean music used low, closely spaced tones within the interval of the fourth. The basic sound to the modern ear would be rich and melismatic with a pentatonic quality that we associate today with Near Eastern and Islamic music, a style which Westerners often find shrill, wailing, and monotonous.

Music of the Bronze Age cultures in the Aegean basin has been discussed in numerous articles devoted to specific aspects but there has been little synoptic treatment (see the bibliography). The last two general studies of Aegean music (B. Aign in 1963 and M. Wegner in 1968) were written about 30 years ago; even then both wrote of music spanning the Bronze and early Iron Ages, and both studies were essentially catalogues with little discussion. More recently, M. Maas and J. Snyder (1989) wrote on the history of stringed instruments from the Aegean Bronze Age through the classical period; and M.L. West (1992) has written a general history of classical music with considerable attention to its Aegean origins.

Nonetheless, there is still much more that can be said about Bronze Age Aegean music, and it is time to provide a detailed catalogue of the evidence for it and to attempt some conclusions about its nature. This survey first presents the instruments, then an analysis and some conclusions; a complete catalogue of the physical evidence, artifact by artifact, and their representations also gives important information and detailed discussions and references; finally, there is a concordance and bibliography.

I feel I should also say something about my own approach to this subject, for music history is generally written by musicologists; I think of myself as an archaeologist whose specialty is Greece, especially the Aegean Bronze Age.

Recently, however, I have become more interested in the classical period and in social archaeology, which may be defined as the archaeology of society, its everyday life, attitudes, and behavior. Recently, too, I have become interested in the study of gender and sexuality in classical antiquity.

Writing a history of Aegean Bronze Age music, therefore, has resulted in blending my earlier specialty with my most recent interests. Even more pleasantly, however, has been the opportunity to use my life-long interest in music. I bought my own piano before I was 10, taught myself the violin in high school, and in college majored in music with a concentration in composition. When my first archaeology teacher, T.B.L. Webster, placed Greek and Roman lamps in my hand, however, they sang to me more clearly and I pursued a different career.

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2. In the following discussions, I rely on, for Egypt, Manniche 1991, and, for the Near East, Rimmer 1969.
CHAPTER 1

AEGEAN MUSICAL INSTRUMENTS

THE HUMAN VOICE (SINGING)

No actual composition of Aegean music has survived. We would not expect Linear B (the Mycenaean script of the Late Bronze Age) to have been used to write music, or even the words to songs; Linear B is almost entirely concerned with lists of commodities and personnel, and their inventory and distribution. But Linear A, the earlier Minoan script used from MM II to LM I, was written in so many media and for several other purposes than just inventories and lists, that it is conceivable that it might have been used to write lyrics. And the unique Phaistos Disc, a clay disc whose both sides carry a spiral inscription of pictograms, apparently unrelated to Linear A, quite likely records a poem of some kind with rhymes and repeated refrains.1

The so-called 'Libation Formula'2 in Linear A, for example, consists of a phrase or sentence of eight words inscribed on a wide variety of objects, stone libation tables, cups, ladles and offering tables, inked terracotta cups, and a silver pin, most of which were dedicated at peak sanctuaries. At its full form, and in Linear B phonetic values, the 'Libation Formula' runs like this:

<table>
<thead>
<tr>
<th>word 1</th>
<th>word 2</th>
<th>word 3</th>
<th>word 4</th>
<th>word 5</th>
<th>word 6</th>
<th>word 7</th>
<th>word 8</th>
</tr>
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Allowable variations exist for Word 1; Word 2 seems reserved for a set of place-names, including Tyllissos, Mt Ida and Mt Dikte; but Word 3 is always different, as if reserved for the ever-changing name of the dedicant. The other words never change. This precise repetition is exactly what we would expect for a song, chant, or poem recited by different people at a number of places.

Within this Neopalatial context where writing conceivably could record

song, we might be able to analyze, with some imagination, the two contemporary depictions of singing that have survived, Cat. 53, the Harvester Vase, and Cat. 60, the amethyst disk seal from Mycenae.

The intaglio disk (D. 1.0), Pl. 24.2, carries the head of a man in profile, his mouth open as if singing or chanting. Stylistically, the seal belongs to the late MM, well-defined Group of the Chanting Priest. Another sealstone belonging to this stylistic group, CMS II 3.13a, carries a similar portrait of a bearded, long-haired man, perhaps with his mouth also open. Several other members of this group carry male heads on the obverse of the sealstone and bull or calf heads on the reverse, while another carries just a boar's head accompanied by a knife. The associations between male head and animal head (especially the boar's head with knife) may imply that these men are connected with animal sacrifice or butchery. The similar hair style of the long-robed Leader on the Harvester Vase (Cat. 53) may identify him as another one of these participants in the sacrifice; and the close proximity to him of the three singers there may complete his identification as a singing (or chanting) participant. In fact, two early scholars, Sir Arthur Evans (PM II 785, IV 412) and Victor Kenna (1962), had already identified these portraits as those of priests. Whether they are or not, however, is not crucially important for this study.

The amethyst disc comes from Mycenae Shaft Grave Gamma, an extremely rich tomb holding the bodies of four individuals, the latest of whom was a man in his early 30s placed in a central position in the tomb; around his head were, among many items, an electrum mask and a bronze and a cup containing alabaster sword pommels, beads, and the sealstone. Since the sword pommels were obviously reserved for their material as parts of ceremonial swords, it is likely that the seal had also been reserved, not only as an item of jewelry and status, but also because its material, amethyst, is rare in the Aegean. Obviously the deceased individual was a man of some importance.

The only other representation of singing occurs on the Harvester Vase (Cat. 53: Pls. 1.1, 2); here, the three men (figures 15-17) and the sistrum shaker 18 in front of them are depicted singing, their mouths open and heads tilted at various angles. The three singers are dressed differently from the other men, their hair is short and wavy, their torsos are modeled smooth; in addition, the sistrum player has a prominent stomach, an unusual body type in

Minoan art. Since both the fleshiness and the kilt recur on bronze figurines depicting a male votary, it is possible that this person was a recognized type.

The procession of workers is divided into two parts: first, the crowded group of fourteen led by the three singers and the sistrum shaker and, second, the remaining eight, more spread out, led by the Leader. The massing of the workers behind the musicians seems odd, for if the rhythm of the music was to keep them in step it was not successful -- figure 5 is generally thought to have fallen and the next pair looks off-balance; in fact, the entire mass of figures behind the musicians looks rowdy. Perhaps the grouping has a second purpose, to imply that the more staid group of eight in front are something like supervisors and the mass of fourteen in back really represent a host of fieldhands.

The song that is being sung may be the Minoan equivalent of classical harvest songs like the Lityseres (West 1992: 28) or the Linos, a song of lament, which, on the Shield of Achilles (Iliad 18.569-570), a youth sings as he plays the phorminx for a procession of grape harvesters. West quotes (1992: 45-46) the scholion to Homer's description which seems to suit the scene here: the Linos is "a song of lament which is sung in an attenuated voice employed by a solo performer with poorly co-ordinated antiphonal responses from a chorus ..." The cluttered group of workers on the Harvester Vase then might reflect such imprecision.

These harvest songs seem ancient; Herodotos II.79 notes that the Linos appears in many cultures, Phoenicia, Cyprus, and Egypt: "The Egyptian name for Linus is Maneros, and their story is that their first king had an only son, who died young, and that this dirge - their first and, at that time, their only melody - was invented to be sung in his honour" (translation, de Sélinecourt).

The three singers are different physically from the workers: they are taller;

6. It is possible that fallen figures are a topos in Minoan art. An early fragment of the Procession Fresco that Evans found just south of the Procession Corridor (PM II 2, 751 fig. 485) preserves men moving left, but one of them has his face level with the hip of the other in front. Cameron 1978: 587, pl. 4, dates it to the Neopalatial period and moves it to the East Wing to accompany the Grand Staircase, though the relative difference in height of the figures cannot match the changes in height of the staircase's risers. Other pairs of figures differing in height occur on a small fragment of a relief rhyton (HM 2329, Warren 1969: 85, P475) which depicts two male wrestlers, one lifting the other off the ground.
7. See the section on folk-songs in Edmonds 1967, vol. III: 488-507
their hair is wavy, not cap-like; and their chests are oddly smooth, as if fleshy or wrapped in a close-fitting mantle. They appear to glide forward rather than step forth with vigor like the workers who raise their legs exaggeratedly. The singers are also posed with their heads fanned out: figure 15 raises his head, stretching his throat; figure 16 lowers his head, constricting it; and figure 17 sings straight out. It would be tempting to imagine them singing parts, tenor, bass, and baritone respectively, but if classical Greek music allows only octave parallelism in singing (West: 40-41) the positions of the heads here might convey tonal qualities, like reedy, throaty, and clear, or result simply from the artist's attention to compositional spacing.

The Harvester Vase is the only work of Aegean art to combine depictions of musical sound and vigorous movement, a combination that compels me to discern the overarching element that embraces both: rhythm.² I have already noted that the composition is divided into two parts: the larger group of 13 rowdy fieldhands³ culminating in the three singers 15-17 and the sistrum player 18; and the smaller, more staid group of four pairs of workers 21-26 and the Leader 27. The number of men as well as the spacing puts the two groups in a ratio of 2:1. The ratio also belongs to the octave and may reflect the total range of the song.

The larger group breaks evenly in halves, beginning with two pairs of fieldhands 1-4 and a mass of four figures 5-9; the second half contains another two pairs of fieldhands 10-13 and another mass of four figures 14, plus the singers 15-17. The whole composition of the procession thus breaks into thirds, two-thirds for the rowdy fieldhands and one-third for the more stately group in front. While the exaggeratedly raised legs of the workers imply that the basic rhythm is march-like, the breakdown of the composition into thirds may lead us to expect within the measures a dotted rhythm, like iambic or trachiaic in poetry.

If we read the composition, left to right as the procession itself moves,

8. Such a combination is common in Classical depictions of music-making. For instance, a similar depiction of music-making with vigorous body movement appears on a Black-Figure amphora (Maas & Snyder 51 fig. 15c), where the first and third of four men have both feet on the ground while the second and fourth exaggeratedly raise their left knee high in the air. The effect reproduces a rhythm expressed as down-up, down-up, or thesis-asis, thesis-asis, or /\ /\.

9. In Pl. 2 fieldhand 9 is really a ditographed head of fieldhand 8; cf. the ditographed heads in front of worker 26 which were begun and partially erased.

allowing an eighth-note for each worker, including the singers, and thus a quarter note for each pair of workers, and if we allot a cadence to the two figures who finalize their sections, the sistrum player 18 and Leader 27, we find the following march.¹⁰

I have supplied a whimsical antiphonal lyric to provide a sense of the rhythm and occasion,¹¹ and, since in Egypt the role of the sistrum player was to accentuate and divide the phrases,¹² the reasonable place to put that divide is at the same place where the procession itself divides, at the sistrum player himself. Thus:

| FIGURES | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
|---------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|

SINGERS "We'll be tired from pick--ing o---lives;"
MISTRUM SHAKER (shaking the sistrum) "BUT;"
WORKERS "they'll be good to eat!"

STRINGED INSTRUMENTS

There is secure evidence for two types of stringed instruments in the Aegean Bronze Age: harps and lyres. Seated male figures of marble play the frame harp in the Early Cycladic period, and a sealing from EH II Lerna carries seal impressions that depict the instrument.

Aegean lyres came in several forms: the tortoise shell lyre (chelys lyre), the triangular lyre without soundbox, and a more rectangular lyre with a

¹⁰. Regardless whether the 2/4 march has any reality in Aegean music of the LM I period, it offers no support, one way or another, for West's hypothesis (p. 387) that the Minoans may have contributed the paeanic rhythm (5/8 time ± ± ± ± , thus akin to the Cretic ± ± ± ± ) to the classical tradition. West bases his hypothesis on the twin assumptions that the both the paean and the Minoan language were not Indo-European; it is still uncertain, however, to what family of languages Linear A belongs (see Hooker 1975; and Chadwick 1975: the word 'pa-ja-wo-ne' is attested as a divine name [for Apollo?] in Linear B (KN C 394.R4 and KN V 52).2).

¹¹. If picking olives is indeed the occasion, it takes place either in early fall for green, oil-yielding olives or in winter for black, eating olives.

Chapter 1: The Instruments

crescent soundbox, the phorminx. Fragments of drilled tortoise shell, chelys lyres have been found in the late Mycenaean sanctuary at Phylakopi; monkeys play triangular lyres on a fresco from Akrotiri, Thera; fragments of ivory phorminxes come from Mycenaean contexts, and the instrument is represented on a Middle Minoan sealstone and in Late Minoan and Mycenaean paintings. At the very end of the Bronze Age or early in the Iron Age, a miniature bronze kithara was dedicated at Amyklai.

The evidence is problematic for several other kinds of stringed instruments:13 Minoan hieroglyphs continue to depict what seems to be the frame harp, while a couple of Middle Minoan sealstones depict what can be called a double harp. The Akrotiri fresco depicts monkeys playing a simple triangular lyre (Cat. 2) which may not, therefore, be real but a toy; it resembles, however, an instrument that Nikolaos Platon restores from onyx fragments (Cat. 11).

<table>
<thead>
<tr>
<th>EBA</th>
<th>MBA</th>
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<td>Harp</td>
<td>EH/EC II</td>
<td>MM II</td>
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<td>Double Harp</td>
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<td>Triangular Lyre</td>
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<td>Phorminx</td>
<td>MM IIB</td>
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<td>Kithara</td>
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Chronology of Stringed Instruments.

Harps

Harps are stringed instruments from one side of whose frame the strings descend obliquely to a soundbox. The frame harp (Pl. 17) is known from its representations in Early Cycladic figurines (Cat. 38-47) and on an impressed sealing from Lerna on the Mainland (Cat. 62, Pl. 24.4), all datable to the Early Bronze II period (ca. 2300-2200 B.C.); a development of the frame harp, the double harp (Cats. 56, 58, 64), is known clearly from Middle Minoan hieroglyphic sealstones.

The frame of the frame harp refers to the neck or arm that rises out of the long, rectangular soundbox at the end closer to the musician, and it connects to a support post rising from the far end of the soundbox, thus forming a triangle, the πραγματος of the classical period.14 At the top of the instrument, a duckbill projects forward probably to mask the join between frame and support post and perhaps also to provide a grip for the left hand. The soundbox rests on the musician's right thigh; it is long, rectangular in section, and slightly triangular in plan, with the base of the triangle, the short side, at the player's hip.15

No strings are represented in the marble statuettes but the Lerna impression carefully depicts four. It is most likely that, in playing, the strings would have been plucked or strummed. The later double harp, contains two separated sets of four strings, and if it developed from the Early Bronze Age frame harp, then perhaps the earlier one did have four strings, a tetrachord as Evans suggests (e.g., e-a).16

The Early Cycladic marble musicians are all male and nude. They sit on a stool or throne with high back and hold the instrument on their right thigh. They rest their right arm alongside the soundbox or on it, and raise their left arm up toward, or to grasp, the support post just under the duckbill protrusion or considerably below it. None of the harps plays the instrument.17 The Cycladic musician in the New York Metropolitan Museum of Art (Cat. 47) is generally agreed to be a forgery; he wears a belt and grips the instrument at the top with both hands.

The major problem concerning all Early Cycladic figurines is that few of them come from controlled excavations, including the musicians, and few have any reliable provenience; the overwhelming majority are "said to have come from" a particular site or have no known origin at all. Since the marble

13. Schliemann 1881: 561, no. 1210, identifies a rectangular terracotta plaque from Troy IV with six small holes in a row, each with a channel running to the edge as a "fragment of a Lyre with six chords"; it could be a string-fastener. CMS II 3.170 was identified by Aign 1963: 41 cat. II/8, as a woman holding a lyre (repeated by Anderson 1994: fig. 4), but CMS's more accurate drawing depicts her holding a bird. Duchesne-Guillemot 1968 attempts to identify the well-known boat-pyxis HM 120 as the type of Minoan lyre called σαμβύκη; see Sakellarakis 1971; and Poursat 1977b: 27-28, pl. IX.3, 4.


15. Cf. the shape of the soundbox of the angled harp of Egypt (Manniche 1991: pl. 6), which, however, was played with the soundbox vertical.

16. PM II 834-835.

17. The next representation of a seated male string-player appears in the much later throne room fresco from Pylos (Cat. 31); he also does not play the instrument.
figures are easy for modern artists to block out, carve, and abrade into shape, and since the forms and style are in fashion, such forgeries fetch huge prices on the art market, and have perfect parallels among early 20th century sculpture (e.g., that of Brancusi). It is difficult to tell with certainty which ones are modern copies and which are originals. The problem has been explored at length by several scholars and the latest contribution to the controversy adds heat to the discussion. As a rule of thumb, any unprovenanced figure should be considered suspect.

Six Early Cycladic marble musicians can be accepted as plausibly authentic: two harps (Cats. 41 & 42, Pl. 17.2) were found in Thera in 1838 and entered the Karlsruhe Museum in 1840; in 1884 the National Museum in Athens acquired one aulete (Cat. 48, Pl. 20.2) and one harp (Cat. 39) from a grave in Keros; J.T. Bent found another harp (Cat. 40) in 1888 near Knidos, but it has since disappeared; and finally one harp (Cat. 38, Pl. 17.1) comes from an excavation on Naxos in 1910, though the tomb that produced it had already been robbed.

Nonetheless, the only certainly authentic piece ought to be the excavated Naxos harp (Cat. 38), though a more thorough excavation report would have been welcome at the time. The pieces that entered collections in the 19th century are minimally suspect, although "An Early Cycladic Arcadia of simple and happy fishers who played harps and pan-pipes is uncomfortably congruent with Romantic conventions fashionable in the mid-19th century -- when the first of the Cycladic musicians surfaces." The only piece catalogued (Cat. 47) that seems an obvious forgery is the one in the New York Metropolitan Museum.

Some of the unprovenanced harps, however, should be authentic for two major reasons. First, if the early pieces were faked, what specific person could have provided the concept? Even the forgeries that surrounded Evans took impetus from his conjectures. In the 1880s the only person would have been Bent but he seems too exhilarated by his find (Cat. 40) on Cape Krio to have commissioned it, and for all his excitement and scarcely concealed envy concerning the Keros harp (Cat. 39) he is apparently unaware of the Thera

18. Some obvious forgeries, like a standing Folded Arm Figurine in the Goulandris Collection, are anachronistically drilled.
22. Evans 1909: 192; Aign 349-350. Maas & Snyder 219 n. 3 do not accept this identification.
23. The hieroglyphic sign may have provided the prototype for the syllabograms in the later Linear scripts, sign 29 ꜐ for Linear A and sign 29 ꜐ for Linear B; for the last we know its phonetic value which is conventionally written as "pey" and which is conjectured to have sounded like "bu" or "pyu", a sound that could be considered onomatopoeic for a plucked harp-string.
24. Maas & Snyder 219 n. 3. PM II 835 notes that PM II fig. 550b and PM I 277 fig. 207.c3
Snyder discussed one seal, Cat. 58, which had become two seals in both Aign and Wegner due to a mix-up in Evans, *Palace of Minos*. But there actually is a second seal, Cat. 56, a three-sided prism of steatite excavated from the Mallia Workshop,25 and from these two we can recognize a third double harp preserved in the impression of a hard-stone stamp seal on a sealing, Cat. 64.

