

# Music in Ancient Greece and Rome

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# CONTENTS

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*List of figures*

vi

*Preface*

ix

1	Music in Greek life, poetry and drama	1
2(a)	The aulos	24
2(b)	Kithara and lyre	47
2(c)	Other instruments	69
3	Scales, intervals and tuning	86
4	Music, words and rhythm	110
5	Music and acoustical science	130
6	Music and myth	148
7	The years between – Alexandria and southern Italy	163
8	The Roman musical experience	172
9	Notation and pitch	206
10	Some surviving scores	218
	Appendix 1 Technical analysis of Greek intervals	264
	Appendix 2 The construction of the water-organ ( <i>hydraulis</i> )	267
	Appendix 3 The Brauron aulos	271
	Notes and suggested reading	276
	Index	292

## PREFACE

### Note

The musical letter-notation follows the conventional pattern; middle c and the octave above it are written as c'd'e'f'g'a'b' and the octave above that as c''d''e''f''g'' etc. The octave below middle c is written cdefgab, and the octave below that as CDEFGAB.

## 1

# MUSIC IN GREEK LIFE, POETRY AND DRAMA

Music played a very important part in almost every aspect of life for the ancient Greeks. It was heard at their public gatherings and at their private dinner-parties, at their ceremonies, both joyful and sad; it was heard at every act of worship, whenever people called upon, or prayed to, or gave thanks to the gods. It was heard in their theatres, whenever tragedies or comedies were staged, and on their sports grounds as the athletes competed. It was heard in their schools, on board their warships, and even on the battlefield. If ever a people had a just claim to be called music-lovers, it was the Greeks.

In reviewing their various musical activities, it will be necessary to make frequent mention of some of the instruments which were in general use. A detailed account of all the important instruments is given in the next chapter, but for the time being it will suffice to describe three of them very briefly:

- 1) The kithara was a large wooden stringed instrument, played with a plectrum. It was supported by the left arm high in front of the player, who normally played standing. The instrument called *phorminx* by Homer and by some of the later poets was a forerunner of the kithara, similar in sound and function, but a bit smaller.
- 2) The aulos was a pair of pipes, with vibrating reeds in their mouthpieces, held out in front of the player.
- 3) The lyre was a smaller stringed instrument, played in the same way as a kithara, but often held lower down – on the player's lap if he was seated.

Music was never far away from the great religious festivals. The two most important Athenian ones, the Panathenaia and the Great Dionysia, were reorganized and expanded in the latter part of the sixth century BC, and in their developed form involved a great deal of music.

The Panathenaia was celebrated by the whole population of Athens and the surrounding district (Attica) in the summer of each year, with a special



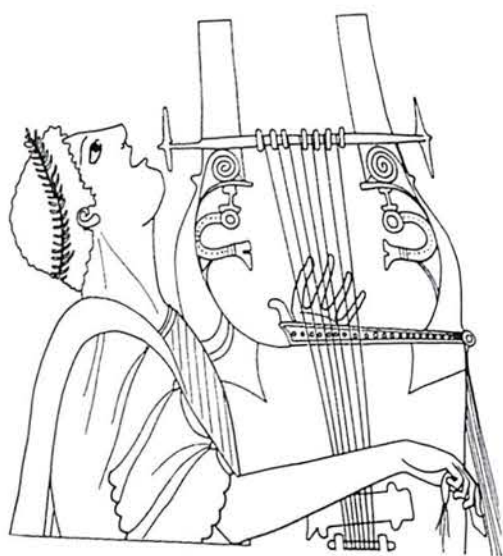


Figure 1.1 Kithara



Figure 1.2 Aulos

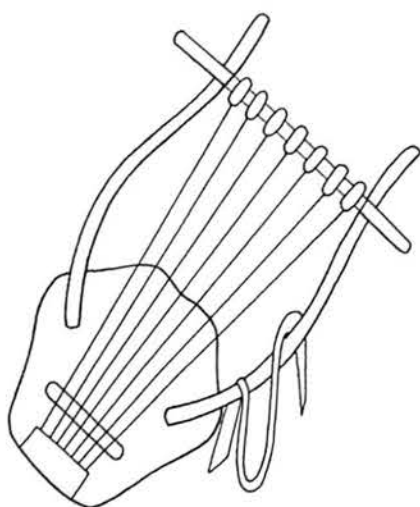


Figure 1.3 Lyre

version, the Great Panathenaia, every fourth year. For that occasion a new robe was woven for the ancient statue of Athena, which was housed in the old temple, the remains of which are still visible on the Acropolis (the Erechtheum overlaps part of its foundations).