The double harp may have developed from the EC frame harp by which the lengths of the arm and support are retained (and the duckbill at their join, as well; cf. Cat. 56) but the height at the center is lowered, thus compressing the harp into a heart-shape with two lobes, each containing a set of three (Cat. 58; cf. Cat. 67) or four strings (Cat. 56; Cat. 64 depicts the two lobes as one, with eight strings carefully depicted). The two sets of four strings in a double harp may have made up two disjunct tetrachords (e.g., e→a, b→e′), together producing an octave (if both were enharmonic, then e e+f a; b b+c e′).

**Lyres**

Lyres are stringed instruments from the top bar of whose frame the strings, of approximately equal length, descend directly to a soundbox. All lyres therefore (see Pl. 6) have two side arms (δ πίχυς; οἱ πίχυλα [pl.], a board or plank; or τὸ κέρας, τὰ κέρατα [pl.], horn) at the top of which is the horizontal yoke or crossbar (τὸ χορδότονον or τὸ ζύγον) that connects them and from which the strings (ἡ χορδή, οἱ χορδαί), made of sheep gut (*Odyssey* 21.408), descend.

There are representations of two types of lyres, the rare triangular lyre with no soundbox and the commonly depicted phorminx which does have a soundbox. The classical kithara with a square or only slightly rounded soundbox originates at the close of the Late Bronze Age and will be discussed below. The phorminx (a detailed description follows) is a type of kithara both depict the same harp carried on AM 1938.793, face b, our Cat. 58 (*PM* II fig. 207.1, c2, and c4 depict AM 1938.794, faces c, a, and d, respectively). Aign and Wegner had catalogued these two depictions as different seals: Aign 1963: 36 II/1 & II/2, and Wegner 1968: nos. 83 & 85. Maas & Snyder quite rightly are unwilling to create a new type of harp based on the single representation that they identify; but their comment about sealstones, that "there is no reason to expect them to portray such instruments in a very realistic way", might be correct in some cases, especially for soft-stone seals of steatite and serpentine, but hard-stone seals of the silicates (e.g., agate and cornelian) and marbles (e.g., limestones and jaspers) generally do carry such realistic and detailed representations.

27. Two other monkey frescoes are known from Knossos: the Saffron Gatherers from the palace and a band of monkeys from the House of the Frescoes (Immerwahr 1990: Kn 1 and 2, respectively), and two more frescoes from Akrotiri, in Beta 6 and from sector Alpha (Doumas 1992: pls. 85 and 147 respectively). Monkeys are also known on seals; see Yule 1981: 94 Shape 33d and 139 Motif 18.4 & 5; and Younger 1988: 345, and 1993: 25.
28. See Parker 1997; and Strasser 1997.
29. One of the earliest paintings is the 'Saffron Gatherer' fresco from Knossos depicting a blue monkey picking crocus (Immerwahr 1990: Kn 1); cf. the blue monkey from upstairs in Xeste 3 attending the goddess to whom girls bring crocus blossoms (Doumas pl. 122); I recognize a Minoan goddess in the *topos* of a "woman seated at right to left on a throne with figures in front facing her" (Younger 1995a: 153).
or fairy tale, like one of Aesop's tales or Grimm's 'Bremen Town Musicians'. Similar animal satires are known in Egypt. On the other hand, since a blue monkey attends the Minoan goddess in a fresco upstairs in Xeste 3, and other monkeys attend a shrine in a fresco from sector Alpha, it is likely that monkeys participated in ritual, and perhaps it should be in this context that we find lyre music and swords together. The artist, however, has rendered the details of these triangular lyres with such precision that there must be a real prototype behind them, although it is not otherwise represented here in the Aegean, nor is there a similar lyre in Egypt or the Near East.

From two alabaster fragments (Cat. 11) Platon restores one arm of a triangular lyre (Pl. 16), a precocious reconstruction since it predates by several years the discovery of the Akrotiri fresco with the similar triangular lyre played by monkeys. The plain fragment preserves the base of a spur projecting from a short plinth; this is what Platon restores as an arched bridge (cf. Cats. 32 & 33). While the duck-head fragment is solid with an inlaid eye, the other fragment has two mortises: at the narrower end, a circular mortise off-center, and at the thicker end with plinth and spur, a large elliptical mortise. Platon mentions the lower mortise but diminishes its size; he does not mention the top mortise. The large size of the bottom mortise should accommodate a thick tenon, thicker than Platon hypothesizes for his lyre, and the presence of the top mortise implies that this lower arm section is separate from the upper arm section. If these two fragments do indeed belong to a lyre, which is doubtful, it will not have looked like the one Platon illustrates; instead, it might be possible to restore a thinner lower structure, perhaps a soundbox, and the arms in at least two pieces, with the duck-head piece perhaps forming a finial like those on phorminxes. In any case, a stone lyre seems impossible; it would have been too inflexible to support the tension of the strings.

If, on the other hand, triangular lyres did exist, it is possible that they are the prototypes for those that are commonly represented on Late Geometric

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30. For a discussion that similarly links painting with narrative, see Morris 1989.
33. Cf. the sealstone CMS II 3:51 which depicts a woman wielding a sword and scabbard.
35. Maas & Snyder 219 n. 5.
much as 45 degrees in order to strum the strings from below.

Phorminxes

The Instrument. The word phorminx (ὀ φόρμινξ) is apparently not Greek;42 in Homer and early poetry the phorminx is the type of lyre associated with Apollo. (Pl. 6) The instrument has a rounded, crescent-shaped soundbox and is almost always depicted with seven strings (the Pylos fresco, Cat. 31, depicts five). Our earliest representation dates securely to the Middle Minoan II period (Cat. 59) but all the rest belong to the Mycenaean period, whether early, LH I on the mainland (Cat. 32),43 or later, LM/LH III in Crete and on the mainland. After the Bronze Age, this particular Aegean type of phorminx, large with elaborate arms, is found again, but in Etruscan Italy.44

In the Middle Minoan to Mycenaean period the general appearance of the phorminx is well attested, and from surviving ivories that may have comprised whole parts or formed attachments (Cats. 1-9), we can even imagine the instrument in detail. The MM II sealstone (Cat. 59) and the LM IIIA Ayia Triada sarcophagus (Cat. 29) and fresco (Cat. 30) give the most detailed depictions of the phorminx. In the painted representations, a man stands to play the instrument, holding it firmly against his bent left arm by a wriststrap attached from the right arm of the lyre to the player’s left hand; he strikes the strings with his right hand, either directly with the fingers or with a spoon-shaped plectron. In size, the regular phorminx is represented as high as the musician is tall from the waist to at least the chin, ca. 55-65 cm, but there

42. Aravantinos 1996: recent excavations at Thebes, under Pelopidou Street, uncovered a hoard of tablets, including a few page-tablets that include “lists of personnel by name or occupation”, including “lyre-players”. The instrument these professionals play must be that which we call the phorminx.

43. The LH I date depends, as the discussion in the catalogue makes clear, on the incised and relief decorations of the lyre’s ivory arm; if the date is correct, it might corroborate the early date for an Egyptian lyre (Manniche 1991: 47) that bears an inscription to Amenophis I (ca. 1546-1526).

44. Maas & Snyder 29, 44 fig. 5a, 207, illustrate an Etruscan larnax from Capua; cf. Aign p. 187 E/1, and Lawergren 1993 fig. 11A. In the Museo Campano, Capua, room XXIII, vitrine 53 contains a terracotta antefix depicting Hercules battling the Nemean lion in the center, and at the lower left and right, two men with their hair in long plaits hightepping to right and playing the phorminx. Barbieri 1991 illustrates on the cover a terracotta revetment from Acquarossa and now in the Museo Archeologico Nazionale, Viterbo, depicting the phorminx being played at a male symposium, and, in pl. 4, another being played at a komos.

were larger examples (see below).

The normal concert phorminx in fresco is painted yellow, probably a warm and well-polished wood, possibly oak, with white accents, probably ivory if the extant ivory fragments catalogued here (Cats. 1-9) were the actual attachments.45 The arms of the concert phorminx are tall and are formed from two sections: a lower section rises from the soundbox in a S-curve usually decorated with a duck-head finial (these curves may influence the curlicues of the later classical concert kithara);46 from the top of the finial the forearm rises straight after a short inward curve to terminate in flowers (e.g., Cat. 30) or bulges (e.g., Cats. 1, 3-5). The yoke when well represented may bulge in the center (e.g., Cat. 29), more probably for affixing the strings than to indicate tuning pegs;47 it seems to pass across the arms, as if the arms passed up through the yoke, or, more likely, as if the yoke lay in a notch in the arms as did the yoke of classical lyres.48 At the two ends of the yoke separate finials might have been attached. Ivory mushroom-shaped objects could be such finials (Cats. 1, 3-9), and these may be represented on the Ayia Triada sarcophagus (Cat. 29), though the contemporary Ayia Triada fresco (Cat. 30) clearly depicts papyrus flower finials to the forearms above the yoke.

The soundbox of the concert phorminx is shaped like a horizontal crescent, the concave side on the top, the convex side at the base, the arms rising from the limbs of the crescent. We always see the soundbox from the front, even, apparently, on the Ayia Triada sarcophagus (Cat. 29) where the musician faces left (cf. the Pylos fresco, Cat. 31; also see the MM II sealstone Cat. 59). What the back of the soundbox looked like is not known, but the classical kithara had a humped back side and flat or slightly rounded front side.49 In the later kithara, the hump is wider at the top and slopes downward toward the base; thus the classical instrument would have rested in the player’s left forearm with the top curve of the hump at or just below the wrist. Perhaps it is for this reason that both the Aegean representations of the phorminx and

45. Maas & Snyder 35 (ivory) & 184 (oak). Egyptian harps were painted white (Manniche 1991: 41).

46. West 53.


48. Maas & Snyder 38.

49. See the depictions cited by Lawergren 1993: 57 n. 11, West 54, and Maas & Snyder 33, and 65-66, esp. p. 46 fig. 9c. I have seen other sculpted representations of lyres with rounded backs in the Chania Museum and the Naples Museum.
the later representations of kitharai show us only the left hand and little or none of the left forearm. Presumably, the soundbox would have been hollowed at least in part, for the production of sound inside, and, since no representation shows circles or dots on the front of the instrument, a large hole or a series of small holes along the top would have permitted the amplified sound to be heard.50

From the yoke the strings descend towards the soundbox. Since all representations of these phorminxes, except the Pylos fresco (Cat. 31; Pl. 13), depict seven strings, it could not be Terpander, the seventh century Spartan poet, who was the original musician to increase the strings from four to seven.51

It has been hypothesized52 that pegs at the base of the phorminx's soundbox secured the strings, but no representation of the concert phorminx actually shows the strings even reaching the soundbox. Instead, the strings appear to bunch just below the level of the duckhead finials (see Cats. 29, 30, 59). One representation of the large phorminx, Cat. 35, shows something different; here, the strings are attached to a short strip or stand at the base.

A bridge on the side of the soundbox makes the best sense, the strings passing over it to be secured at the base, as depicted on the large phorminx.53 But several complete and clear representations of the concert phorminx depict a convex (i.e., Cats. 32, 33, and perhaps 34) or a V-shaped arc (Cat. 30) rising from the soundbox. If this is the bridge, it may be real or simply positioned there by the artist as a way of depicting it clearly in a two-dimensional, ranked perspective rendering.54 If the bridge really were a convex or V-shaped arc, it may have been of leather strapped to attachments on the top of the soundbox, although it is doubtful if leather can provide the proper tension or if it can conduct sound vibrations to the soundbox clearly. In the reconstruction presented in Pl. 6, I have followed sense rather than the depictions in placing the bridge on the side of the soundbox.

Several peculiar ivory pieces (Cats. 6-8) from Mycenae, Spata, and Mendi may have formed finials to the bridge. In form, they are rectangular in plan and somewhat triangular in section with holes that could have pegged them to the soundbox down the gable; a notched fan spreads out high at one end.

The classical phorminx, chelys lyre, and barbitos had their arms tilted forward slightly in order to carry the strings away from the top edge of the soundbox; the classical phorminx's tilt was effected in the lower arms,55 the chelys lyre's and barbitos's at the top of the upper arms.56 Such a tilt could have been effected easily in the Aegean phorminx by rotating the lower arms out with the duck heads facing front; the upper arms, with their definite curve at their lower ends, would then be brought forward -- the two-dimensional representations in Aegean fresco would have turned these arms to the side so their profiles could be better appreciated. The ivory arm fragment (Cat. 1) from Mycenae chamber tomb 81 presents the evidence for this orientation of facing forward. The three preserved sides carry two types of decoration. One side (Pls. 4, 7.2) and one edge (Pl. 3.2) carry thick spirals in relief -- these should be the inside and back of the lyre's upper arm; the other side (Pl. 3.1) carries delicately incised 'line and pulley' designs -- this should be the outside face of the arm. When so oriented, the upper part of the arm tilts forward.

50. The soundboxes of some Egyptian lyres (Manniche 1991: 47) were completely hollow; for others, only the lower part was hollow, open at the base, or the base was pierced with holes. "The thinner the walls of the sound-box, the more freely they vibrate and the better the sound becomes." Renfrew & Cherry in Renfrew 1985: 325-6 wrongly state that the Aegean lyre had no soundbox.

51. Maas & Snyder 26 quote and translate the appropriate lines of Terpander's poem:

"μείς τοις πετράγησις ἀποστέρεσας αὐθήν
ἐπιστὼκτον δόμυμηι κελάδοροις ὕμνοις."

Putting aside the four-voiced song,
we will sing you new hymns on a seven-toned phorminx.

Maas & Snyder note the prevalence of seven strings on Minoan-Mycenaean phorminxes and conclude that if Terpander invented anything it was a new type of song. West gives an ambiguous interpretation: that Terpander may have increased an early Iron age lyre with four strings to seven (p. 52), and, following Maas & Snyder, 'he may well have been the first to win wide acclaim with the seven-stringed instrument and with a new, less monotonous style of epic singing, in which a wider melodic compass and more different notes were used." (p. 330). The older interpretation is found in Lorimer 1950: 456: "The familiarity of Mycenaean Greece with the lyre whose reappearance in Hellenic Greece is associated with the name of Terpander is thus fully established", echoing Evans, PM II 835.

52. E.g., by Maas & Snyder 220 n. 9 for Cat. 34.
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Of the extant examples, these ivory lyre fragments from Mycenaean chamber tomb 81 (Cat. 1) should be the earliest. Both the incised 'line and pulley' motifs and the thick relief spirals find exact parallels in the incised and relief decoration of bone buttons and 'buckles', their gold coverings, and gold sequins from Mycenae Shaft Graves III (Karo 1930: pl. XXIX, IV (pls. LIX-LX), and V (pls. LXII-LXVI), while the thick spirals in relief also resemble those on the stone stele (pls. V-VII, esp. stele 1430, pl. VIII bottom). These parallels date the manufacture of the lyre from Mycenae chamber tomb 81 to LH I. Another ivory terminal, somewhat biconical in form, comes from the same tomb; it finds a parallel in two similar terminals from Palaikastro (Cat. 2; Pl. 9.1) whose incised 'line and pulley' decoration should make them contemporary. If the Mycenaean biconical ivory is associated with the lyre, perhaps the Palaikastro pieces should also be associated with lyres, perhaps as handles to plectrons or tips to staffs. If the latter, the staff might have been the ἱδᾶδος, with which a poet beat out rhythms to accompany his singing.

Fragment from two more lyres come from the Menidi tholos (LH IIIIB context), and from these the National Museum in Athens reconstructs a classical kithara57 (cf. Cat. 37) atop a rectangular base presumed to be the soundbox. The reconstruction (Pl. 5) uses the ivory fragments of both arms and other parts (Pls. 9.2-3) to make vertical arms curving in at their base to form a U-shape and the yoke that they support; for the soundbox, the reconstruction uses a plaque with sphinxes (more probably from a separate chest) and an ivory piece for a bridge that is placed on top of the soundbox. The total reconstructed height is about 50 cm. But the reconstruction is hypothetical, as Poursat reiterates, and it seems best to ignore most of it: the yoke which contains eight holes, the rectangular soundbox, and the uniquely placed bridge.58 Without the base, the lyre arms are then 32 cm high. If the preserved ivory arms are instead the forearms of a regular phorminx (see the new hypothetical reconstruction proposed here, Pl. 6), then their curves would bend out to fit into the top of the duck-head finials of the lower arms.

At one time the Aegean phorminx may have come in two sizes, the regular or concert phorminx and a larger phorminx or giant lyre. Two pots depict a musician standing next to a phorminx as large as he is: a LH IIIA2 krater sherd from Nauplion (Cat. 35) and the Chania pyxis (Cat. 339; LM IIIB early). In Egypt, foreigners had introduced the giant lyre in the Amarna period.59 contemporary with the transition between LM/LH IIIA and IIIB, but apparently it was not popular, for it did not survive the period. If the representations on the Aegean pots reflect the actual size of the instrument, it was similar to the Egyptian giant lyre; it rested on the ground and the upper surface of the soundbox was concave. The Egyptian giant lyre, however, used two players, and had eight strings in its clearest depiction.

Musicians and Playing Technique. It seems that men were the only phorminx players: in the Palaikastro terracotta group (Cat. 54), the musician has been identified as a woman, presumably because of the long robe, though this garment can also be worn by a man, and the Pylos ring impression (Cat. 60) may show a woman, but, in any case, the figure seems to be carrying, not playing, the instrument.60 Apart from the Pylos fresco (Cat. 31) which presents a phorminx player at rest amongst painted banqueters, the other representations of the Aegean phorminx place it in a religious setting.

The male phorminx players wear long, full tunics (including the Palaikastro musician; the figure on the Pylos ring impression is dressed in a skirt) with decorated vertical or lightly oblique bands. They stand and grip the instrument vertical61 against the left side of their chest with the left arm and elbow, the left hand held vertically, fingers spread to damp or lightly touch the strings from behind;62 a wrist-strap, red in fresco like the classical wrist-strap, is wrapped around their left wrist and is tied to the right arm of the instrument. With the phorminx thus held tightly in the left arm and against the chest and with the left hand tied tautly to the opposite arm, there would have been little

57. Maas & Snyder xvii, object to the reconstruction even in theory: it would have been better had the fragments "been preserved according to modern practices and separate replicas (not incorporating the fragments) made."
58. The plaque with the sphinxes (NMA 1972) would then belong to some other ivory object in the tomb, along with the many other ivory fittings found there (Poursat 1977a: pl. XLVI).
60. Cat. 61 may show a girl possibly blowing a triton shell -- the Pylos ring impression and this seal are the only two representations that plausibly show females associated with music.
61. Egyptian and Near Eastern lyres were played horizontal.
62. See Roberts 1979. As Maas & Snyder 3, point out, the musician's left hand and fingers were kept free for a purpose; cf. p. 63: the left hand of classical kithara players probably did not stop the strings to give them higher pitches, but possibly to produce harmonics, since the place where the fingers could stop the strings would produce too much of change in pitch for the song; cf. Maas 1976: 39, and n. 11. A light touch on the strings could produce harmonics (p. 200-201): octave, octave plus fitth, double octave, and possibly double octave plus third.
flexibility for using the fingers of the left hand for finger tuning, strumming or plucking the strings.

With the right hand, the musician either finger plucked the strings (Cats. 30, 35) or strummed a set or the entire set of strings with a plectron, of which we have two representations (Cats. 29, 59) and one extant example in ivory (Cat. 5). As with modern guitar playing, the plectron would have produced a hard, bright sound. It is likely that the main playing technique consisted of strumming the strings with the plectron; if the strings were tuned as in the classical period, with the lowest string (\(\nu\eta\tau\eta\) near the musician and the highest (\(\varphi\nu\nu\tau\eta\) or \(\nu\eta\tau\eta\)) at the farther end, strumming would produce arpeggios, and the effect would resemble the modern zither. Maas & Snyder's description of this technique in their summary gives a suggestion of the effect (p. 200-201):

"It seems evident that the rhythmic aspect of the music of the lyre was of great importance -- more importance, one might contend, than any melodic function it might have. The sweep of the plectron across the strings must have produced an almost drum-like effect, creating a rhythmic frame work that could not be ignored... This is not to say that it did not matter which strings were struck or how those strings were tuned: the outer notes of a tetrachord and perhaps the note(s) an octave above, for example, might have been considered suitable for drone-like reiteration in the strumming; and the note of the melody being sung at the same moment may have been included also. The sound made as the plectron swept the strings did vary: the left hand touched certain strings, damping them so that they would not ring out..."

The strings had to be tuned, of course, but it is not certain that there were sophisticated pegs (\(\kappa\nu\lambda\lambda\omega\), \(\iota\kappa\nu\lambda\lambda\rho\tau\varepsilon\)) like those in the classical period for tuning them before and during a concert. Several phorminx yokes seem to display some physical response to the attachment of the strings: on Cat. 29 it thickens in the middle; in the Pylos fresco (Cat. 31) it looks lathed and the strings more often than not descend from the indentations there; on Cat. 33 the strings descend from the lower apices of a line of zig-zags below the yoke, perhaps a leather strip, and, on the large phorminx (Cat. 35), from rings, perhaps again of leather, clustered along the center of the yoke. But

63. West 623; Maas & Snyder 6; Roberts 1981; and Lawergren 1993: 63, however, suggest that Aegean phorminxes did have these tuning pegs.

...none of these responses needs be anything else than flexible transitions between strings and yoke that could, in some way, allow for tightening and loosening the tension of the strings to tune them. The Akrotiri lyres (Cat. 28), on the other hand, depict the strings descending from elaborately decorated spots on the yoke, which, on the analogy of jewelry, ought to be holes surrounded by a ring of gold granules; the strings would not, therefore, have been adjusted here at the top; perhaps they were adjusted at the bottom, where they are depicted as definitely passing over the lower arms of the lyre, presumably to attach to some sort of peg which could have allowed for general tuning. This attention to detail is interesting, even if monkeys did not tune the strings in any case.

To what extent the tuning process had to have been precise is not clear, but since the basis of early classical music is the interval of the tetrachord, only the first and fourth notes needed to be in precise tune with each other. In the classical period, the interval of the fourth (e.g., e–a) is outlined by the two notes of the interval and filled in with two others. On the modern piano, for instance, in the diatonic major scale we would fill in the interval thus: e f# g f, or in the minor scale e f# g a. But in the classical period, the two filling notes were usually more closely spaced (\(\tau\varsigma\nu\kappa\sigma\omega\omicron\nu\)) and themselves placed closer to the lower note, thus: enharmonic e f e, or chromatic e f f# a.

64. The interval between the first and the fourth tone in a scale can be found by sounding a tone on a freely vibrating string to produce the first tone (e.g., e), and then dividing it (or, as on a modern violin, stopping it) one-fourth along its length and sounding the remaining 3/4ths of the string to produce the fourth tone (e.g., a). Other common intervals can be similarly, if sometimes approximately, expressed in proportional lengths: the second tone (e.g., f) is produced by sounding 8/9ths of the string, the major third (e.g., g) 1/4th, the fifth (e.g., b) 2/3rds, and the octave (e.g., e') 1/2 of the string. An interesting Linear A graffito in plaster, HT Zd 156 (Godart and Olivier 1976-1985: vol. IV, 132-133), presents figs in what seems to be a descending order of units, presumably weights: 1, 1 1/2, 2 1/4, 3 3/8 (Pope 1960), or, as ratios: 1:1, 3:2, 9:4, 27:8. Steiglitz 1978 compares these ratios to those of musical intervals.

65. For readers not versed in musicology, the fourth is most easily remembered as the interval of the first two notes of "Here Comes the Bride".

66. Again, to help the reader, the first four notes of the diatonic scale are used to construct the first phrase of the song "In the Still of the Night": e f# a g# a f#.

67. West 160-172, esp. 161-163.

68. The Egyptian interval, sometimes of a tetrachord or, apparently of an augmented 5th, also...
The form of the Middle Minoan double harps tells us that the early
Aegean musicians may have used two tetrachords, and probably disjunct ones
at that, to create an octave scale (i.e., e→e' created out of e→a, b→e'); if both
were enharmonic, the scale would sound like this: e f a; b f c e'). The
seven strings of the Mycenaean phorminx, however, tells us that these
musicians probably used a seven-note scale, which could have consisted of a
tetrachord at the bottom and an additional three notes at the top ending just
one note short of the octave (i.e. enharmonic e→d spanning e f a b c d'), or
they could have built the diatonic octave scale out of two conjunct tetrachords
in seven notes (e.g., e f g a b f e').

As to tuning, then, since the interval of the fourth is basic to early music,
the string closest (ὕπατη) to the musician and the string in the center (μεση)
would have to have been the only ones precisely tuned to each other;
physically, these two strings would perhaps have also been the easiest to tune
since they lie near the musician. The other strings would only have to fill
the interval in some way and to have spread out a short distance beyond it in some
way. If this imprecision seems bothersome, it must be remembered that
early music was more chromatic and melismatic than modern Western music.
The interval of the fourth was stressed and the lower notes slurred within it;
classical players therefore used their kitharas mainly to provide a strummed,
chromatic prelude to song, and only occasionally did they pluck notes or
strum during it. It is not likely the Minoans and Mycenaeans made different
music or required anything more precise, but if they needed more precision
and finer tuning, no doubt the musician could press a finger of the left hand
against a string and finger tune it, as a modern violinist does, shortening the
vibrating section and raising the pitch while he plucked it with plectron or
finger of the right hand.

Sound. The sound produced could only have been brilliant, bright, and

69. West 176-177.
70. It is possible that the birdneck arms, prefiguring the later, complicated curlicues of the
classical phorminx might have had something to do with keeping Bronze Age tuning
flexible if not in flux; cf. West 53-4.
71. West 64-68; Maas & Snyder 60; Roberts 1979. In Egypt, 'the player brushed most, if not
all, of the strings at once with a plectrum, while deadening some of the other strings from
behind with the spare hand. The pressure of the fingers may have also stretched the strings
and thus altered the pitch ...' (Manniche 1991: 48).

enchanced closely spaced intervals, often of less than a semitone (Manniche 1991: 27,
47).

72. Maas & Snyder note Minoan-Mycenaean birds (p. 2) as well as later associations (p. 200):
birds on an Orientalizing dino fragment from Old Smyrna (ch 2, fig. 1), on the well-known
white ground klyix in the Delphi Museum, and on NYMM 06.11.29 (Richter & Milne 1973:
fig. 99). Long 1974: 38 takes the birds literally and wonders if the music was to summon
them.
73. Shepherd 1987: 159.
the sounding box.

The kithara continued on into the Archaic period only to begin losing favor to the concert square-based kithara after 600 B.C.; it virtually disappeared by the fourth century. By the classical period the instrument was small, played close to the chest, and only by women (or by the Muses).

**Reed Instruments**

*Auloi*

Classical auloi consisted of a pair of reeded instruments held parallel to each other and played simultaneously. Whatever the material of the tube (cane, metal, wood, ivory or bone), they produced sound through the vibration of one blade or two blades of thinned cane, the 'reeds', inserted into the mouth end of the tube and contained wholly within the mouth; players activated these with their breath.

There are two main classes of auloi: clarinets with one reed and oboes with a pair of reeds. Clarinets were generally short (L. ca. 22 cm) and thick, with large internal bores (D. greater than 1.0 cm). Oboes were longer, some as long as 60 cm, with correspondingly narrow internal bores of less than 1.0 cm.

In the classical period, some auloi were as short as 20-25 cm, but the normal length is about 30, while some were 40-50 cm. Extant examples are about 30+ cm in length and some elaborate auloi from Pompeii measure 49-57 cm; Pausanias (9.30.2) describes a statue of the Argive Sakadas whose auloi were as long as he was tall.

The inner diameter and length of auloi determined their pitch: the narrower and shorter, the higher the pitch. The oboe-auloi, too, with their pair of reeds, could be controlled as to their dynamic level and nuance; the clarinet-auloi either produced a sound or they did not. In the classical period auloi could be named after the ages of their presumed players: *παιδείνοι*.

75. West 55.
77. For a detailed discussion of the instrument, their sound, and how they were played, see West 81-109. For Egyptian auloi, see Manniche 1991: 28-29, 48-49, and passim.
78. Rimmer 1969: 34.
79. West 90.
references to the 'Phrygian aulos' in the works of Archilochos, Sophocles, and Euripides, its earliest secure representation occurs in a Late Geometric bronze figurine, then none in the classical period, once on a 2nd century B.C. relief from Mysia, while the rest are Roman. Bélis 1986a hypothesizes that the classical Phrygian aulos might not have been different in shape from the normal auloì but different in sound resulting from a difference in the internal diameter or a difference in the circumference of the holes. According to the Roman imperial examples, however, Phrygian auloì are unequal also in form: one, usually the right one (βόμβος), is the 'normal' cylindrical tube made of wood or bone. The other auloì, usually the left one, is similar but ends in an up-curving attachment made from a cow-horn (κερατίτης αὐλός, κεραυλός, κερασφόρος αὐλός). This flared opening would have lowered the pitch.

The Phrygian aulos with the deeper color of the κεραυλός were apparently most appropriate accompanying the ecstatic cult of Cybele.

The 'magadis-aulos' is even more obscure; the poet Ion of Chios (died 422 B.C.) mentions it as a Lydian instrument. Since μαγαδίζω means to sound an octave, the aulos would have to have been of unequal lengths to accomplish this harmony, and as if to confirm this difference in length, the historian Pollex (4.80) mentions their "marital piping".

From the Bronze Age, one possible aulos fragment (Cat. 12 from Mycenae) has survived, presumably Late Bronze Age in date. If it is from an aulos, its bulb-like swelling should indicate the mouth-end of the instrument, and its internal diameter of 1.4 cm would make it a clarinet-aulos.

Several media also depict the Bronze Age instrument being played: at least one authentic Early Cycladic male figurine (Cat. 48); one ring impression (Cat. 65) from Knossos; and three paintings, two frescoes from Ayia Triada (Cat. 30) and from Knossos (Cat. 27), and the Ayia Triada sarcophagus (Cat. 29).

The Early Cycladic male figurine (Cat. 48) is said to have been found in a grave in Keros in 1884; its early discovery date should make it genuine. The other EC aulete (Cat. 49) in the Goulandris Collection has no provenience and, in any case, has lost its auloì. The Keros statuette stands nude (H. 20 cm) and erect on a square base, holding the two auloì to his mouth. According to the scale of the figure, the real aulos should have measured a little over 20 cm in length, thus making them a pair of the short variety.

From the Late Minoan period come the three other representations. A miniature fresco from Knossos (Cat. 27) probably depicts repeating pairs of aulos as decorating the hem of a textile, probably a woman's dress; the date should be Neopalatial (MM III-LM I). The proportions of the auloì suggest that they, too, are of the short variety. A clay sealing from the Palace at Knossos (Cat. 65; LM IIIA or IIIB context) impressed either by a cylinder seal or a finger ring dating to LM I-II is preserved in two fragments and has been only partially published. Pl. 24.7 combines the two fragments: a man raises his hands as if playing the aulos (the instrument itself has not survived) while three soldiers walk in front of him, each with a figure-8 shield. The aulete here walks with his back arched, not erect like the EC figurines, and this is the pose of the other two Late Minoan auloì. The fresco from Ayia Triada (Cat. 30), painted by the artist of the sarcophagus, depicts a procession of at least one woman and several men, including a phorminx player (see above) and another, his back slightly arched, raising his arms high enough to support auloì (again the auloì have not survived), and, if this identification is correct, we may recognize the two vertical lines at his shoulder as the ends of the strings that secured the aulos to the mouthpiece.

The scene on the south side of the Ayia Triada sarcophagus (Cat. 29; Pls. 18 & 19) presents another aulete, but the type of instrument is problematic, and a detailed description is in order. The aulete stands with his back arched, both his arms up to hold the two long slender pipes horizontally, the left one above the right, both painted dark with darker vertical stripes at intervals; the stripes could represent the ridges that divide the growth sections of reeds. The holes at the top of the instruments are not shown, of course, nor are the slight bulbs into which the classical auloì are inserted near the mouth-end. Near his mouth dangle three strings probably either to secure the pipes together or to secure them to the mouthpiece which may have been represented though not clearly.

His hands hold the aulos fanning out to form an acute angle, but the fingers point towards his face, probably an artistic convention for rendering them naturally curled over the holes in the pipes. But there is an error here; as depicted the finger of the right hand appears too thin, and in comparing it to the left hand, it is possible to suggest that the artist either did not join up the

81. The Greek term, ἐλαμώς αὐλός, refers to this longer tube fitted for an attachment.
82. West 91.
83. See below, the discussion on triton trumpets.
84. Snell et al., eds. 1971-present: 19 F 23.
correct horizontal lines of the fingers or just created an inverted version. The
distinctive overlapping technique of playing the instrument may account for
this awkward depiction of the aulete's hands.

Just to the right of the hands, there is a break in the plaster and just
beyond that is preserved the apparent continuation of the lower aulos below
the dark-painted right section of a bowl-like object with what appear to be the
remains of yellow banding at the top. Obviously, the lower aulos is longer
than the upper, but that does not necessarily imply that they belong to the
uneven subtype, either the magadis or the Phrygian aulos. The end of the
preserved lower aulos also appears pointed86 (compare the auloi ends on the
Knossos textile fresco, Cat. 27, and contrast the abrupt ends of the marble
auloi, Cat. 48); and this pointed end suggests that this aulos was closed at the
end, necessitating, therefore, a vent-hole close to the end of the tube. Thus the
physically shorter upper aulos may have been the same physical length as the
acoustical length of the lower aulos.

As for the dark, bowl-like object, it is possible to restore it as either a
separate object or as a continuation of the upper aulos. Neither solution is
entirely satisfactory. If the bowl-shaped object is separate from the aulos,
then it must represent a 'floating' object like the ewer and food-filled bowl
above the altar at right. Long (1974: 64) suggests several alternatives for this
object: she mentions the possibility that the yellow banding at the top of the
bowl might reflect gold inlays, much as exist on the contemporary niello cup
from Dendra87 (the yellow banding may, however, be part of the fresco's
preparatory sketch in ochre);88 and she compares the bowl's profile to that of a
conical stone filler from Thera. In comparison with the 'floating' vessels
painted above the altar, such a 'floating' bowl associated here with the bull's
sacrifice would not seem out of place completely. Other assemblages of
'floating' vessels are known in other contexts.89

If, however, the bowl-shaped object is restored as the upcurved, cowhorn

86. Evans, PM III p. 39 fig. 24, misrepresents the lower aulos as ending abruptly.
88. More fragments of the ochre sketch can be seen in front of the lower arms, and an isolated,
unfinished curl floats in front of the lower aulos-end above the bull's shoulder.
89. On the cushion seal from Naxos, CMS V 608; on the sealing from Mallia, HMs 1049;
Pelon 1970: 130-135, no. 265, pl. XXVI.4 and 6 (also in Long 1974: fig. 11); and as
ideograms *226 VAS on the Linear B tablet K93a from Knossos, Chadwick et al. 1986: 93.

bell of the upper aulos, it makes these auloi Phrygian.90 Even though this
second solution presents a more plausible reconstruction on purely formal
grounds, there are so many problems that it is not readily acceptable: in the
Roman period, Phrygian auloi are made of box-wood, while the aulos here
were probably made from reeds; and, more troubling, if these are Phrygian,
they represent a form that until the Roman period is seen only twice, once in
the Late Geometric period and once again in the Hellenistic period.

If the bowl does not belong and if the auloi are not Phrygian, they should
belong to the magadis subtype. Since the Ayia Triada aulete raises the aulos
high and parallel to the ground, he may be overblowing, which would have
created the harmonic intervals suitable for the magadis.

If we try to classify the auloi as either clarinet or oboe according to
classical definitions, they present other problems. They appear longer than
the presumed torso of the aulete, which, according to the scale of the painting,
would make them about 60 cm in length;91 they therefore form a pair of the
long variety. If the preserved aulos's length can be set at approximately 65
cm, its thickness should be something like 3.6 cm, wide enough for the large
interior diameter of a clarinet-auloi, but since the two auloi are not tied
together but rather fan apart, they should be oboe-auloi. The painter,
however, may not have been familiar with the details of the instrumen and
may instead have depicted them large and thick in order to make them appear
substantial.

90. Relying on this reconstruction, Bélys ends her 1986a article by citing three literary sources
dating from the Hellenistic and later periods, all of which place the invention of the
Phrygian auloi in the mythological past of the mid second millennium, and concludes in a
second article (Bélys 1989: 131) that the Phrygian auloi came from Phrygia to Greece via
Crete -- this history seems too detailed for the spotty evidence.
91. In fact, the auloi, when set against the standing height of the kitharist, measures 39% of
that height in length. Again, if the kitharist is less than 1.75 m tall, then the aulos measures
less than 68 cm.
WIND INSTRUMENTS

Syrinxes

The classical Greek pan-pipe (ἡ σῦριγξ, or in the plural σῦριγγες to denote the set of pipes)\(^\text{92}\) consists of a set of tubes of equal length\(^\text{93}\) stuck together with wax and bound with twine, blocked up at different depths with wax, and possessing no finger holes; the player must blow across the open tops, like blowing across bottles, and, like the harmonica, the musician moves the instrument past the mouth or vice versa. The earliest sideblown pipes may be Upper Palaeolithic, certainly Neolithic at Çatal Hüyük. In the classical period the instrument has a popular character, fit for herdsmen, warriors, and the god Pan, whence the English name. The number of tubes varies, from three to nine in the Archaic period, four to ten in the classical period, and even up to eighteen in the Hellenistic period.