The celebrations each year involved a grand singing procession which started near the boundary wall of Athens and wound its way all through the city, across the market-place (*Agora*) and up the slope of the Acropolis, accompanied by musicians and dancers. The musicians in the procession are conventionally represented in vase-paintings by two aulos-players and two kithara-players (there being no room for more figures) and in sculpture by four of each.<sup>1</sup> These probably represent quite a large number of musicians, but it is difficult to be sure about this. There are very few references to large numbers of musicians playing 'in concert' earlier than the third century BC.

The nature of the music which was played and sung can be guessed. There was a type of song called a *paian*, which was most commonly sung in honour of Apollo, but could equally well be addressed to Athena. It is usually a solemn type of composition, expressing hope of deliverance from a dire peril, or as a thank-offering after escape. If it was sung on the occasion of a procession to the shrine of the god, it might be preceded or followed by a type of hymn called a *prosodion*, or processional, in which the god was invoked and praised; this was sometimes written in a different metre from that of the *paian*, but like the *paian* it was usually accompanied by a stringed instrument. The composition of Limenios, which is discussed in detail in Chapter 10, is in the form of a *paian* and *prosodion*.

It was also customary for musicians, usually aulos-players, to play while sacrifices were being offered, or any other solemn ritual was being carried out. As the Panathenaia involved numerous animal sacrifices, and every fourth year the changing of Athena's robe, they must have been fully employed in this capacity. Moreover, apart from the strictly religious part of the festival there were competitive musical contests of all kinds, involving instrumental soloists, solo singers and choral singers and dancers. In fact, throughout most of the festival days the sound of music must have been almost continuous.

The other major Athenian festival, in which music featured even more prominently, was the Great Dionysia, held annually in late March or early April.<sup>2</sup> This was the time of year when the sea became navigable after the winter storms, and things in general 'opened up'.

The festivities occupied several days, and included a number of musical events. The most important ritual involved carrying a very ancient image of the god Dionysos in procession to the boundaries of the ancient Athenian territory and 'welcoming' him once more; this was intended as a gesture of apology for the fact that his original entry had been greeted



with less than full enthusiasm. The statue was then carried back to his sanctuary in Athens (which was at the rear of the stage buildings of the theatre) to the accompaniment of ribald songs, reflecting the fact that it was in part a fertility ritual. All this would involve a lot of music.

When the procession returned to the city centre there were a number of musical events – competitions in aulos-playing, kithara-playing and singing; the only entertainment which perhaps did not involve music in the literal sense (though the Greeks would certainly have called it *mousikē*) was the recitation of the poems of Homer by ‘rhapsodes’ (see p. 10). One which certainly involved a great deal of music was the performance of dithyrambs.

In its very early stages the dithyramb was apparently just a merry song, sung by anybody who was feeling up in the world (usually after a few jars). In the sixth century BC it seems to have become organized into a song for performance by a *choros* of men or boys, accompanied by an aulos-player. At some time early in the fifth century professional aulos-players began to be employed, and they seem to have taken on themselves a more prominent role, putting in ‘intermezzi’ (*anabolai*) and indulging in elaborate displays of technique. There were calls for them to be put in their place; a poet called Pratinas is quoted<sup>3</sup> as saying: ‘Let the *aulos* dance behind, for it is the servant (not the master).’

Dithyrambs were also performed at a number of other Greek festivals, including a number which were not dedicated to Dionysos,<sup>4</sup> but the greatest celebration of this art form was without doubt the Great Dionysia. For certain administrative purposes, all Athenian citizens were assigned to one of ten ‘tribes’ or clans, and each tribe had to provide two choruses, one of up to fifty men and the other of the same number of boys. Each chorus performed a dithyramb, and there was fierce competition between them for the prizes. Compositions were specially commissioned for the occasion, and the tribes vied with each other to secure the services of the best composers, musicians and chorus-masters. We do not know precisely where they were performed, but it must have been in a wide open space with room for some hundreds of singers and a large audience. The choirs at this festival apparently stood in a circle, and did not dance as part of the performance, as the ‘choruses’ in the drama did.

From the musical point of view, the drama festival was much the most important part of the Great Dionysia. It involved tragedies, comedies and satyr-plays, which will be dealt with individually later on.