The only candidates for Bronze Age Aegean syrinxes are those depicted in Early Cycladic figurines (Cats. 50-52); none, however, comes from an excavation and the authenticity of each is therefore questionable. All three statuettes simplify the instrument by rendering it as a simple large square with the individual tubes undifferentiated; such simplicity seems in character with the abstract style of Cycladic figurines in general, whether ancient or modern. The syrinx seems rather large, generally in length about 15%, and in thickness about 4% of the height of the musician, i.e., about 25 cm square and 7 cm thick, big enough for a double row of thick seven reeds.\(^\text{94}\) Even more troubling, the statuettes misunderstand the technique of playing, for they represent the player holding the syrinx up to the mouth like a sandwich as if the musician were to blow down into the tubes, not across their tops. To be played correctly, the syrinx needs to be held vertically in front of the chest, the mouths of the tubes set against the lower lip. For these reasons, I strongly doubt the authenticity of all three examples.\(^\text{95}\)

\(^\text{92}\) West 109-112.
\(^\text{93}\) Euruscan panpipes and later Hellenistic panpipes used tubes of differing length, like the modern instrument.
\(^\text{94}\) Again, taking a person as standing less than 1.75 m. tall, and the reeds as thick as the aulos reed depicted in the Ayia Triada sarcophagus, D. 3.6 cm.
\(^\text{95}\) Is it therefore coincidence that the accession date of Cat. 50 (1964) and the publication dates of Cats. 51 (1960) and 52 (1965) are so close?

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Triton Shell Trumpets\(^\text{96}\)

Whether triton shells were indeed used as trumpets in the Aegean Bronze Age has been much debated. The actual shells are well attested in Minoan and Cycladic cult contexts, and they were often imitated in stone or faience,\(^\text{97}\) which should indicate their special value.

There are at least three possible uses for the triton shell: as a ladle, as a funnel or rhyton, and as a trumpet. To function as a ladle, the shell would not have to be altered;\(^\text{98}\) the mouth could serve both as scoop and spoon — unaltered shells are not catalogued here. To function as a funnel, however, the pointed apex would have to have been opened, perhaps even made artificially large; liquids could then be poured in through the mouth at the other end. To function more efficiently as a funnel, the shell, whose interior helical coil spirals to the apex, should be scraped out, but this is not necessary for the shell to function as a trumpet. Instead, the shell is turned around, the apex is opened, and the musician blows through the open apex to produce the sound; the flaring mouth at the other end then functions like the bell of a modern trumpet. The alternative is to shape the replica with a more cylindrical appendix, the fold of shell near the mouth, and to drill it for the mouthpiece of the trumpet.

Triton shells come from numerous Aegean and Cypriote sites, many of which seem to be sanctuaries.\(^\text{99}\) Of the many shells found, only a few have their apex sawn and therefore could have functioned as funnels or trumpets (Cats. 13-18), while a couple of replicas also have either an open apex (Cat. 19) or a drilled appendix (Cat. 20). Some of these triton replicas also have the mouth deliberately elongated and lathed (Cats. 20-23); these reworkings may have been to enlarge the opening as if to create a wider spoon, if the shell

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\(^\text{96}\) For the comparative material and for the technical aspects of triton trumpets, I rely greatly on Montagu 1981.

\(^\text{97}\) Baurain & Darque 1983; and Åström & Reese 1990: 11. Demakopoulou et al. 1994: 32-34, fig. 45, reports the new find of a fragment of an amethyst triton shell at Midea; a similar fragment is known from Mycena (NMA 1396). It is possible they come from the same triton shell replica even though the fragments come from different sites; Rehak 1995b discusses bull-head rhyta apparently deliberately smashed, the fragments dispersed.

\(^\text{98}\) Triton shells have been found hollowed out (Åström & Reese 1990: 8-10); these certainly were used as vessels: Khrioktia, Cyprus (Neolithic); Paros, Panayia Tomb 21 (EC context); and Pseira, Crete, House AB room 12 and elsewhere (LM IB context).

\(^\text{99}\) Åström & Reese 1990; Baurain & Darque 1983.
were to function as a ladle, or a bell, if the shell were a trumpet.

For the triton shell to function as a trumpet, musicians must blow vibrating air directly into the shell through either the sawn apex of the real shell or the drilled appendix of the replica,\textsuperscript{100} using their lips like a double reed to produce the sound.\textsuperscript{101} Baurain & Darque (1983: 54) confess to being unable to produce any sound from the stone triton shell from Mallia (Cat. 20) even though it has two holes, the artificially drilled appendix near the mouth of the shell and a rougher hole near the apex; they seem not to realize that the sound comes from the musician’s vibrating lips and the trumpet merely gives the pitch, timbre, and amplification. Montagu describes how the triton shell trumpet worked: “The vibrations of the air in a conch may possibly be transmitted through the wall of one whorl [of the interior helical coil] to the next, rather than along the air column, and that it may function as a simple vessel trumpet rather than as a coiled tube... [T]his could permit the Minoan to produce a 'shell' trumpet of stone which was a vessel that followed the shape of a shell externally but which had no internal construction.”\textsuperscript{102} In other words, the replicas that have end holes and are completely hollow inside for technical reasons, like the Mallia steatite triton, could have been blown as trumpets.

Such formal considerations as above and comparative ethnographic evidence from around the world indicate that triton shells or triton shell replicas were indeed blown. A good depiction of a classical triton blow on an Attic red-figure kylix by the Nikosthenes Painter,\textsuperscript{103} and there the boy is definitely blowing into the elongated appendix of the shell, probably a replica therefore. As for Crete, Stylianos Alexiou tells how "the triton shell was used in Crete until a few years ago by field guards, rural postmen, and shepherds both as a trumpet and as a megaphone."\textsuperscript{104}

The pitch of triton trumpets is determined, like all pitches of wind instruments, by the volume of the vessel and the area of open holes. The flared end or mouth of the triton would make its pitch an octave lower than a cylindrical flute of the same volume. Hand stopping the mouth would have varied the pitch, and overblowing as on a clarinet would have produced a harmonic twelfth. A finger hole, like the possible one in the Mallia triton, would have produced a second pitch.

Only one Bronze Age depiction, the sealstone (Cat. 61), shows a person and a triton shell together, and both are unclear. First, the triton shell: since the figure’s head is not tilted back and the point of the triton is not actually at, let alone in, the person’s mouth, it is not clear if the person is actually blowing into the triton; but the lobes of the shell increase in size the farther away they are from the figure’s head, and this should imply that the person is holding the triton’s apex near its mouth, and, if it is blowing the trumpet, it is a triton shell, not a replica.

Second, the figure: since it wears a calf-length skirt, it should be a girl; men, such as the sistrum-shaker on the Harvester Vase (Cat. 53) and the seated youth in a fresco from Xeste 3, Akrotiri,\textsuperscript{105} wear shorter kilts. The figure is completely bare-chested and with clearly marked nipples, but no three-dimensional representation of breasts, which is possible to do in intaglio sealstones. The clearly indicated nipples should again mark the figure as female but the lack of developed breasts should make it adolescent. The figure’s short hair is also restricted to Minoan girls.\textsuperscript{106} If the figure on the seal is an adolescent girl, and if she is indeed blowing the triton shell, then she is the second possible female to be associated with an Aegean musical instrument.\textsuperscript{107}

\textsuperscript{100} Side-blowing across the large, irregular mouth of the shell would probably not give out any more sound than that of blown air. It is not the technique, resembling end blowing across a syrinx tube, that hinders the production of tone there; it is the large size of the opening. At home I found that I could blow across the mouth of a wine jug (D. 2.7 cm) and produce nice even tones, the mouth of a glass flower vase (inner D. 4.75 cm) and produces an occasional and fleeting tone but only if I got the angle of blown air just right, and the mouth of a spaghetti sauce jar (inner D. 6.50 cm) and produce no tone at all. Similarly, I suspect that blowing across the irregular mouth (W. 7.5 cm; L. 10 cm) of a triton shell like the actual one from Phylakopi (Renfrew 1985: pl. 62) would produce no tone at all.

\textsuperscript{101} By blowing air through my lips (moistened and tightly pressed together) I can produce a tolerable e-flat, and, by overblowing, an octave higher. By cupping my hands in front and blowing through the small opening between thumb and the base of my forefinger I can amplify this sound and by opening my outside hand, I can produce a second tone a fifth above.

\textsuperscript{102} Montagu 1981: 274-5.

\textsuperscript{103} Beazley 1942: 126 no. 24 (BM E12); Boardman 1975: fig. 93.1.

\textsuperscript{104} Alexiou 1969: 108.

\textsuperscript{105} Doumas 1992: pl. 110.

\textsuperscript{106} Davis 1986; Withee 1992; and Younger 1992: 288-89.

\textsuperscript{107} For the other, see the sealing from Pylos (Cat. 66) with a possible woman offering a phorminx to the seated goddess.
Chapter 1: The Instruments

Percussion Instruments

Sistra

Handheld sistra (rattles) are well attested in the ancient Mediterranean from the Middle Bronze Age into the late antique period. The arch sistrum (Pollux’s ψηθοπη)\(^{108}\) is the best known: it has a shape like a tennis racket with horizontal rungs that pass through holes in the frame; the sound is produced by rattling either the rungs themselves or the bobbins strung on them.

In the Egyptian sistra,\(^{109}\) one end of each rung extends several centimeters beyond the frame before being bent back, like a cotter pin to hold it in place; the other end is secured by what resembles a lugnut. The sound is produced by one or more bobbins strung loosely on each rung. The shape is first seen in Middle Kingdom representations, where they are of bronze; faience examples apparently existed as well.

From the Greco-Roman period come extant bronze examples; and from Pompeii come at least 20 bronze examples and one silver one:\(^{110}\) the silver sistra and most of the bronzes have four rungs, average a little over 20 cm in total length, and are decorated with cat, Hathor, or Bes appliqués. The rungs lie loose in their holes and both ends extend beyond the frame before bending back like cotter pins; since there are no bobbins, the sound is produced by rattling the loose rungs.

The depictions of Aegean sistra, all Minoan, date from MM I to LM I.\(^{111}\)

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108. West 127-128.
109. E.g., Manniche 1991: 62-3, 85 ff.; 87 fig. 51, portrait of a woman holding a sistrum, Amarna period; pl. 11, a Greco-Roman bronze sistrum.
110. Tran Tam Tinh 1964: 181-185, section V: Sistres, catalogues the sistrum. Add another two bronzes from Pompeii: De Caro 1992: 74 cat. 5.5 (length 23.5); and paintings come from the Isis temple depicting a priest and a priestess shaking arch sistra (p. 45 cat. 1.21, and pp. 55-6 cat. 1.63, pl. X).
111. Similar objects portrayed on three Mycenaean pots have been identified as possible sistra, but they look quite different from the Minoan examples, more like lollipops or circular mirrors with handles, and since two of the vases associate these so-called sistra with depictions of vases, perhaps they are ladies instead.
113. The singers, however, have oddly smooth torsos. Might they be eunuchs? It has been speculated that the singer Ur-Nanshe of Mari (Strohmenger & Hirmer 1964: figs. 92-93, pl. XXI) was a eunuch based on the figure's long hair, lack of beard, and rare fecky skirt; Richard Ellis over the e-mail discussion list "ANE", 12 October 1994.
114. Evans 1909: 191 s.n. 28, identifies it as a musical instrument "with a plektron attached ... essentially a harp".

Chapter 1: The Instruments

The extant Archanes sistrum, Cat. 24, is of terracotta with holes for only two rungs, probably of wood, strung with the three terracotta bobbins found with the instrument; its context is MM IA. The prism seal, Cat. 57, shows an arch sistrum oriented along the seal's long axis of the prism; the sistrum's handle flares at the base and, within the arch, six rungs are preserved with room perhaps for three more. No bobbins are depicted, but at the base of the sistrum's arch two curved lines descend to profile the handle; it is possible these produced some sound to accompany the probable rattling of the rungs.

The sistrum depicted on the Ayia Triada Harvester Vase, Cat. 53 (Pls. 11, 22.1 a replica drawing), was probably of bronze with a broad handle rectangular in section; it carries only one rung with two bobbins strung on it. On the outside of the frame, a button is depicted capping the rung, securing it tightly and preventing it from passing out of its hole in the frame. The man, figure 18 in the procession, shakes a sistrum in his right hand, his left hand up and clenched. In appearance the sistrum-shaker differs from the others: he wears a kilt which is a rare costume; his hair hangs moderately long in back with pronounced sideburns; and his belly protrudes.\(^{112}\) Perhaps he is older and well fed.\(^{113}\)

MM II sealstones present three slightly different objects that look like they could have been sistra; I shall assume they are and give them conventional names: the open end sistrum, the U-sistrum and the key sistrum. The open end sistrum (Cats. 55 & 63) looks very similar to the Egyptian arch sistrum but without the handle. Two seals use this object as a filling ornament: open-ended elongated loops filled only with horizontal strings (3-10). The key sistrum (Cats. 69 & 70)\(^{114}\) is used as CHIC hieroglyphic sign 57, shaped like a tuning fork containing horizontal rungs and equipped with a side attachment that resembles the key to a wind-up toy; this could be the bent end of a rung to keep it from sliding out or an appliqué like those on the
Egyptian sistra. The U-sistrum (Cats. 71 & 72) is also probably a hieroglyphic sign (CHIC *181 eventually developing into AB 38, Linear B "e"), shaped like a U on whose arms are depicted short horizontal strokes that may represent short rungs or strung bobbins -- if so, this sistrum, if such it is, resembles the Minoan arch sistrum, relying on the sound of shaken metal attachments.

As for the sound that sistra make, Egyptian arch sistrum would have produced several types of sound concurrently: the loose jangling of the rungs inside the holes in the arch frame, the banging of the bent ends against the outside of the frame, and the clatter of the bobbins on the rungs. The Minoan sistrum apparently produced softer sounds. The Archanes arch sistrum, being of terracotta with terracotta bobbins on probably wooden rungs would have produced a slightly purer sound, that only of the bobbins clicking against each other and against the inside of the frame; similarly, the Harvester Vase sistrum, probably of bronze, with only two loose bobbins on one securely fastened rung would have produced only the sharp metallic sound of the bobbins hitting the frame.

The key sistrum looks metallic, the sound therefore high pitched and clangy; since the hieroglyphic sign eventually develops into the Linear B sign ZΩ,115 we may imagine a buzzing sound from the constantly shaken sistrum. On the two seals with key sistra (Cats. 69 & 70) they appear in the field as filling ornaments with goats; perhaps they were thought appropriate because their sound matched a goat’s bleating. Similarly, the U-sistrum looks metallic, and if the short horizontal strokes across the arms are indeed short rungs or disks, the instrument would have produced a sound resembling that from the disks of a tambourine.116 From all these instruments, their sound would have been more intimate than loud.117

115. Linear B sign 16 ὗ, ὦ.
116. If the hieroglyphic sign *181 develops into AB 38 "e" which also stands alone as the ideogram *134 accompanying wine, the sistrum behind the sign may have been an appropriate instrument when wine was being consumed.
117. The Egyptian word for 'sistrum' ἱστή, derives from the sound produced from shaking papyrus stems (Manniche 1991: 63); one wonders if this is not the true source for the Greek word, σκίττρον, brought into etymological plausibility by making it resemble the verb σκίνω, 'to shake'; that is, the sound would have been mostly sibilant.

Cymbals

From the Greco-Roman period numerous bronze cymbals are extant and depicted.118 They come in many sizes, but for our purposes we may single out two, small (D. less than 10 cm) for the fingers, and large (D. 10 to 20 cm) for the hands. The form, however, is identical: circular with a wide, raised, central boss and flat rim; the center of the boss is perforated for the knotted leather handle.

From Pompeii come pairs of hand cymbals. One such is circular in shape (D. est. ca. 18 cm) with a raised boss pierced in the center for the strap;119 circular grooves outline the boss and the rim periphery. Similar bronze cymbals in the British Museum come from Roman Egypt.120

Five bronze cymbals come from Aegean contexts, one of the finger variety (Cat. 25) from the Ulu Burun shipwreck, and two pairs (Cat. 26), one for each hand, from Mouliana chamber tomb B in Crete. The contexts for both are late, end of the 14th century and LM IIIC, respectively.

The excavator of the Mouliana cymbals identified them as such and connected the presumed male deceased with the ecstatic cult of Cybele. One peculiarity, the repoussé dots that decorate the rim, may have caused some confusion, for it is possible that H.L. Lorimer121 misunderstood Xanthoudides's word for the dots on the rim (ὀματία) as referring to rivet holes for attaching the disks onto leather shields as charges or bosses. Desborough gives a list of shield-bosses and includes the Mouliana disks with a little uncertainty.122 Real shield-bosses have a projecting point instead of a central hole.

With the discovery of the Ulu Burun cymbal, however, it is certain that, though finger and hand cymbals were known in the Bronze Age Aegean, they may not have been made there; it is now thought likely that the Ulu Burun ship was traveling into the Aegean from the east, and its cymbal may have originated there.

120. Manniche 1991: pl. 10.
121. Lorimer 1950: 155; on p. 456, she also mistakenly ascribes eight strings to the Menidi lyres and to the Amyklaion bronze votive kithara.
CHAPTER 2

AEGEAN MUSIC AND SOCIETY

INTRODUCTION

Discussions of music do not often take social factors into consideration, but music is, like any other human production, a social phenomenon embodying decisions concerning type and quality of sound, lyrics and melody, setting and musician; if this were not so, the music of all cultures would be similar. Each of these decisions, often appearing to be spontaneous and without mediation, nonetheless attempts to define what is and what is not musically appropriate: "Stuggles over musical propriety are themselves political struggles over whose music, whose images of pleasure or beauty, whose rules of order shall prevail." We should be able, then, to discern some of these decisions from the surviving instruments and from the depictions of music in Aegean art.

We may begin by formulating four assumptions:

1) the primary purpose of Aegean formal art is to present and validate political relationships: power inequalities, status, and class;

2) the formal requirements of Minoan and Mycenaean society would demand that music's exciting qualities be controlled;

3) we would expect music, therefore, to be depicted as narrowly constructed and constrained;

4) while at the same time, there must also have existed some sort of acceptable setting for expressing these excited feelings.

Such restrictions do not concern just music: almost all Aegean art is similarly narrowly constructed, most of it apparently special in some way. Occasional, everyday scenes of people doing ordinary things are extremely

123. Cf. S. Frith's concise articulation of this attitude, "Serious music matters because it transcends social forces ..." (Frith 1987: 133).
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rare, and they are Minoan and date early, prior to the Mycenaean arrival in Crete. MM II sealstones from the Mallia Workshop depict potters (one of these also represents a man playing the boardgame senet).125 Later, in the LM I frescoes from the West House at Akrotiri in Thera, a woman carries a water jar on her head, men bring in their sheep and take out their goats, youths race naked over the hills to catch the first glimpses of the fleet arriving;126 and of the Vapheio 'Quiet Cup', surely a Minoan product, a youth hobbles a bovine for browsing in the field!27 -- this is the work-a-day environment for the Harvester Rhyton as well.