The great games of ancient Greece, which were in themselves religious festivals, involved a lot of musical activity. At the other games (the Olympics, the Isthmians, and the Nemeans) the contests were almost entirely athletic, but at the Pythian games at Delphi (held in honour of Apollo, the divine musician), there were contests for musicians who performed with the same competitive fervour as the athletes. There were a

number of different ‘events’, in which the players could show their special skill. The most prestigious was ‘singing to the kithara’ (*kitharōdia* in Greek), an art form in which one man (women never competed) was poet, composer, singer and his own accompanist. The compositions they wrote and performed were called ‘kithara-singers’ *nomoi*’; this was the genre in which the most famous innovators made their mark, and to excel in it was their ultimate ambition. There were also contests in kithara-playing on its own, called by the Greeks *psile kitharisis*, a title meaning ‘mere’ or ‘bald’ kithara-playing, which may possibly convey a disparaging tone. Perhaps the occasional virtuoso player whose singing voice or poetic skill did not match his playing might compensate by a brilliant display of instrumental technique. The woodwind players were not left out either; they performed solos which were known as ‘aulos-players’ *nomoi*’ – extended instrumental pieces with a number of ‘movements’, some of which seem to have been in the nature of programme music. One famous example told, in five sections, the story of the victory of Apollo over the mythical monster called the Python at Delphi – a very suitable subject for the venue. There were also vocal compositions, intended to be sung to an aulos accompaniment, which of course would require two musicians. This type of duet performance was called *aulōdia*, and figured in the programme at Delphi from a very early date. One ancient writer tells us<sup>5</sup> that some of the typical compositions for *aulōdia* had tragic or funereal associations, and for this reason were eliminated from the programme in about 578 BC, but this is not certain.

Music was by no means confined to the Pythian games, or to the strictly musical contests. There are plenty of vase-paintings from the mid-sixth century BC onwards which show athletes competing in almost every kind of event – running, long-jump, discus, javelin, and others – with an aulos-player standing nearby and obviously playing (Figure 1.4). It is tempting to wonder whether this helped or hindered the athletes.

It is also well known that ‘victory odes’ (*epinikia* in Greek) were composed in honour of those who won the most important prizes. One of the most successful poet/composers in this genre was Pindar, and a considerable amount of his work survives; unfortunately, we have only the words without the musical notation. He celebrated drivers of chariots (the most wealthy of the competitors, and so the most likely to commission him), boxers, wrestlers, ‘long-runners’ (who ran a distance of about 2 miles), pentathlon winners, and others. He even wrote an ode celebrating a victory by an aulos-player called Midas who came from Akragas (the modern Agrigento). Luckily, the text of this poem (Pythian 12) survives, and the remarks of some ancient commentators give us some useful evidence on the construction of that instrument. There are some hints in the text of Pindar’s odes on the mode of performance, as he writes of himself and his singers in a proud and self-conscious tone. He seems to