Of course, formal occasions, primarily religious scenes, athletic contests, perhaps reflecting coming of age ceremonies, and adult male hunting and war parties, also occur in the early period,128 but in the Mycenaean period after the Cretan destructions in LM IB, it is only these latter topoi that occur, only scenes that depict some formal, organized activity reflecting either religious or political status;129 occasional scenes of the everyday disappear. Such formal scenes are concerned with power relationships, those between the

125. Potters, see Wingerath 1995: 24-25, and e.g., the well-known steatite prism AM 1938.750 (Kenna 1960: no. 37 faces a & b) and AM 1938.746 (Kenna 1960: no. 39, faces b & c; PM IV fig. 93a); the boardgame AM 1938.745 (Kenna 1960: no. 38 face a; PM IV fig. 464).
128. Younger 1995b. A goddess, perhaps, appears on a MM II bowl and stand (Immerwahr 1990: pp. 33 & 34, color pls. II & III). Gold finger rings (Younger 1985: 141ff.) and frescoes (e.g., the House of the Ladies fresco from Akrotiri in Thera: Doumas 1992: pls. 6-12) of the MM III-LM I period almost exclusively depict cult. Male athletic contests appear on stone relief vases (e.g., the Boxer Rhyton, Marinatos & Hirmer 1960: pls. 106-107) and in wall and relief frescoes (Immerwahr 1990: Kn 8) and finger rings carry hunting scenes. Sealstones from MM II on (e.g., CMS II 2.163 face b; AM 1938.962, Kenna 1960: no. 226) and MM III-LM I relief frescoes (Immerwahr 1990: Kn 8) and finger rings (e.g., the sealings from Sklavokampos HMs 612-625 etc.; S. Marinatos 1941: pl. 4) carry hunting scenes. A few rings (e.g., CMS I 16 from Mycenae ShGr IV), relief vessels (e.g., the Silver Siege Krater from Mycenae ShGr III: Marinatos & Hirmer 1960: pl. 174), and frescoes (e.g., the shipwreck and marching warriors from the West House, Akrotiri in Thera: Doumas 1992: pls. 26, 28-29, 30) depict battles.
129. Rehak 1997. Here are a few examples: Knossos frescoes (bull-leaping, procession, Campstool [Immerwahr 1990: Kn 22, 23, 26]); procession frescoes from Thebes and Tiryns (Immerwahr 1990: Th 1 & Ti 4); hunting and warfare in the Pylos frescoes (Immerwahr 1990: Py 10 & 11).

Chapter 2: Music and Society

The Use of Aegean Music

Music has often been considered to have ethnic and ethical value; in the late fifth century B.C. in Greece there were intense discussions concerning the 'New Music' of the day, discussions continued by Plato and Aristotle in the fourth century.130 Even today, we distinguish national musics and assign them characteristics, like highly structured German music and loose, colorful French music;131 and we praise some music for its uplifting quality and, whatever the period, decry the degenerative quality of modern music. It is tempting, therefore, to look at Aegean music also in cultural terms.

It is almost certain that the people on the Greek mainland were speaking Greek quite early, possibly by the end of the Early Bronze Age,132 and that the natives of Crete spoke what seems to have been a different language, perhaps resembling an Anatolian dialect, until quite late, perhaps even into the classical period at least in geographical pockets; how the pre-Greek mainlanders ('Pelasgians' to the later Greeks) and the Cycladic peoples identified themselves ethnically and what language or languages they spoke is unknown, but some of them at least probably had Anatolian relatives.

From the survey in Chapter 1 it seems clear that the early inhabitants of the Aegean preferred the harp and sistrum (and triton shell trumpet?) and invented the phorminx, and that the later Greek-speakers took up the phorminx and preferred it and aulos (as well as the tortoise shell lyres and perhaps cymbals). In such a reconstruction we might conclude that in the Early Bronze Age and the Minoan Pre- and Protopalatial periods pre-Greek peoples liked the deep sounds of the harp and strong rhythms produced by the sistrum; later, in the Minoan Neo- and Final Palatial periods and in the Mycenaean age the higher pitched phorminx and auloi were preferred.133

130. West 356-372.
133. Why the phorminx survived in Etruscan Italy is problematic, but it may have been
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It is surprising, too, that Aegean art apparently never depicts ensemble music; in the Near East and in classical Greece various instruments are teamed, like the lyre, the aulos, and the krokala (clackers). But in the Aegean there are no sure depictions of two or more instruments being played at the same time; the fresco from Ayia Triada (Cat. 30) may depict an aulete along with the phorminx player, but the sarcophagus from Ayia Triada (Cat. 29) separates them and places them on opposite sides of the coffin, even though they both accompany activities relating to sacrifice, that of a calf accompanied by aulos, and the dedication of some liquid (the calf's blood?) accompanied by the phorminx -- even if they accompany the same general occasion, which is likely, they are being played separately at different stages, each given its own depiction. Otherwise, all music seems produced by soloists. The Aegeans would therefore have had no use for the kinds of 'directors' and 'overseers' of singers and auletes that occurred in Egypt. In Egypt, too, conductors apparently directed singing and instrumental music using hand signals that resemble the Kodaly method of choral directing; as such, they do not appear in Aegean art, unless the youth standing on the stern of ship 3 in the West House flotilla fresco from Akrotiri in Thera is synchronizing the paddlers with his odd arm and hand gestures.

We can deduce that music was important in Aegean society from the appearance of instruments in a variety of contexts and with a variety of connotations: administrative (on sealstones, as written signs, depicted in a throne room), economic (ivory imported for phorminx decorations), military (accompanying a procession of soldiers), funerary (instruments depictions in tombs), and religious (instruments dedicated in sanctuaries and tombs and depicted in processions and in cults of the dead). And we can imagine that singing in the Aegean, even though we have few sure representations of it, played as great a part in everyday life as it did in the Eastern Mediterranean in general or as it does in our own culture.

The musical instruments that were deposited in tombs as grave furniture, the lyres deposited in tholoi and chamber tombs, perhaps were played while the deceased journeyed to the grave, as the phorminx player near the statue before a possible tomb on the Ayia Triada sarcophagus implies. As an appropriate grave offering, it is possible that the Aegeans shared with the classical Greeks the notion that playing the phorminx was a restful occupation for the dead. But it is also possible that the deceased buried with instruments had actually played them themselves. Players, apparently professional, are named by title in a Linear B tablet from Thebes. In Egypt, musicians were highly regarded: we know the personal names of many of them, both women and men; and we hear of many who commissioned statues of themselves, were allowed to erect their own tombs, were sent on foreign embassies, and even accompanied Pharaoh on military campaigns -- for this last context we can compare the setting of the probable aulete on the Knossos sealing accompanying men carrying figure-8 shields (Cat. 65).

Music also was apparently considered appropriate in administrative settings. That the Minoans depicted musical instruments on sealstones must allude to their being able to mark an important occupation, and their pictographic form may have stood for syllabic representations of the sounds they made.

In the Mycenaean period we have only one depiction of music in an administrative context, the throne room fresco at Pylos (Cat. 31), and here it is important to note that the 'bard' only holds the phorminx on his lap -- he is not playing it. While we are not sure of the occasion, the pairs of men below him, wearing long robes, seated at tables, and apparently drinking in an institutionalized social environment, should suggest that the 'bard' was there to entertain or instruct these possible administrators.

But such an interpretation is too simplistic. In practical terms, the 'bard' is not a participant of the feast; as in a modern supperclub, this musician is placed apart. If we regard the image separately, his seated pose, his instrument at hand like an attribute, his averted gaze are all elements that one would find in a modern promotional photograph of a famous concert musician. The choice of location is also interesting, since it suggests an

134. Manniche 1991: 30-31 and passim, "chironomists".
135. Cf. Doumas 1992: pls. 73 and 81. Though these gestures may resemble those of an Egyptian chironomist, that occupation in Egypt did not survive the Middle Kingdom.
138. Mallia Workshop seal engravers depicted their neighbor potters, see n. 124 supra. With such a direct connection between illustration and occupation, it is reasonable to suppose the depictions of musical instruments on seals (Cat. 56) refer to real musicians.
139. Thus, Langdon 1993: 76-78, no. 17, elevates the Pylos 'bard' to the status of a Mopsos or Orpheus in classical mythology: "These twelfth and eleventh-century representations echo the somewhat earlier Mycenaean fresco from the Pylos throne room and the Late Minoan
'otherness': a separate rocky terrain, a mountain peak perhaps, outside a constructed human environment. Within the context of the entire throne room fresco, moreover, the 'bard' sits above the other men facing left, perhaps alongside with the winged griffin or perhaps facing the throne and its flanking griffins and lions, as if to direct our gaze away from his erstwhile playing and toward that which he faces.\textsuperscript{140}

There are other settings for music. The singers accompanying the laborers on the Harvester Vase are there undoubtedly to inspire the men for their coming work and to set the pace. The sistrum-shaker on the vase, too, keeps the workers in step, or tries to, much like the aulete with the line of marching soldiers on the Knossos sealing,\textsuperscript{141} or perhaps the youth conducting paddlers in the flotilla fresco in the West House at Akrotiri.

One would have expected other occasions, as attested in Homer and in the classical period: wedding processions, funerals, performances of epic, athletic contests, and private occasions as when Achilles plays his phorminx while Patroclus listens (\textit{Iliad} 9.189). While no recognizable depiction of a wedding procession or a private musicale exists, there are several Aegean depictions of athletic contexts,\textsuperscript{142} but no musician accompanies them.

All these occasions, attested or assumed, would be minor in any case, considering the overwhelming evidence for the formal, religious associations of Aegean music. From the dedications of musical instruments, especially chelys lyres and triton shell trumpets, in shrines and sanctuaries, and from the frescoes and seals, we know that music accompanied religious ritual. We cannot imagine that much of this music was practical: to call the faithful, to cover the gruesome sounds of frightened sacrificial animals, to drown out ill-omened words or noise, to provide transitions between phases of ritual action, and especially to frighten away evil spirits and to call down the divinity.\textsuperscript{143}

But much of this music was also used to heightened religious feeling. The phorminx was played in processions, at libations perhaps to the dead, and at altars;\textsuperscript{144} auloi were also used in these religious processions, and at animal sacrifices.\textsuperscript{144} On the sarcophagus the formality of the lyrical phorminx in stately procession contrasts strongly with the reedy auloi set against the dying call. The Ayia Triada sarcophagus also emphasizes the important role of the musician by placing both aulete and phorminx player in the center of the two long sides. Both musicians are also slightly isolated, the phorminx player at the end of a procession, the aulete apart and in the far plane. Since music penetrates whatever personal boundaries we might erect to contain and control our reactions, assails us from without, and integrates and relates us with the outside world, the Mycenaean decision to depict musicians apart and thus framed may reflect a desire to view music from a distance, compartmentalized, its effects thus apparently under control.\textsuperscript{145}

There is another, possibly religious, musical instrument that the Aegeans may have used. An Egyptian rattle, the \textit{menat},\textsuperscript{146} made of rows of faience beads, resembled a heavy necklace; these were carried and shaken by important women in religious ceremonies. Its existence and use is reminiscent of the single-strand necklaces that women carry and touch in Aegean frescoes.\textsuperscript{147} Two examples will suffice here: in a fresco from Akrotiri, Xeste 3, the \textit{Necklace Swinger}\textsuperscript{148} approaches the Wounded Girl carrying a single-strand of spherical rock crystal or pale purple glass beads in her left hand.

\textsuperscript{143} Cf. Quasten 1983: 15-19. To call the faithful (e.g., the triton shell trumpet on the Idaean Cave sealstone, \textit{Cat. 61}), to cover sounds (e.g., the auloi on the Ayia Triada sarcophagus, \textit{Cat. 29}), to provide transitions (e.g., the relative positions in their processions of the musicians on the Harvester Vase, \textit{Cat. 53}, and the Ayia Triada sarcophagus, \textit{Cat. 29}, and fresco, \textit{Cat. 30}).

\textsuperscript{144} The phorminx in processions (the Ayia Triada fresco, \textit{Cat. 30}, and perhaps on a ring that impressed a sealing at Pylos, \textit{Cat. 66}), at libations (the Ayia Triada sarcophagus, \textit{Cat. 29}) perhaps to the dead, and at altars (the Chania pyxis, \textit{Cat. 33}); auloi in religious processions (perhaps the Ayia Triada fresco, \textit{Cat. 30}), and at animal sacrifices (Ayia Triada sarcophagus, \textit{Cat. 29}).

\textsuperscript{145} Sheppard 1987: 157.

\textsuperscript{146} Manniche 1991: 63-4.

\textsuperscript{147} Younger 1992: 266-268, with additional related scenes.

\textsuperscript{148} Doumas 1992: pls. 100, 101.

\textsuperscript{149} Such pale yellow glass beads have been found in the Mycenaean Sanctuary at Phylaki;
and the fragmentary 'Mykenaia' fresco from the Mycenae Cult Center holds a double necklace of gold and cornelian spherical and teardrop beads in her right hand. Both frescoes come from religious contexts: the Akrotiri frescoes may depict part of a female initiation cycle, while the 'Mykenaia' comes from a building near or part of the Cult Center at Mycenae. The meaning of these scenes of holding and touching necklaces is unknown, and while it is possible that the necklaces functioned symbolically, conveyed status, and marked agegrades, it is also possible, given the Egyptian parallel, that they were shaken to make noise that punctuated episodes in rites of passage.

We can amplify this retrieval of Aegean sound with two more examples—dressbeads and strands of beads. There are many representations of men's and women's costumes outfitted with hanging stone or terracotta beads. Conical stone beads (conuli or dress-weights), often mistakenly identified as spindle whorls, hung from the short ends of warp threads at the lower hem of a tunic or skirt, and small spherical and papyrus-shaped beads gathered the many long warp ends from the sleeve hem of bodices. A few representations of men wearing kilts also depict dress beads hanging on long warp ends at the front. While these weights had a practical function, to weigh down a man's kilt or woman's dress, important in the Aegean, especially during the gusty meltemis and siroccos of summer, they would also have provided a dry, crackling sound as the people walked along streets and through narrow alleys.

Similarly, strands of beads were also strung as festoons to catch the wind as rigging on ships, between columns, accompanying hanging branches in a ritual context, and inside windows. Window jambs were even equipped with small hooks shaped like double-axes so the necklaces could be strung up quickly and easily. Not only would these festoons have served as gay bunting for festive occasions; they would also have clacked in the breeze. Perhaps the crackling noise of these beads, along with the rustling of leaves of the similarly hung pine branches, contributed to making the presence of the divinity felt; thus, at Dodona, the rustling of oak leaves signified the oracular presence of Zeus.

(Renfrew 1985: 317-322).

152. Iakovidès 1997; and Dabney 1996.
158. Langer 1953: chs. 7 & 8, and passim.
159. Subotnik 1987: 140.
preoccupation with romantic morbidity and mortality are perfect subjects in contexts that focus on death: military, funerary, and sacrificial. Even the Harvester Vase’s apparently occasional music may have been only a variety of what later becomes the classical harvest song, the Linos, a song of lamentation over death.

Music also has the "uncanny ability to make us experience our bodies in accordance with its gestures and rhythms." It can raise our emotions, excite us, renew our energies, incite us to action. In fact, music intermediates between public and private response. It makes our feelings richer and more convincing than the mere words used to express them; music provides a "public forum of private expression".161

This means for private expression can be dangerous, especially in a society, like the Minoan-Mycenaean, where the understanding of individuality was probably limited. Even the concept of the individual note or tone was probably subsumed under the strummed arpeggios of the phorminx and the drone of the lower aulos accompaniment -- these would have set value on a group of tones and blurred noise.162

We might then interpret the strummed quality of Classical, and presumably Aegean, music as reflecting a lessened sense of individuality and perhaps a privileging of group identity and group-sanctioned behavior.

Social reactions to expressions of emotion vary; society may view them as liberating in an organized setting or as dangerous, needing control. For example, J. Rimmer juxtaposes Western Christian music with ancient Near Eastern music:163 "Western Christian religion has purposefully limited physical activity [e.g., wrestling, dancing, ritual exercise], other than sober processional movement, from its rituals. In most other religions it was and is a natural part of human behaviour towards the Gods... In Western Europe, percussion instruments have always figured less, both in variety and in usage, than other kinds of instruments -- a long-lasting result, perhaps, of the early western Christian church's fear of their hypnotic effect and non-Christian association."

Similarly, in Aegean art there are only a few representations of music and vigorous action: the Harvester Vase and probably the Knosos sealing and Pahakastro terracotta group. In fact, most representations of vigorous movement depict men either at war or in its surrogates and substitutes, hunting and athletics.164

There are almost no representations of movement for its own sake, dance, the one fresco universally agreed to represent a dance is the Dance in the Grove fresco from Knosos,166 with which the Isopata ring (CMS II 5.1) should be compared. Very likely there are more depictions of dance than have been realized. Since there probably were war-dances, it is possible to see the duelists on CMS XI 34 as energetic dancers or on CMS V 643 as courtly dancers. The numerous minotaurs, the several goat-men, and the two lion-men, all in contorted positions, may have been men with animal masks dancing.167 Acrobats, too, are types of dancers.168 And the many depictions of stately processions can also be considered dances. Only in this last do we see the musical accompaniment.

While the formal depiction of music emphasizes its stateliness, the costumes of the musicians suggest the possibility for more energetic movement. The phorminx players on the Ayia Triada sarcophagus and fresco (Cat. 29 & 30) and in the Pylos fresco (Cat. 31) all wear the long tunic that both Mycenaeans and women wear,169 a unisex, everyday garment that implies sexual ambivalence. This long garment would have allowed great freedom in movement; we can imagine the phorminx player swaying to his rhythms, for instance. The aulete on the Ayia Triada sarcophagus (Cat. 29) wears a skirt resembling the Mycenaean tunic but uniquely calf-length, with his torso bared like most men in active, outdoor occupations; we might presume auli-play was more energetic than playing the phorminx.

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162. Shepherd 1987: 159, identifies the single-sounded notes of modern music as consonant with the high value placed on individuality: "notes stripped of much of their inherent sonorities possibilities become a social code for the brand of individualism characteristic of industrial capitalist societies".
165. See Tolle 1964; Aström 1986: 124-125; Ulansowska 1993. I am grateful to Andrea Remyn who suggested the following and other possibilities.
169. Compare the professional Classical kitharist in his chiton resembling Apollo in stance and costume (Maas & Snyder 53-58).
especially since it is here associated with the undoubtedly noisy and exciting sacrificing of a calf and elsewhere with marching soldiers (Cat. 65); the aulete’s bared flesh, torso and legs, should indicate the sensuality of the excitement.

Both musicians on the Ayia Triada sarcophagus stand in an exaggeratedly arched pose, their shoulders drawn far back, their chests high and thrust forward. For men, this pose is used otherwise in scenes of offering and presentation: a file of men offer ladies on a LM I stone relief vessel from Knossos; the Cupbearer fresco from Knossos similarly offers a rhyton; the boy on the Chieftain Cup presents himself to the youth; and bronze figurines represent similar men presenting themselves presumably to the divinity.171

It would seem, therefore, that music, regardless of its potential, was severely restricted in its depictions; politically correct representations demanded that music be stately, somber, processional, serious, controlled, and male.