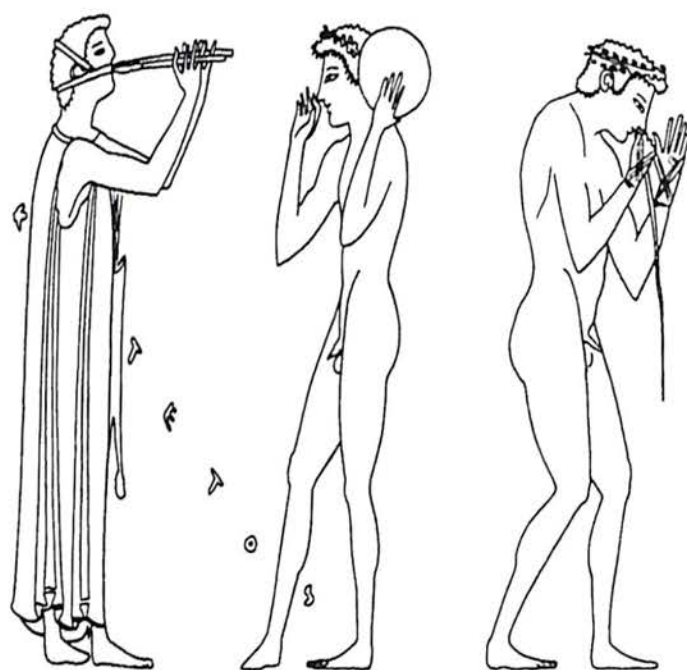


Figure 1.4 Aulos-player with discus-thrower and boxer

have employed a chorus of young men who sang and danced, accompanied by a *kithara* (for which he deliberately uses the old-fashioned word *phorminx*) or an *aulos*, or both.<sup>6</sup> Where he mentions percussion, he is not in fact referring to his own compositions; for example, in two contexts<sup>7</sup> he mentions 'clashing cymbals' and 'beating drums'; but he is describing the worship of Demeter or Rhea, not a victory celebration. Again, on one occasion he calls on someone who happens to bear the same name as the Roman hero, Aineias, to 'urge his comrades on to sing of . . .', though whether Aineias was a soloist, or the chorus-master, we cannot be sure.<sup>8</sup> It appears that the poet himself usually played the *kithara* accompaniment, and directed the performance. There are, however, a number of allusions to 'despatching' an ode to a distant place.<sup>9</sup> This would occur when the performance was to be given in the victor's home town after his return, and the poet, who was based in Thebes, would not necessarily travel there. It seems likely that there would be a number of professional players available to direct performances ('have *kithara*, will travel') who could be coached by Pindar and taught the music orally. It has also been suggested that the dance movements were largely traditional, and could be semi-improvised on the spot.

These were the great public occasions. But in private life too, in the home and among friends, there was a lot of music-making. The most important Greek social institution, the drinking-party (*symposion*) was characterized by witty conversation, music and songs. In the famous dialogue of Plato called the *Symposion* we are told that the host had provided a professional female player of the *aulos* to entertain the guests; when they decide to have an intellectual conversation instead, she is sent out of the room 'to play to the women inside, or to herself'.<sup>10</sup> It should be noted that the women in question would be the host's wife and his daughters, if any, who would take no part in the proceedings, being shut

away in a back room to avoid embarrassment (it is not always clear for whom). The women who appear in the party scenes in vase-paintings are prostitutes, many of whom were musicians; they entertained the guests with music in the early part of the evening, transferring later to the other, older aspect of their profession. The characteristic instrument for such players was the *aulos*, and the connection was so firmly established that the Greek word for a female *aulos*-player, *aulētris*, was regularly used to mean a high-class prostitute. They were not normally members of the household staff, but were hired for special occasions from an agency.

In his description of a symposium, Xenophon tells of a professional entertainer who comes from Syracuse, and has a girl *aulos*-player, a girl dancer and a boy who plays the lyre and sings. The girl dancer also performs a juggling act with twelve hoops, and jumps through a frame set with knives. One of the guests attempts to emulate – or parody – these acts.

But the entertainment of the guests at a symposium was not confined to professionals. It was part of an Athenian youth's education to learn to play the lyre (though not the *kithara*, which was considered more difficult, and appropriate only for professionals) and he might well be expected to contribute his share to an evening's singing. The characteristic piece for such occasions was called a *skolion* in Greek, and a few snatches of these frivolous but very popular drinking-songs have been preserved.

The comedy-writers exploited the comic potential of the symposium situation. In Aristophanes' *Wasps* (produced in 422 BC) there is a scene<sup>11</sup> in which an elderly, vulgar and uncouth man is told what to expect when he dines in elegant, aristocratic surroundings. He must be prepared to 'cap' short snatches of song sung by the other guests, and contribute his own



Figure 1.5 Aulos-players practising their arts



share of challenges. There is no mention made of playing a lyre, but it was commonly assumed that an educated upper-class Athenian would be able to do so. (In an earlier passage of the play, where a dog is on trial for theft of some cheese, his defence counsel asks for leniency, on the grounds that 'he never learnt to play a lyre' – that is, he did not have a proper education.) In fact, when he gets to the party the old scoundrel tells obscene jokes, gets very drunk and runs off with the girl aulos-player, thus depriving the other guests of their accustomed pleasures.

An episode in the *Clouds*, probably written at about the same time,<sup>12</sup> suggests that the practice of guests singing at a party was rather 'old hat' by this time. This episode is a normal meal with father and son at home; when the father asks his son to 'take up the lyre and sing a melody of Simonides' (which would have dated from the early fifth century) the son says that singing songs between drinks is 'old-fashioned stuff' (*archaion*). He then proceeds, much to his father's disgust, to disparage Simonides and Aeschylus, and when pressed to sing something modern, obliges with a bit of Euripides, with a musical style that is 'way-out' and subject matter which is shocking (an incestuous relationship).

Finally, it should be said that even a Greek drinking-party had its more serious moments. All but the most boorish or impious revellers would pause at the end of the meal which preceded the serious drinking and pour three libations of wine on the table or on an altar; if there was an aulos-player in attendance, he or she would play a special 'libation-melody' (in Greek, *spondeion*) while this was being done. Hence the sound of the aulos and the songs became for the Greeks powerful symbols of peacetime and revelry. Both War and Death are deplored as being 'without the aulos' or 'without the lyre'.<sup>13</sup>

However, even in wartime, and on active service, they did not abandon music altogether. We cannot be quite certain whether Greek soldiers normally marched in step; they are certainly shown doing so, led by an aulos-player, on a famous early Corinthian vase of the late seventh century BC (Figure 1.6), but it must be said that other contemporary pictures show synchronised steps in the most unlikely situations – e.g. huntsmen attacking a boar.<sup>14</sup>

A version of the trumpet (see p. 79) was used to give commands on the battlefield, but its notes were almost exclusively connected with war, and it was not considered a truly musical instrument.<sup>15</sup> The warships of the Greek navies were propelled by oarsmen, and the most widely used, the trireme, had a complement of 170 rowers. It was clearly important to keep them strictly in time and, apart from verbal commands given by the boatswain, some percussion instruments, and occasionally an aulos, were used. On one famous occasion, the return of Alkibiades from exile, a well-known virtuoso player performed the office.<sup>16</sup> There could be no more telling illustration of the way in which music sprang to the mind of

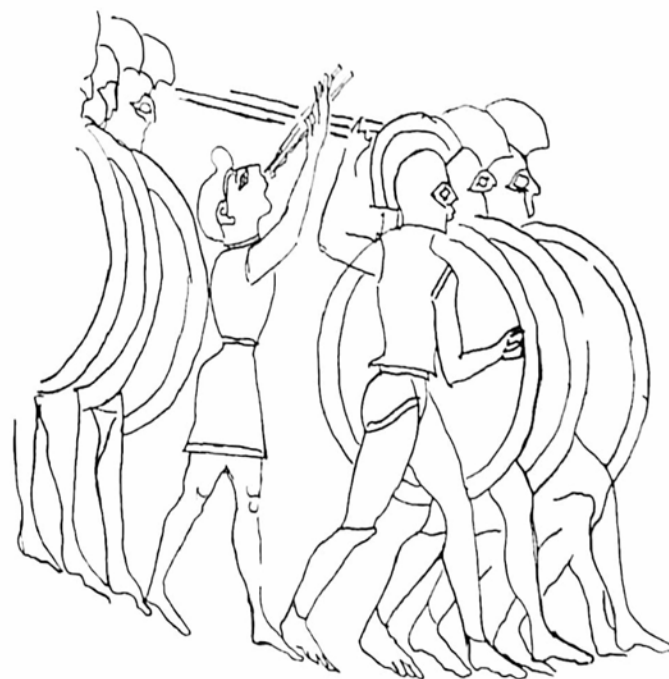


Figure 1.6 Soldiers on the march

the Greek at war than the account put into the mouth of a messenger by Aeschylus in his tragedy *The Persians*, based on the historical events which reached a climax in the naval battle of Salamis in 480 BC:

But when the dawn, borne by her white steeds  
 Possessed the whole earth, brilliant to behold,  
 First came the sonorous music of the Greek war-chant,  
 The prayer for victory, and shrill from island rocks  
 The echo cried in answer. Then the foreign foe  
 Were gripped with fear, their minds perplexed; the battle hymn  
 Was sung by Greeks not in retreat, but surging into battle,  
 Their hearts and courage high . . .