**GENDER AND SEXUALITY IN AEGEAN MUSIC**

We can perhaps appreciate the difference between Aegean and Near Eastern music even more clearly when we realize that in the eastern Mediterranean music had the ability to convey and heighten sexual and erotic feelings.172 There were erotic songs and melodies, prostitute-musicians, both men and women, and erotic instruments. Even the duck- or birdhead finials on the lyres were erotic symbols. The lute, especially, is often depicted as present during lovemaking, as if it were a semiotic sign for sex; one courtesan is even represented still holding the instrument during intercourse.173

In classical Greece, too, music was an appropriate accompaniment to sex: on a kylix by Onesimos, for example, a balding man entreats a woman to unlie her chiton, her chelys lyre at her side, and on a redfigure amphora a nude flute girl touches the penis of a bearded man with her aulos, possibly reflecting

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173. Manniche 1991: 110, fig. 66. Similarly, NYMM 31.3.98, an Egyptian parchment fragment dating to Dynasty 17-18 depicts an ithyphallic man and a woman playing the harp.

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**Chapter 2: Music and Society**

a verbal pun.174

As to the sex of the musicians, we know that in Egypt during the New Kingdom both men and women were professional singers and played the lyre, harp, and lute. Other instruments were thought appropriate to one sex or the other: only men blew the military trumpet and played the drum, and only women played the tambourine and sistra. In the classical period kithara-playing was a formal art practiced by professional men at formal occasions, while other instruments were more associated with informal and even rowdy drinking parties and with love (the lyra, barbitos, and aulos), and some of these were more associated with men (the kithara, the barbitos when reclining at the symposion) or with women (the barbitos when sitting or when at home, the frame harp, magadis, pektis, trigonon, and krokala).175

The Aegean, however, is peculiar. Alone of all ancient civilizations I know, it has produced virtually no sexual or erotic art, no depictions of sexual intercourse, no representations of intimacy, no hand holding, no embracing, no kissing.176 With such a constant constraint on depicting erotic desire, we would not expect music to be depicted as an overt accompaniment to a physical expression of intimacy.

The production of music is also more narrowly constructed in the Aegean Bronze Age; apart from two doubtful representations of women associated with a musical instrument (Cat. 66 the Pylos sealing, offering a phorminx; Cat. 61 the sealstone, possibly blowing the triton), only men are portrayed playing musical instruments, and only then as soloists, and primarily, if not only, in somber religious settings. This does not mean, of course, that only men

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175. Maas & Snyder passim, esp. ch. 4, pp. 79-112., and pp. 115 ff., 121 ff., and 140 ff. In the classical period, the chelys lyre was a less formal instrument than the concert phorminx; it was often the instrument taught in general education and is depicted being played by young boys in schools, gymnasias, and palaistra. It was played at symposia where women were present, and could be played by komasts. It can be accompanied by all sorts of instruments, except the horn and trumpet. Maas 1985 traces the history of the classical kithara from its lofty status as a formal instrument to one that eventually becomes an instrument for women and the Muses.
176. There are two depictions of goats copulating (CMS VII 78 and CMS II 2.306a), one doubtful depiction of a man and woman having intercourse (CMS II 1.446a), and one depiction of a nude man and a dressed woman facing each other, their hands perhaps touching (CMS II 5.324) -- all these belong to the late Protopalatial period or, in the case of CMS VII 78, perhaps the early Neopalatial period.
produced music in reality, just that only men were thought fit to be
represented playing music.

For instance, it is possible that the Akrotiri fresco portraying monkeys
playing lyres (Cat. 28) might refer to women musicians since in Aegean
representations monkeys accompany only women and pick crocus as women
do.177 But if the Thera fresco does refer to women musicians, the fact that it
replaces them with monkeys underscores an apparent Aegean decision not to
depict women themselves playing music.178 It is difficult to conceive of an
Aegean society that would not permit women to produce music, at least certain kinds
of music, or would not allow music to be produced in secular environments, at
work, at social gatherings, while watching the children or the sheep,179 and it is
likely that Aegean society did indeed allow women to make music and men
dand women to make music privately and at informal social and work
occasions. But what we are allowed to see restricts music only to the formal
settings and apparently excludes women altogether from music.

In addition to the sex of the musician, we may be able to elicit some
information about the gender and sexuality of Aegean music itself.

Music in general has often been seen as feminine, and its common
reduction, both in theory and in analysis, to mathematical ratios or to rigid sets
of harmonic progressions, is an attempt to make music rational, objective,
universal, and transcendent of outside forces such as the social and
personal.180 We thus can interpret not only music sexually but also the
musician as an object of erotic desire. Two instances in the classical period

177. See N. Marinatos 1987, who mentions most depictions of monkeys in Aegean art. In
Xeste 3, along with the lyre-playing monkeys, others wield swords and a sword sheath
(Doumas pl. 96), as does a woman on a sealstone from Knossos, CMS II 3.16, and the boy
on the Chieftain Cup.

178. For similar restrictions on women musicians, compare the remarks of John Essex writing
[viola da gamba], are Instruments most agreeable to the Ladies: there are some others that
really are unbecoming the Fair Sex; as the Flute, Violin and Hautboy; the last of which is
too Mannlike, and would look indecent in a Woman's Mouth; and the Flute is very
improper, as taking away too much of the Juices, which are otherwise more necessarily
employ'd, to promote the Appetite, and assist Digestion."

179. The Harvester Rhyton (Cat. 53) is unique in depicting music apparently in a work
environment; and some scholars therefore have preferred to interpret the procession instead
as religious.


permit this approach: male players of the classical barbottes sometimes wore
women's clothing181 and Phaidros in Plato's Symposium (179d) characterizes
Orpheus, because he was a kitharode, as effeminate (οτι μαλακιζεσθαι
εδοκει, οτε ὧν κιθαρωδός).182

Music's ability to arouse sexual passion through its rhythms and
constructions of climax and cadence are difficult to control successfully,
especially since these feelings are often transferred to the musician.183 The
eroticized male and female musician existed in the Near East and Egypt, and
this should lead us to expect a similar construction for the Aegean male
musician.

To retrieve information about the sexual nature of the Aegean musician,
we start with the choice of instrument. The two major stringed instruments in
the Aegean, the harp and the phorminx, do not overlap in time: the harp
appears first in Early Bronze Age Cycladic and mainland depictions and
finally in MM II sealstones; this is the period when the phorminx first appears
in Crete and thereafter only in the hands of Mycenaens. If compressed in
maximally we might see these preferences of one then the other suggesting a
conceptual binary opposition between them.

One physical aspect of harps clearly differentiate them from the
phorminx: they are stationary, and the musician plays them seated; the
phorminx player, on the other hand, was free to move and be active, and was
expected to participate in and accompany processions. Similarly, in the
classical period, the kitharist, able to move about, was male, while the harp
was considered feminine, played almost always by seated women, and
frivolous.184 We may expect, then, the freer and more active male phorminx
player in the Aegean Bronze Age to be expressing the common male privilege
of active public movement.

Aside from the tonal quality or timbre185 of harps and phorminxes, which

181. Maas & Snyder 118 ff.
183. The sexual attraction of the flamboyant pianist Franz Liszt and the construction of
modern male rock musicians as sex idols for both teenage males and females are well
known examples of the eroticized musician.
184. West 70-75.
185. Shepherd 1987: 158: timbre, "The texture, the grain, the tactile quality" of sound, "more
than any other parameter, appears to constitute the nature of sound itself". In their
introduction, Leppard and McClary 1987: xv, discuss the gender connotations of different
timbres.
we can barely recover, the seated or standing pose of musicians, as passive or active, should have had gender connotations. In fact, women usually constitute the seated figure in Aegean art; for the Late Bronze Age, we have at present fewer than 10 representations of seated men and fewer than 28 representations of seated women. Two representations of seated men have them drinking at tables (see Cat. 31); the rest are all each unique. Many of the women, on the other hand, are the seated Minos goddess, a topos (see Cat. 66); other representations of seated women, like the well-known Dance in the Grove or Temple frescoes from Knossos, have them watching processions in large social groups segregated from and in front of the men. It is possible, therefore, that the pose of sitting and the occupations that required sitting, e.g., textile making, were both feminized.

Men, on the other hand, are depicted in Aegean art almost exclusively in active poses: wrestling, boxing, bull-leaping, hunting, and fighting. Such activity would seem masculinized. In fact, in fresco depictions of bull-leaping, white-painted figures, presumably female, as well as red-painted figures, presumably male, leap bulls. If bull-leaping was gender-constructed as male, this would then explain why the females in the paintings, like the men, bare flat toes and wear cod-pieces -- both aspects are merely costumes for representing the gender of the activity, regardless of the sex of its practitioner.

In the Mycenaean world, where the depiction of playing music was a male privilege, perhaps to masculinize and control music's already feminine construction, we would expect the instruments of choice not to be those one sits down to play, but those, the phorminx and auloi, that one stands up to play in active poses. This gendered construction of musical instruments is confirmed when we remember that the only seated musician in the Late Bronze Age is the Pylos 'bard' (Cat. 31) who does not play his phorminx -- he only holds it.

Did the masculine preserve of making music and the masculine engendering of the phorminx and auloi also carry sexual connotations? Here, too, we find a few clues. The common duck-head finials to the lyre arms had erotic associations in Egypt, and this persistent choice of decoration for early Aegean harps for nude musicians, the later double harp, and the phorminx may imply the same. It is possible that waterbirds in the Aegean were more associated with women than with men. Birds occur infrequently with men: a robed man holds a bird on one sealstone; and the Aigina pendant depicts a killed Master of ducks. Women, on the other hand, are frequently shown as a Mistress of ducks on sealstones, and with ducks on ivory mirror handles, and on objects associated with women; and we should remember that almost all winged monsters in Minoan-Mycenaean art are female, the eagle-woman with large breasts, the sphinx with a woman's head, and many griffins with teats. If to be winged is feminine, then we come around again to the feminized construct of music itself, its rushing sound and winged words, and the birds associated with Aegean musicians.


187. The white flesh of some bull-leapers has caused some scholars to doubt they are female; for a summary, see Younger 1995b. The idea that some activities require the costume of the normative participant, in this case male, is well known; cf. modern women who wear men's business suits to work. Going a step further, that some activities may also require the nude or bared physique of the normative gender, regardless of the sex of the actual participant, I owe to both Bonfante 1989 & 1990, and to Stephanie Morgan, a student at Duke University, who has argued that the Venus-body for Roman matron portraits acts as semiotic for their attaining a high social class. Similarly, we should see the cuirass, sculpted according to an ideal male torso type, also as a costume that acts as a metaphor for heroized fighting; see, Flory 1994.
CHAPTER 2: MUSIC AND SOCIETY

CONCLUSION

The above analysis of Aegean music and musicians is, admittedly, suppositional; the representations of music were carefully designed to represent to us only certain people as the producers of music, only certain instruments, and only certain occasions. What music was really produced, by whom, and when is not fully knowable.

Even if we had more images, it would still be difficult to retrieve much more meaning simply because Late Bronze Age art had a constricted agenda; Aegean society in general had already carefully selected a limited number of themes appropriate for artistic representation, among which occasional scenes of everyday life had little place, and with the Mycenaean presence in Crete even that narrow reserve was eliminated. It is as if Mycenaean society had censored the normal lives of average people as being mostly unworthy for monumentalizing in art. To learn about everyday living one must turn to domestic architecture, pottery, and utensils -- not to art.

Music is no exception: its depiction was very narrowly constructed as the preserve of men, appropriate for extremely few situations, and supervised mostly by state cult. For us to hear Aegean music requires not only imagination but a faith that it existed in other settings than what the Late Minoans and Mycenaeans carefully selected for us to see.

CHAPTER 3: EXTANT INSTRUMENTS

CATALOGUE OF EXTANT MUSICAL INSTRUMENTS

STRINGED INSTRUMENTS
Ivory Phorminxes

From Mycenae Chamber Tomb 81

Mycenae chamber tomb 81, excavated by Christos Tsountas in 1895, held a fairly rich collection of furnishings, though the pottery is apparently unidentified. Amongst the grave goods are fragments of a lyre carrying shallow relief spirals and incised "line & pulley" designs dateable to LH I on style.

1. (Pls. 3, 4, 7) NMA 3114, 3117: the lyre's arm, two bridge terminals, a mushroom-shaped yoke terminal (Poursat 1977a pl. XXXIV, lower row, extreme left), and biconical terminal (plektron handle? staff tip?; Poursat 1977a pl. XXXIV, lower right). Of the bridge, one piece is complete (L 6.5 cm); each of the terminals has a square mortise in the base (H. 6.6 & 7.2 cm). Platon 1966: pl. 71b; Poursat 1977a: 97, cat. nos. 307, 308, & 309 (wrongly identified as a plektron fragment), pl. XXXIII; Xenaki-Sakellariou 1985: 130, pl. 108.

From Palaikastro, larnax burial "on the cliff" (LM III context)

2. (Pl. 9.1) HM no. unknown, two ivory terminals (plektron handles? staff tips?). Bosanquet & Dawkins 1923: 127-38, 158, fig. 110; Poursat 1977b: 181. The two handles, somewhat biconical in form, carry incised "line & pulley" designs, which should indicate a mainland manufacture in LH I. Compare the similar ivory handle from Mycenae chamber tomb 81, Poursat 1977a, pl. XXXIV, lower right.

From the Menidi Tholos Tomb (LH IIIB context)

The Menidi tholos tomb at classical Archanai, just 12 km northwest of
Athens, was excavated in 1879; the pottery is LH IIIB. From the chamber floor come fragments of at least two ivory lyres, and an ivory plectron. I have restored the Menidi lyre as a phorminx (Pl. 6)

*3. Lyre 1. (Pls. 5, 8.1, 9.2-3)

NMA 1974, the "Restored Lyre". Fragments of the arms, yoke, and perhaps the soundbox, bridge, and mushroom-shaped yoke terminals. Lolling et al. 1880: pls. VIII.6, 8 & 9, 10; Perrot & Chipiez 1894: II fig. 368; Aign 1963: V/2; Platon 1966: pls. 70 & 71a with a slightly different reconstruction; Poursat 1977a: 147-48, cat. nos. 425, 431, & 440, pl. XLV; Wegener 1968: cat. 37/38. The right arm (pres. L. 28 cm) has a snakehead or penis terminal that is decorated, from bottom to top, with a thin band, two rows of running spirals, an incurved base or altar (located at the waist or neck of the terminal), atop which are the forelegs of two antithetic quadrupeds (lions or sphinxes) flanking a central vertical line, a composition that is known from sealstones. It is likely that the design ran around the entire lyre.

NMA no. unknown (Pls. 5, 9.2), incorporated into the National Museum reconstruction as a bridge terminal: a rectangular ivory plaque with a longitudinal ridge pierced with two holes and ending in a fan.

NMA no. unknown (Pls. 5, 9.1). Lolling 1880: pl. VIII. 8.10; cf. Poursat 1977a: pl. XLV. Mushroom-shaped ivory piece with a square mortise in the base and peg-holes (H. 4.5 cm), perhaps a yoke terminal

4. Lyre 2. NMA 1975, the second, unrestored lyre. Fragments of left and right arms (H. max. 34 cm), decoration not preserved, and yoke. Poursat 1977a: 147, cat. no. 426, pl. XLV.


From Spata, Great Chamber Tomb (LH III context)

P. Stamatakis excavated two chamber tombs at Spata in east Attica in 1887, the larger holding almost all the finds, including the ivory lyre and LH

*10. (Pl. 16) HM 107 (bird-head fragment) & 179 (plain curved fragment). Platon 1966: 208-10, pl. 67, fig. 1. The duck-head fragment is solid with an inlaid eye; the plain fragment preserves the base of a spur projecting from a short plinth (arched bridge?), and two mortises: at the narrow end, a circular mortise off-center, and at the thicker end with plinth and spur, a large elliptical mortise.

WIND INSTRUMENTS

Ivory Aulos from Mycenae (exact findspot unknown)

*12. NMA 1050, fragment of an ivory aulos. Schliemann 1880: 78 no. 130a (wrongly identifying the material as "potstone"); Poursat 1977a: 11, cat. no. 17, pl. II. The fragment consists of an ivory cylinder (internal D. 1.4 cm) with raised band (ὁλός, the bulb that precedes the mouthpiece) and, near it, a small hole pierced through the side perhaps for the ties to the mouthpiece (see West fig. 4.1).
CHAPTER 3: EXTANT INSTRUMENTS

Triton Shells with Pierced Apex

13. HM 121, from Phaistos, south corner of room VIII (Bench Sanctuary, MM II context), of the Upper West Court Sanctuary Complex. Åström & Reese 1990: 8.


17. Hala Sultan Tekke, sanctuary?, northwest corner (Late Cypriot IIIA1 context). Åström & Reese 1990: 5-6; ca. 1175 B.C.

18. Kition sanctuary, workshop room 12, well 2. Åström & Reese 1990: 8; Cypro-Geometric I, ca. 1050-1000 B.C.

Triton Replicas with Pierced Apex

19. For three examples: HM inv. no. unknown, three small terracotta models painted with red and white bands with pierced apices from Knossos, Loomweight Deposit (MM IIB or MM III context). PM I 222 fig. 168.

Triton Replicas with Drilled Appendix

20. (Pl. 21) Ayios Nikolaos Mus. 11246, of steatite, from Mallia, zone northeast of palace (LM IB context). Baurain & Darque 1983. The steatite shell carries a low relief of two Minooan Genii standing on a platform. The appendix near the mouth is drilled; at the other end, near the apex of the shell, but on the underside, there is a small hole.

21. HM 45, of alabaster, from Knossos, Pillar Crypt (LM IB context). PM II 822-23, figs. 537H and 539; Warren 1969: 91; Baurain & Darque 1983: 64-65 no. 6. The appendix near the mouth is drilled, and the lip has four holes drilled presumably for a metal attachment.

22. HM 360, of obsidian, from Ayia Triada room 13 (LM IB context).

23. HM 177, of alabaster, from a Kalyvia Chamber Tomb (LM IIIA terminus post quem non). Savignoni 1904: 528, fig. 40; Marinatos & Hirmer pl. 115 below; Warren 1969: 91; Baurain & Darque 1983: 62 no. 2. The appendix near the mouth appears to be drilled.

PERCUSSION INSTRUMENTS

Terracotta Sistrum

24. (Pl. 22.2) Archanes Mus. no. unknown, terracotta sistrum (L. est. 22.4, W. est. 11.5 cm) from Archanes, the Phourni cemetery, Funerary Building 9 (MM IA context). Sakellarakis & Sapouna-Sakellarakis 1991: 118 ff., fig. 99. Two holes in the frame of the sistrum secured a rung, presumably wooden, on which were strung the three clay disks found with the instrument.

Bronze Cymbals

25. (Pl. 22.4) HM Bronze 1014, 1015, four bronze hand cymbals (D. 19, D. central boss 8, H. 2.5 cm) from Mouliana Chamber Tomb B, Crete (LM IIIC context); two of the cymbals are on display. Xanthoudides 1904: 46-48, fig. 11; Aign 1963: 51; Desborough pl. 23c. The disks were found placed on the chest of the deceased (presumed male) in a tomb along with weapons; one disc was badly corroded.