(lines 386–394)

The importance of music in Greek life is not a strange phenomenon, nor one which is difficult to understand. But the mention of poetry in the title which I have given to this chapter may cause some puzzlement. We tend to think of poetry in terms of the spoken word, or the printed word on a page. Drama also we receive by means of the spoken word, apart from the particular case of opera, which forms only a tiny minority of our total drama repertoire. But for the Greeks the sung word was almost as commonly heard, and certainly as important, as the spoken word, not only in their drama, but in a number of poetic forms which we do not particularly associate with music. The poet of the *Iliad*, invoking the Muse in the first line of his epic poem, asks her, not to 'speak' or 'tell' of the wrath of Achilles, but to 'sing' of it. It is difficult to say with certainty what this meant in practice for the epic poet or minstrel. When Homer portrays such artists performing in the 'heroic' world (in the palace of



Alkinoos, king of the Phaeacians, in Book 8 of the *Odyssey*, and in Odysseus' own house in Book 1 and elsewhere) he regularly describes how they play a few introductory notes on the *phorminx*, and then begin to 'sing' (*a-eidein*), and indeed the word for a minstrel is 'singer' (*a-oidos*). But the performance of a long narrative poem is more likely to have been in the nature of a sing-song chant or recitative than singing as we understand the term. In vase-paintings of two centuries later there are a number of portrayals of 'rhapsodes' – professional reciters who gave performances of excerpts from the Homeric poems and others at the great public festivals. But although the second element of that word carries the connotation 'singers', they are not normally shown carrying a musical instrument, but merely a staff, which seems to have been used as a 'prop' in their semi-dramatic performances (Figure 1.7).

Plato wrote a short dialogue, the *Ion*, in which Socrates converses with one of these performers, and though there are references to 'singing' other 'poems', the word 'speak' is used in connection with epic, and there is no suggestion of an instrument in their talk. It may be that Homer himself, in the late eighth or early seventh century BC, was keeping up an old tradition of singing which lapsed not long after his time; it is hardly credible that something which appears to be so firmly grounded in folk-memory and in the language of epic should have been pure invention on the poet's part.



Figure 1.7 Rhapsode

Another important genre of literature in which music played a significant part was what the Greeks called lyric poetry. Whatever nuances the words 'lyric' and 'lyrical' may have for us, for them it simply meant a song to be sung to the accompaniment of a lyre-type instrument. From an early date this type of composition divided into two branches, known as the monodic lyric and the choral lyric. Monodic means 'sung solo', and in this type of song we find the earliest attempts to express personal emotion and to make personal comment on life, mankind and the contemporary scene. The two most famous composers of such lyric were Alkaios and Sappho, who both lived on the island of Lesbos in the early sixth century BC. Alkaios wrote songs about contemporary politics and the state of the world, and how a man might best react to it. Sappho, one of the very few women whose poetry has been preserved (though only in brief fragments) wrote highly evocative and atmospheric songs, some of them telling of her passionate feelings towards women. For the Greeks, the proper medium for this type of subject was the song, sung solo by the poet, who accompanied himself (or herself) on a lyre. There is a well-known vase-painting, thought by some<sup>17</sup> to be by the Brygos painter, dating from the early fifth century BC, which shows Sappho and Alkaios, both holding lyre-type instruments (Figure 1.8).

In addition to composing the appropriate music, Alkaios and Sappho each invented a pattern of rhythms for their songs, in the form of a stanza



Figure 1.8 Sappho and Alkaios



which came to be named after them. They did not, however, confine themselves to 'their own' rhythms, but used a range of metres, with lines of various lengths. Though not a single note of their music survives, we may be fairly confident that the distinctions, of what the Greeks later called *ethos*, between music for different moods and for different sentiments began to be drawn from this time onwards; the slow, sad music of Sappho lamenting her parting from a loved one would have had a very different pattern of notes, and a different style of melody, from one of Alkaios' stirring calls to his fellow-citizens to put right their political wrongs.

The other branch of lyric poetry which grew up alongside the monodic was the choral lyric. Indeed, some scholars have suggested<sup>18</sup> that the two forms are exemplified together in a single work, the 'Maiden-song' (Partheneion) of Alkman, a poet who worked in Sparta in the seventh century BC, and that this type of composition was the common origin of both. The conventional view for many years has been that the essential differences lay in the mode of performance and in the subject matter. It used to be accepted that the choral lyric was sung and danced by a *choros*, a group (most commonly of men, but sometimes of women or girls)<sup>19</sup> numbering anything from twelve to fifty, accompanied by an aulos-player or a kithara-player or both. The occasions on which they performed were public, and so the themes and subjects of this type of song were public. This has been called into question in recent times, but most disagreements can be attributed to the obvious fact that there is not always a clear-cut distinction between 'public' and 'private'.