The illustration in Sakellarakis & Sapouna-Sakellarakis 1991 establishes the ratio between width of handle and overall length (1.6:4) and width of handle and overall width (1:3:1); if the actual width of the handle is approximately that of a large dog biscuit (similar in shape and comfortably held in my hand) with a width of 3.5 cm, then estimates for an actual overall length and width can be calculated. The results are consistent with the average dimensions of the extant sistra from Pompeii.

193. Other shells have their apex missing: Peristeria tholos (LH I-II context; Åström & Reese 1990: 10), and Kythera, Kastri Tb B (LM IB/IIA context; Åström & Reese 1990: 10, 11: the shell can be sounded but was probably not intended to be).
Chapter 3: Musical Depictions

Catalogue of Musical Depictions

Frescos

27. (Pl. 20.1) HM, fresco tray PX 19 and 20, fresco from Knossos, Northwest and Fresco Heap. PM III fig. 23; Cameron and Hood 1967: fig. 3f; Immerwahr 1990: Kn No. 14b; Cameron 1974: 311 & 433, attributes the fresco to his School B, MM III B or early in LM IA. The fragment depicts a textile pattern, probably from a woman's dress, consisting of pairs of white-painted tubes with pointed ends. Each is bound by yellow bands, one at the base, one below the point, and one in the middle. At the base band, a ribbon or thong joins each pair and runs along each tube to join at each of the other bands. Evans hesitantly suggests "flutes"; Immerwahr suggests quivers. Since they occur in pairs and the shape of the conical tip resembles the conical tip of the lower aulos on the Ayia Triada Sarcophagus, Cat. 29, they would seem instead to be short auloi (slightly less than 20 cm long if they are as thick as the Ayia Triada sarcophagus auloi), equipped like them with vent-holes.

28. (Pl. 15) Thera Mus. no. unknown, fresco from Akrotiri, Thera, Xeste 3, ground floor, room 4 (LM IA context). S. Marinatos 1976: 25-27; Doumas 1992: 128, pls. 95-96; N. Marinatos 1984: 114, pl. 80. Two major sections of this fresco are published; Paul Rehak (personal communication) proposes to link the two sections. Two groups of monkeys face each other, apparently fighting; at left, a band of at least three monkeys, at right, a group of at least two. The monkey at the extreme left holds a triangular lyre in his left hand, his index finger raised; the volute of a second triangular lyre can be seen below his hand, implying a second monkey. In front of these two musicians, a third monkey wields a scabbard with baldric and a plume at the tip; he wears a large circular earring and a necklace whose knotted loop can be seen at the back of his neck. The monkey to the right of center faces left and wields a sword above his head in his right hand; behind him, at the extreme right, a monkey sits facing left. Rocky terrain above the scene and clumps of crocus suggest a mountainous setting.

29. (Pls. 10-11, 18-19) HM no. unknown, frescoed sarcophagus (the Ayia Triada Sarcophagus) from Ayia Triada, Crete, chamber tomb 4 (LM IIIA[1]). Paribeni 1908; Immerwahr 1990: AT 2; Long 1974: 36ff, pl. 15; Marinatos & Hrimer color pl. XXIXA; Aign 1963: 44f., II/11 fig. 15. The North (or Front) Side (Pls. 10-11).

The Pouring Scene: from right to left, all figures facing left: a man in a long tunic plays a phorminx; a woman in long tunic and plumed cap holds a yoke across her shoulders carrying two buckets; a woman in hide skirt and bodice pours the contents of a bucket into another on a stand, before which are two pylons on stepped stands topped with double axes surmounted by birds. The musician holds his right hand with thumb and forefinger close together; between them is a red line that may represent a plektron. Lawgren rightly points out (1993: 63-64, fig. 10) that, since we see the player standing left, we should be viewing the back side of the phorminx and the musician's entire left arm in the near plane before the instrument, but the artist has made a mistake.195 The artist had started correctly; the slightly paler, ochre sketch of the elbow can be seen just below the arm in the soundbox area; the artist then painted the shoulder and hem of the tunic over the upper arm but painted the arm itself as if it lay on the far side, (i.e., the front side) of the instrument. The artist's primary mistake actually was to insist on a front view of the phorminx (with the musician's left arm behind it as usual) regardless of the fact that the musician, in facing left, would have shown us the back of the instrument.

The Presentation Scene: left to right: two men walk right in hide skirts carrying calf simulacræ; a man walks right in a hide skirt carrying a boat simulacrum; a stepped altar leading to and against which grows a tree; footless, armless male figure (xoanon or representation of the deceased, depending on the identification of the architecture in back) faces left; shrine or tomb.

195. Lang 1969: 80 first noted the error. There is a similar awkwardness in the position and shape of the aulete's hands on the other side of the sarcophagus, again probably because of the awkward hand positions of the player himself. Lawgren also accuses the artist of mistakenly bunching the strings together too close to the center of the instrument, but as is shown in the introductory discussion to the phorminx, the strings may bunch here above the center either because in reality they did or because of the artistic convention of presenting the bridge above (two-dimensionally) the soundbox when it actually was situated on (three-dimensionally) the side of the soundbox.
Chapter 3: Musical Depictions

The South (or Back) Side (Pls. 18-19).

_The Calf Sacrifice_, from left to right, all figures facing right: two pairs of women in long banded tunics (fragmentary); a woman in a long, vertically banded robe stretches forth her hands (except for her forearms, her body above the knees is missing); a sacrificial table on which lies a trussed calf, blood streaming from its neck into a bucket on the ground below; under the table lie two kids; behind the table in the far plane stands a man with long hair, in a tunic that reaches to his calves, playing the _auloi_; a woman in hide skirt and bodice stretches forth her hands above a flat shallow basket or tray atop an altar above which, if suspended, are an ewer and bowl filled with food rendered as red and white circles (fruit?); a pylon on a checkered stand topped with a double ax surmounted by a bird to left; and finally a shrine consisting of a panel decorated with spirals (a false door?) topped with a cornice of beam-ends and four "Horns of Consecration" on the roof; behind or in the shrine grows a tree (olive?).

*30. (Pl. 12) HM, no. unknown, fresco from Ayia Triada (probably LM IIIA[1]). Paribeni 1908: fig. 21; Immerwahr 1990: AT 3; MMR², fig. 198 A; Long 1974: 36ff, fig. 43; PM II 836f., fig. 552b; Aign 1963: 43 no. II/10 fig. 14; Maas & Snyder p. 2 [misdated]). The fresco is widely acknowledged to be by the same hand that painted the frescoed sarcophagus (Cat. 29); Immerwahr cites Cameron for the total height of the _phorminx_-player as 0.435m. Procession of at least three figures all standing or moving to right: against a light background, a woman and three men, all in long tunics with vertical banding. Of the woman, only her feet and the bottom of her tunic are preserved. One man raises both arms high enough to support _auloi_ -- he should be an aulete (Long 1974: 38). A second man raises his right arm (two bracelets at his wrist each holding a sealstone) to support a yoke across his shoulders from which should hang a pair of buckets (cf. the Ayia Triada Sarcophagus, pouring scene, Cat. 29). A third man leads the procession, his hair short and curly with a forelock, and he plays the _phorminx_, which overlaps the border at the right. It is difficult to be sure where the musician's right hand is: if the elbow below belongs to the left arm, which seems unlikely, then the right hand might lie against the upper left arm of the lyre -- an unusual position; more likely, the lower elbow belongs to the right arm and the right hand has finished a strum across the strings and once lay, now broken away, near the right arm of the lyre. The left hand can be seen behind the massed strings, fingers parallel to them, palm flat as if damping them; a red wrist-strap secures the _phorminx_ by passing around the bent neck of the duckhead terminal of the right lower arm to his left wrist. Evans's reconstruction (PM II fig. 552b) and the one on display in the HM next to the fresco are both wrong for most of these details, as Aign shows.

*31. (Pl. 13) Chora Museum, no. unknown, fresco from "Nestor's" Palace at Pylos, Throne Room, NE wall (LH IIIB2-C context). Archaeologia 13.1 (Spring, 1960) color cover; Aign 1963: 80 no. V/1; Wegner 1968: cat. 136; Lang 1969: no. 43-44 H 6, color pl. A; Immerwahr 1990: Py 14. A one third lifesize man in a long tunic with gaily painted horizontal stripes sits facing left on a conical outcropping of rock. In front of him, at our left, a _phorminx_ rests on his lap, the only one that is carefully depicted with just five strings. It is unfortunate that the lower part of the _phorminx_, including the soundbox, is not well preserved, for it would be interesting to know from the position of the hands, whether we are looking at the front or the back of the instrument. Piet de Jong's reconstruction of the central parts of the _phorminx_ hesitantly supplies the musician's hands as if holding the instrument with the left hand and laying the right hand against the strings -- this is possible, but since the musician does not hold the instrument in the crook of his left arm, he certainly is not playing it. The arms end in birdhead finials, from the top of whose neck rise short thick pegs above the long yoke, the whole length of which, including the terminals, has apparently been lathed (if the arcs top and bottom had been connected, we might have interpreted the bulges between them as _κόλλοπες_; cf. Cats. 33 and 34). To the left of the kitharist flies what seems to be a large bird to left, but, as Paul Rehak points out (private communication), its white and blue coloration, the spiral on the chest, the presence of a crest, and the sharp, almost parrot-like beak all argue for a griffin. Below sit pairs of men on solid hourglass-shaped stools (campstools?) at tripod tables, presumably feasting and drinking.

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196. Maas & Snyder 220 n. 7 issue a similar caution about the reconstruction.

197. This is the third griffin in Minoan-Mycenaean art with both wings displayed to either side, and all three come from the Pylos area: this fresco and two cushion seals, the cornelian CMS V Supp. 1A no. 347 from Tragana Tholos 1 and the gold jewel CMS I no. 293 from Pylos Tholos 4. The fresco griffin's leonine legs would probably have stretched out in front and in back in the flying gallop pose; compare the small griffin on a fresco from Mycenae, Kritseli-Proevdi 1992: pl. 2a.
VASE PAINTINGS

32. (Pl. 14.2) Ayios Nikolaos Museum 1102, three-handled LM IIIA2 amphora discovered by accident at Pharmakokephalo Sklalon, Siteia. Platon 1966: 214f, fig. 4; Maas & Snyder 220 ns. 2 and 8, fig 2c. A pair of stringless phorminxes between each handle are painted as hanging from two straps secured to the black band painted at the base of the neck of the jar.

33. (Pl. 14.1) Chania Museum 2308, early LM IIIB pyxis by the Khania Workshop, from Kalami Apokoronoou, Crete. Tzedakis 1969: 367, fig. 2; and 1970: 111 figs. 1-2; Long 1974, pl. 18, fig. 48; Maas & Snyder fig. 2b. The torso of a man in a tunic decorated with multiple rows of zigzags stands next to a large phorminx with seven strings. A zig-zag line just under the yoke creates a line of seven V’s, to the lower apices of which the strings are attached (Maas & Snyder 6: tuning pegs). The soundbox is crescent-shaped with short vertical protrusions at the base of the limbs (cf. Cat. 56) which continue up to form thin vertical supports for parallel S-shaped arms (these could be birdhead arms) that, in turn, support the long yoke. The bridge is arched. From above, two birds fly down towards the musician, and at the left of the scene are two Horns of Consecration, each supporting a central double ax; more birds swoop and fly in a separate panel around the side.

34. (Pl. 14.3) NMA 9063, LH IIA kylix fragment from Skopelos. Platon 1949: 552; and 1966: 5a; Maas & Snyder fig. 3c. The badly preserved fragments show the crescent soundbox of a phorminx.

35. (Pl. 14.4) Nauplion Museum 13 214, LH IIIA2 krater fragment from Nauplion Chamber Tomb 4. Vermeule and Karageorghis 1981: IX.14.1: mainland Ithaca, thus LH IIIB; Dragouna-Latsoudi 1977: 86f; Bulletin de Correspondance Hellenique 103, 1979, pp. 103 & 560 fig. 83; Archaeological Reports 26 (1979-80) 30 fig. 53. A man in a long robe stands next to a large phorminx on the right.198 The limbs of the broad, crescent-shaped soundbox extend up to form thick arms that support the yoke directly -- there are no forearms. The yoke has a cluster of seven circles in the center from which the strings descend to and over the soundbox to be tied to the small, rectangular projection depicted below. This projection has two internal vertical strokes, which may represent the tied and bunched strings; it may also have functioned as a stand for the instrument. The musician stretches forward his right arm to hold a strap that extends across the strings to tie onto a loop attached to the middle of the instrument’s right arm -- the end of the strap dangles there with a tassel at its end. The musician’s right arm (?) stretches down, his forearm and hand reaching out to the base of the strings above the soundbox. The rings on the yoke may represent κόλλοπες (cf. Cat. 33) or imply that the yoke was lathed (cf. Cat. 31).

36. Nauplion Museum 14 376, LH IIIC jar fragment from Tiryns. Vermeule and Karageorghis 1981: XI.69; Maas & Snyder 18, fig. 3b. The fragment preserves only the left (?) hand of the musician, the arms, yoke, and three wobbly painted strings of the phorminx. The curved arms of the instrument are depicted as tall vertical squiggles placed narrowly together as if to imply a crescent soundbox below; the yoke is thick and projects slightly beyond the arms; given the carefree painting style, the three strings must be an abstraction. One of the musician’s hands appears partially across the strings -- parallels for the hand here suggests it ought to be his left hand, but it is possible to see a right hand in profile with thumb and forefinger pinching forward (to our right), as if to pluck the strings, with the other fingers raised.

SCULPTURES

Bronze Votive Kithara

37. (Pl. 23.1) NMA or Sparta Museum, no. unknown, miniature bronze votive kithara (H. 8 cm, W. 4.1 cm) from the Apollo Sanctuary at Amyklai near Sparta (end of LH or early Iron Age). Tsountas 1892: 14 fig. 5; Αρχαιολογική Εφημερίς 1902 pl. 3; Vermeule 1972: 372 fig. 49a; Aign 1963: V/3 p. 84; Wegner 1968: cat. 139. The votive, made from a single bronze sheet (H. 8 cm, W. 4.1 cm) represents a tall classical kithara, the earliest representation of the instrument.

Early Cycladic Marble Figurines, the Harpists

The harpists, when not forgeries, should date to the Early Bronze Age, primarily EC II. Nude men sit on stools or backed chairs ('thrones'), holding
their harp on their right knee, the right arm resting on top of the soundbox, the left arm up to grasp the harp's duck-bill support.

*38. (Pl. 17.1) NMA 8833, marble figurine excavated from Aphidika tomb 40, Naxos (EC I-II). Stephanos 1910; Papatheos Populos 1961-1962; Marangou 1990: 114-115 no. 111). The fragmentary harpist (H. max. 12.5 cm; restored 17.8 cm) sits on a stool; his left arm is not preserved.

*39. NMA 3910, early Spedos type marble figurine said to come from a grave in Keros. Thimme 1977: fig. 38; Getz-Preziosi 1987b: 247, pl. VIIIB; Aign 1963: I/1; Maas & Snyder 15, fig 1. Koehler 1884 reports that the harpist came from the same grave as the aulet (Cat. 48) below and two Early Cycladic Folded-Arm Figurines, and purchased by the NMA. The harpist (H. 22.5 cm) sits on a chair with a high back.

40. Whereabouts unknown, marble figurine reported (Bent 1888: 82) to have been found amongst material washed from graves located on the narrowest portion of the isthmus of Cape Krio (Triopion), south-west Turkey, at the western end of which is located the classical city Knidos (Aign 1963: I/4). Since most of Bent's finds from Antiparos were purchased by the British Museum (Bent 1885 [1965]: 407, n. 1), it is possible that the Krio harpist is there or in a private collection in Britain.

*41. Karlsruhe, Badisches Landesmuseum B 863, marble figurine said to have been found in a grave in Thera in 1838 along with the harpist (Cat. 42) by F. Maler and presented to the Karlsruhe Landesmuseum in 1840. Thimme 1977: 496, no. 254; Getz-Preziosi 1987b: pl. 9.2; Aign 1963: I/2; Schefold 1960: no. 4; Zervos 1957: fig. 316. The harpist (H. 15.6 cm) sits on a stool.

*42. (Pl. 17.2) Karlsruhe, Badisches Landesmuseum B 864, marble figurine said to have been found in a grave in Thera in 1838 along with the harpist (Cat. 41) by F. Maler and presented to the Karlsruhe Landesmuseum in 1840. Thimme 1977: 496, no. 255; Getz-Preziosi 1987b: pl. 9.1; Aign 1963: I/13; Schefold 1960: no. 4. The harpist (H. 16.5 cm) sits on a stool; only the stub of the harp-arm is preserved.

43. The Shelby White and Leon Levy Collection, New York, Kapsala type marble figurine said to be from Amorgos and found with harpist Cat. 44. Getz-Preziosi 1987a: no. 90, and 1987b: 247, pls. VIIIA, 7.1, 8.1. The harpist (H. 20.1 cm) sits on a stool, his left arm up but presumably not to grasp the harp's support under the duckbill extension.

44. The Shelby White and Leon Levy Collection, New York, Kapsala type marble figurine said to be from Amorgos and found with harpist Cat. 43.

45. Private collection in North America, early Spedos type marble figurine, provenience unknown. Getz-Preziosi 1987a: no. 91. The harpist (H. 24.1 cm) sits on a stool, his left arm up is not preserved.


*47. New York Metropolitan Museum of Art 47.100.1, pre-canonical marble figurine, provenience unknown. Thimme 1977: 495 no. 253; Getz-Preziosi 1985: 16, 1987b: 246, pl. III, fig. C; Aign 1963: 33; Anderson 1994 fig. 2, misidentified twice and misdated. The uniquely belted harpist (H. 29.5 cm) sits on a throne, and uniquely holds both his arms out to grasp the harp by its support. Several scholars have called the figurine a forgery: Gill & Chippendale 1993: 619 & n. 162; add Aign 1963: 33.

**Early Cycladic Marble Figurines, the Aulets**

*48. (Pl. 20.2) NMA 3908, early Spedos type marble figurine said to come from a grave in Keros. Thimme 1977: fig. 37; Getz-Preziosi 1987b: 247, pl. VIIIB; Aign 1963: I/5. Koehler 1884 reports that the aulet came from the same grave as the harpist Cat. 39, and two Folded-Arm Figurines, and purchased by the National Museum at Athens; it is probably authentic. The male aulet stands nude (H. 20 cm) and erect on a square base, holding the two auloi to his mouth.

*49. Goulandris Collection no. unknown, marble figurine, provenience unknown. Renfrew 1991: 164 no. 109. Without a known provenience its authenticity is at least questionable. The fragmentary figure stands nude (H. pres. max. 12.7 cm, restored H. ca. 25 cm), arms up possibly to hold auloi to his mouth.

**Early Cycladic Marble Figurines, the Syrinx-Players**

*50. Karlsruhe Badisches Landesmuseum 64/100, Kapsala type marble figurine, provenience unknown. Thimme, 1977: 496, fig. 256; Getz-Preziosi 1987b: 246, pl. IIB, 1985: 45. The nude male syrinx-player stands (H. 34 cm) on a square base, his arms up to hold the rectangular syrinx to his mouth.
51. Munchenstain, private gallery, marble figurine, provenience unknown. Schefold 1960: 110, fig. 5; Haas 1985: 146, fig. 3; Wegner 1968: cat. 25. The nude male syrinx-player stands (his legs broken off at the knees; H. max. 24 cm, restored H. ca. 32 cm), his arms up to hold the rectangular syrinx to his mouth.

52. (Pl. 20.3) A. Emmerich Gallery, New York, marble figurine, provenience unknown. Cahn 1965: 16, fig. 28; Haas 1985: 146, figs. 2, 2a. The nude male syrinx-player stands (H. 26 cm) on a square base, his arms up to hold the square syrinx to his mouth.

Stone Relief Vase, Singing and Sistrum-Shaking

*53. (Pls. 1.1, 2, 22.1). HM 184, the 'Harvester Vase', a rhyton of black steatite in the shape of an ostrich egg (D. max. 11.5 cm), upper half extant, from Ayia Triada, Crete, NW Quarter, room 4 with the benches (LM IB context). Halbherr 1903; PM II 47 & IV 218; Warren 1969: 88, shape 34C; Marinatos & Hirmer pls. 103 & 104; attributed to the Harvester Vase Group (Kaiser 1976: 177-82; Younger 1993: 175, MM III-LM I).

Composition: a procession to right of what seem to be harvesters. In front, a man in a bulky, waist-long, mantle leads a lively procession of 26 men. Moving back from the leader: four pairs of men, carrying implements on their left shoulder; a fleshy man (figure 18) shakes a sistrum (Pl. 22.1) in his right hand, his left hand up and clenched; three cloaked men sing (figures 15-17); another worker with four more pairs of workers; a worker at a lower register, usually described as having stumbled; then finally two more pairs of workers. Costume and hair style should give clues as to the functions and status of these men: the workers (figures 1-14, 19-26) clench their right hand at their chest, hold, in their trailing left hand, some kind of implement on their left shoulder, raise their left leg in step, and wear only codpieces with back flaps and either caps or headcloth; the three singers (figures 15-17) wear their hair short and wavy, their chests apparently tightly cloaked; the sistrum player (figure 18) wears only a kilt; and the leader (figure 27) has long hair (no beard is visible), wears a bulky, waist-long, mantle with scallop pattern and lower fringe, and holds a long crook in his right hand. The workers' implements have been identified as winnowing fans with scythes, or, if they are indeed on their way to harvest olives (Marinatos & Hirmer 147) these could be called flails with pruning hooks. The season, then, would either be early Fall for the harvesting of green olives for oil or early winter for the harvesting of blackened olives for eating; the costumes would favor an early Fall season.

TERRACOTTA FIGURINES

*54. (Pl. 1.2) HM. 3903, terracotta group from Block δ, room 44, Palaikastro, Crete (LM IIIA2 context). Marinatos & Hirmer 102f; Bosanquet & Dawkins 1923: 88, fig. 71; MMR 109, fig. 30; Zervos 1956: 794; PM III 72, fig. 41; Aign 1963: no. II/12; Kant 1980: 190. As reconstructed, three figures (women?) in long dresses with outstretched arms dance about a musician who holds a small phorminx with S-shaped arms in the left hand. The sex of the musician has been identified as female, though the long robe of the figure is also worn by men in the Neopalatial period (Rehak 1994: 79-81). The instrument lacks details, though the S-shape of its arms is distinctive. An extant, separate, terracotta bird may have perched somewhere in the composition (not included in the present display in the Herakleion Museum).

SEALS

Sealstones

55. (Pls. 23.2-3) CMS II 1.391. A unique bone 'baton' from Archanes Phourni, ossuary room (EM III-MM IA). The 'baton' is shaped to look like a short stick of three stacked cubes with a short handle; all 14 flat faces are engraved. Three large faces, down one side of the 'baton', carry standing kids; the other three large faces, on the opposite side of the 'baton', carry hieroglyphic inscriptions (two of which apparently make up the word JA-SA-SA-RA-ME, usually identified as the name of a Minoan goddess). The two sets of three short sides carry a single image each; face D carries a U-Sistrum (Pl. 23.2). The face on the bottom carries a
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Supporting a long yoke that lies across the arms and from whose center a close set of incisions descend and almost immediately join to form one thick gouge down to and across the soundbox (presumably a short horizontal bridge would have been located there), and from the lower end of this gouge a line extends, following the rim of the sealface to thicken at its end, probably a cord with plektron attached. From near the bottom of the left arm (in impression) a loop extends, the wriststrap; if the impression provides the correct view of the instrument, a rear view was intended. But the sealstone itself, and not the more conventional impression, may have been meant to convey the front view of the instrument, with the wriststrap attached to the right arm. The Mallia Workshop typically worked with soft stones and typically used a gouged technique to create bold and simplified images (see Cat. 56, above).

60. (Pl. 24.2) CMS I 5. Amethyst disk from Mycenae, Shaft Grave Gamma (MH end to LH I context). A man's head to right, his hair short on top (with forelock) and long in back, bearded, his mouth open (singing?). Betts 1981.

61. (Pl. 24.3) CMS II 3.7. Lentoid sealstone of rock crystal from the Idaean Cave, Crete, attributable to the Group of the Conch Blower (Younger 1984: 61, LM I). Aign V/2. A bare-chested figure stands to right (in impression), wearing a calf-length skirt and holding a triton shell up with both hands in front of its mouth, the apex (?) towards the face. In front, is an incurved base or altar topped with 'Horns of Consecration' with vertical branches. The base or altar is flanked by another object, perhaps a bucket, and a star; in back, is a tree. Two groundlines mark the terrain. The gender of the figure on this seal has been the object of much controversy and a list of adherents of either sex would be long (see the bibliography in CMS s.n. II 3.7). For reasons outlined on p. 37, I think the figure may possibly be an adolescent girl.

Seal Impressions

62. (Pl. 24.4) CMS V 110. A baked clay sealing that once sealed a reed basket, from room XI of the House of the Tiles at Lerna (EH II), impressed at least six times by a stamp with a circular face decorated with geometric patterns (I's, T's, triskelia) and harps in a radially symmetrical arrangement. Each harp has a thick soundbox whose player's end tapers and curves up for the frame; a support post rises from the other end in a slight S-curve to prop the frame. Four strings are depicted.
63. (Pl. 24.5) CMS V Supp. IB 322. A baked clay roundel (SA We 2) from Mikro Vouni, Samothrace (Middle Bronze Age), impressed by three cushion seals around the rim (CMS V Supp. IB 323 twice, 324 once, and 325 twice). A fourth sealface, circular and probably from a disk seal of hard stone, impressed the center of the obverse face of the roundel, a unique position for an impression on a roundel. This impression carries an agrimi standing left, a short tree or frond below; in front is the *sistrum*, shaped like a long loop with open end, and containing 10 horizontal lines.

64. (Pl. 24.6) HM sealing 172a. Clay sealing from the Palace at Knossos, Hieroglyptic Deposit, impressed by a hard stone stamp seal or 'Petschaft' (Gill 1965: H1 = P64a1.2; MM III context). *PM* I 142, 146, 161; Evans 1909: 161; Aign 1963: II/3 & II/4, fig. 8; CHIC no. 123. The sealstone depicted three different hieroglyphic signs;\(^\text{201}\) including a short *double harp* with two sets of three strings depicted.

65. (Pl. 24.7) HMs 260+263. Clay sealing from the Palace at Knossos (LM IIIA or IIIB context) impressed probably either by a cylinder seal or by a finger ring dating to LM I-II. *PM* III fig. 205 illustrates only HMs 260; Gill 1965: R60+63, pl. 15 illustrates Evans's sketch of HMs 263. The restored drawing combines the two fragments: from left to right, a man walks right, his hands raised as if playing the *auloi*; in front of him are three men, all walking right, each with a figure-8 shield and helmet?; the helmeted center man also holds a spear in front of him in his outstretched hand.

66. (Pl. 25.1) CMS I 361. Clay sealing from 'Nestor's' Palace at Pylos (LM IIIB:2-C) impressed by a gold ring and then inscribed with the Linear B sign for wine. The ring (perhaps LM I-II in manufacture) depicted four figures, the first three facing right towards the last at the extreme right who sits left: at the left, a small figure, presumably a woman, in a skirt; then, another figure in a skirt with horizontal ridges, pleats, or decorated bands, holds, perhaps offers, a *phorminx* -- only women wear such skirts and she is therefore the only woman associated with a phorminx (see *Cat.*\(^\text{201}\)).

\(^{201}\) The second is CHIC sign 92 \(\text{之所}\) within which are added two pairs of strings connecting each 'prong' of the sign with the top of the 'handle'. The sign has occasionally been interpreted also as a lyre, although Evans 1909: 193, himself discounts the strings as ornamental, and Aign (1963: 378) agrees (cf. the recurrence of the sign on *Cat.* 70 side b, Fig. 46). Surrounding the central tondo containing the harp and hieroglyphic sign 92 is a band of cat faces, Evans 1909: sign 74.

61 which possibly depicts a girl possibly blowing a triton shell); in the middle, an apparently nude man with arms up before him; and the last in the procession, another woman in a flounced apron (not skirt, as in the CMS drawing) bends forward, perhaps holding a wand or sceptre towards the seated woman (cf. CMS V Supp. IA no. 177 from Khaania). Finally, at the right edge, a woman sits on a stool facing left, towards the figures. At the upper right, there may be architecture. The scene with procession-with-offerings is certainly religious, and the seated-woman-at-the-right-facing-left-toward-other-figures is such a conventionalized motif that she seems a good candidate for a goddess.\(^\text{202}\) The ring's composition has been badly preserved due to the fact that the sealing was too small to receive the entire ring face, the Linear B sign inscribed across the face of the sealing distorts much of the design, and the sealing was badly burned and cracked in the conflagration that destroyed the Wine Magazine. We therefore can see little of the phorminx, but a close inspection of the photograph of the sealing, not the CMS drawing, reveals details: five strings with room for seven, even eight; straight arms with a vertical arc attached alongside as if schematic duck-head finials for the lower arms; the lower ends of the arms seem clearly to curve in to form the characteristic crescent-shaped soundbox; and with the right hand the figure holds the far end of the soundbox where the arm begins to ascend, while the left upper arm can be seen to stretch down and out -- the figure seems just to be holding the instrument out in front, perhaps as an offering to the seated goddess.

**Signs in the Cretan Scripts**

Three Minoan hieroglyphs seem to depict musical instruments: CHIC sign 58 \(\text{琴}\) (on seals) or \(\text{琴}\) (on clay documents) represents a *harp* (Evans 1909: 192; Aign 349-350; Maas & Snyder 219 n. 3 are skeptical); CHIC sign 57 \(\text{琴}\) may represent a *sistrum*; and a third sign, CHIC sign *181 developing into Linear AB sign 38 and B *134*, may represent another *sistrum*.

\(^{202}\) See my article 1995a: 153 and items in section IID5, esp. items 112, 121, 127, 205; item 127, the 'matrix' HMs 283 (*PM* II fig. 499), carries a similar scene of figures bringing offerings to a seated goddess.
Chapter 3: Musical Depictions

CHIC Sign 58 🎵 or 🎶

The simple harp

*67. (Pl. 25.2) HMp 1296 = CHIC no. 53. Clay bar document from Knossos to be dated to MM II-IIIA (ca. 1700-1650 B.C.). Evans 1909: P101; PMI 276 fig. 205 & II 834, fig. 551; Aign II/6 & II/7. The sign is written twice, lines aB & e; on line e the sign is formed like a trapezoidal keystone, while line aB depicts the frame angular on the left and rising toward the right, reminiscent of the Near Eastern asymmetrical lyre.203 In both depictions the harp contains three strings above a soundbox.

*68. (Pl. 25.3) HMp 1301 = CHIC no. 55. Clay bar document from Knossos. Evans 1909: pl. 15. The slightly abraded sign depicts four strings.

The double harp (for complete descriptions, see Sealstones, Cats. 58 & 64, Pls. 23.6 & 24.6)

CHIC Sign 57 🎸, the key sistra

The hieroglyphic sign occurs frequently on numerous clay documents, a few incised pots from only two sites, Knossos and Mallia, and on eight sealstones;204 only two examples are cited here.


70. (Pl. 25.6a-b) CMS XI 12, sides b & c = CHIC no. 243. Three-sided prism with circular faces, of green jasper.

CHIC sign *181, perhaps developing into Linear AB sign 38 and B *134, the U-sistra, two examples cited (in addition to face D on the bone 'baton', Cat. 51, Pl. 23.2)

71. (Pl. 25.5) CMS IV 136d. Four-sided rectangular prism of green jasper.

The inscription (CHIC no. 305d): X */181 [.

*72. (Pl. 25.7) CMS XII 107b. Four-sided rectangular prism of burnt cornelian. The inscription (CHIC no. 302b): X [*] [.; the U-Sistra is wrapped around the last sign.

204. CMS I 425; II 2.259 & 316; IV 128 & 131; XI 12; XII 72 & 107.
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Ashmolean Mus. 1938.793 (Kenna 1960: no 170), lyre 58
prism, "Herakleion"

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CMS II 1.391, 'baton', Archaic Phourni sistrum 55
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CMS V Supp. IB 322, roundel, Samothrace harp 62
CMS XI 12, sistrum 63
CMS XII 107, prism sistrum 70
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HM 260+263, sealing, Knossos lyre 64
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Mycenae, ChT 81 lyre 1
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BIBLIOGRAPHY

Aign, B.

Alexiou, S.

Anderson, W.D.

Aravantinos, V.

Arias, P.E. and M. Hirmer

Åström, P.

Åström, P. and D.S. Reese

Barbieri, G.
Bibliography

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Bass, G.F.

Baurain, C. and P. Darque

Beazley, J.D.
1942 Attic Red-Figure Vase-Painters. Oxford: Clarendon Press 1942.

Behn, F.

Bélys, A.

Bent, J.T.

Betancourt, P.P.

Betts, J.H.

Blegen, C.W. and J.B. Haley

Boardman, J.

Bonfante, L.

Bosanquet, R. C. and R.M. Dawkins

Cahn, H.

Cameron, M.A.S.
BIBLIOGRAPHY

Cameron, M.A.S. and S. Hood.

Chadwick, J.

Chadwick, J., et al.

Corsten, T.

Dabney, M.K.

Davis, E.N.

De Caro, S.

Demakopoulou, K., N. Divari-Valakou, and G. Walberg

Desborough, V.R.d'A.

Doumas, Ch.

Dover, K.J.

Dragouma-Latsoudi, A.

Drews, R.

Duchesne-Guillemin, M.

Duhoux, Y.

Edmonds, J.M.

Evans, A.J.

Flory, S.
Frith, S.

Getz-Preziosi, P.

Gill, D. and C. Chippendale

Gill, M.A.V.

Godart, L. and Olivier, J.-P.

Grammenou, A.

Greek Ministry of Culture.

Haas, G.

Hägg, R. and Y. Lindau

Hägg, T.

Halbherr, F.
1903 "Il Vaso di Haghia Triada," Monumenti Antichi 13 (1903) cols. 77-132.

Higgins, R.

Hood S.

Hooker, J.T.

Hurwit, J.M.

Iakovidès, S.

Immerwahr, S.

Kaiser, B.
BIBLIOGRAPHY

Karetsou, A., L. Godart, and J.-P. Olivier

Kanta, A.

Karo, G.

Kenna, V.E.G.

Kitchen, K.

Koehler, U.

Kritseli-Providi, I.

Lang, M.

Langdon, S., ed.

Langer, S.K.

Lawergren, B.
1993 "Lyres in the West (Italy, Greece) and East (Egypt, the Near East), ca. 2000 to 400 B.C.," Opuscula Romana 29 (1993) 55-76.

Leppert, R.

Leppert, R. and S. McClary, eds.

Lolling, H., et al.

Long, C.

Lorimer, H.L.

Maas, M.
BIBLIOGRAPHY

Marinatos, S. and M. Hirmer

Mathiesen, T.J.

McClary, S.

Michaelides, S.

Montagu, J.

Morris, S.P.

Muhly, J.

Mylonas, G.E.

Nilsson, M.P.
Olivier, J.-P., and L. Godart
1996 *Corpus hieroglyphicarum inscriptionum Cretae.* Paris: Librairie

Owens, G.A.

Papathanopoulos, G.A.

Paquette, D.
1984 *L'Instrument de musique dans la céramique de la Grèce antique.*

Paribeni, R.
1908 "Sarcofago dipinto di Hagia Triada," *Monumenti Antichi* 19 (1908) col. 5-86.

Parker, P.J.

Pelon, O.

Perrot, G. and C. Chipiez

Persson, A.W.
1931 *The Royal Tombs at Dendra near Midea.* Lund: Gleerup 1931.

Phaklares, P.

---

BIBLIOGRAPHY

Pini, I., ed.
1964-present *Corpus der minoischen und mykenischen Siegel.* Berlin: Gebrüder Mann Verlag 1964-present.

Platon, N.
1949 "Τάφος τοῦ Σταφύλου καὶ ὁ Μυκηνικὸς Ἀποκλεισμὸς τῆς Πετραρίθου," *Κρητικά Χροινικά* 3 (1949) 552.

Pope, M.

Poursat, J.-C.

Quasten, J.

Rehak, P.
BIBLIOGRAPHY

Rehak, P., ed.

Renfrew, C.

Richter, G.M.A. and M.J. Milne

Rimmer, J.

Roberts, H.

Robertson, M.

Sakellarakis, J.

Sakellarakis, J. and E. Sapouna-Sakellarakis.

Savignoni, L.

Schefold, K.

Schliemann, H.
1880 *Mycenae; A Narrative of Researches and Discoveries at Mycenae and Tiryns*. New York: Charles Scribner's Sons 1880.

Schoep, I.

Shaw, J. and M.C. Shaw, eds.

Shepherd, J.

Schlager, N.

Snell, B. et al., eds.

Stephanos, K.
1910 "Ἀνασκαφικαὶ Ἐργασίαι ἐν Νάξῳ," *Πρακτικά της εν Αθήναις Αρχαιολογικῆς Ἐταιρείας* 1910, 270-73.
Stieglitz, R.

Strasser, T.F.

Strommenger, E. and M. Hirmer

Subotnik, R.R.

Thimme, J., ed.

Tölle-Kastenbeing, R.

Tran Tam Tinh, V.

Tsountas, Ch.
1892 "Εκ του Αιμελαίου," Αρχαιολογική Εφημερίς 1892, 1-26.

Tzedakis, I.


Ulanowska, A.

Verlinden, C.

Vermeule, E.T.


Vermeule, E., and V. Karageorghis.

Vorreiter, L.

Warren, P.M.


Watrous, L.V.

Wegner, M.
West, M.L.

Wingerath, H.

Withee, D.

Xanthoudides, S.A.
1904 "Έκ Κρήτης," Αρχαιολογική Εφημερίς 1904, cols. 1-56.

Xenaki-Sakellariou, A.

Yalouris, N.

Younger, J.G.

Yule, P.

Zervos, Christian.
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