We have already encountered the ode celebrating a victory at the great games, composed by Pindar. Such songs were also composed for religious festivals, and commonly incorporated the narration of a myth from the great Greek repertoire of stories. To what extent the *choros* mimed or acted out the story we do not know, but it seems likely that there was some theatrical element in the performance. Apart from Pindar's works, which date from the fifth century BC, the surviving remains of this type of composition are miserably small, but from a comparison between them and the fragments of solo lyric it is easy to see that the differences in tone and content are very marked. Whereas Alkaios speaks personally to his close friends, and directs his hatred against individuals, the choral lyric speaks to the public at large, and in much more universal terms. It very often deals with religious themes: mankind's dependence on the gods, and the need to observe the divine laws. It must be remembered that for the Greeks this was public business, and the concern of the city, not a matter for a man's individual conscience.

Another early genre of poetry which may have had a musical element is known as elegiac poetry. This is a verse form derived from the metre of epic poetry (see p. 115) with modifications in alternate lines. For a long

time it was generally believed that poetry of this type was intended to be sung to the accompaniment of an aulos, but doubt has been cast on this theory. The problem arises from the fact that the main evidence is found in the works of an elegiac poet called Theognis, but it is not clear whether he is referring to a performance of his own work, or more generally to the contemporary musical scene.<sup>20</sup> There is also a further source of confusion in the Greek word *elegeios*, which may simply refer to the rhythmic pattern of the words, while the similar-sounding word *elegos* means a lament or dirge. It is known that this kind of song (which was also called a *thrēnos* in Greek) might be written in the elegiac metre<sup>21</sup> and accompanied by an aulos, but there is plenty of surviving poetry in the same metre which is by no means sad or funereal. In fact, the subject matter tends to be rather similar to that of the monodic lyric: personal reflections on life and love. Over a number of centuries the metre gradually became accepted as the medium for erotic or even obscene poetry – the ancient equivalent of the lewd limerick – of which there are many examples in the Palatine Anthology, a collection of miscellaneous poems in this metre by various authors, dating from the third century BC to the fifth century AD.

But the literary form in which music played the most important part was drama, both tragic and comic, and that strange form of drama which has no modern descendant, the satyr-play. What is more, the Greek practice contrasted strongly with that of almost all later cultures, in that the playwright was expected to compose the music, train the singers and direct the performance of his plays. The sneer aimed at Euripides (who was a very popular composer, his tunes being widely known and much admired) that one of his household slaves had collaborated in some of his compositions,<sup>22</sup> would be completely pointless unless it was the fixed rule that the poet should write all of it.

Aristotle, in his *Poetics*, traced the beginnings of tragic drama from 'the leaders of the dithyramb' meaning, presumably, that in a developed form of the dithyramb there were solo singers who led the dance movements.<sup>23</sup> The Greek word for an actor was *hypokritēs*, which meant the 'answerer' or 'respondent'. This has generally been taken to mean that in the very earliest stages of drama there was one actor who played all the individual parts, and engaged in dialogue with the *choros*. At some stage, he began to speak most of his part instead of singing it. Then (we do not know when) a second actor was brought in. Even then, there was comparatively little dialogue, and a great deal of the story was not acted, but narrated in song by the *choros*.

In the choral songs of Aeschylus, the earliest of the three great tragedians, there is a considerable amount of narrative, usually relating to the events which preceded the action of the play. The most striking examples are the first three choral songs in the *Agamemnon*, the first of which tells of the sacrifice of Iphigeneia at Aulis and the second and third

of the elopement of Helen from Sparta and her arrival in Troy (which preceded the Aulis episode). Each of these songs has a strong dramatic element, and it is easy to imagine the men in the *choros* not only singing the words, but also miming the action. Indeed, given the Greek view that the dramatist's medium was a blend of music, words and *rhythmos* (i.e. bodily movement), it is surely safe to assume that the dancing of the *choros* was representational (or mimetic, to use Aristotle's special term), miming the events of the story, and expressing the emotions of the singers in what is now called body-language. There would be little place for the purely ornamental and formal style of dancing familiar to us from nineteenth-century ballet.

The conventional view of the early form of tragedy, which was held by most scholars in the first half of the twentieth century, was suggested to them by the very prominent part assigned to the *choros* in the *Suppliant Women* of Aeschylus. For many years this was believed to be the oldest surviving tragedy, dating from around 500 BC; but evidence came to light in 1952 which shows that it was in fact written during the last twelve years of Aeschylus' life.<sup>24</sup> But then again, the *Agamemnon* belongs to the very end of his life, and he still uses some very old-fashioned narrative techniques in that play, where it suits his purpose to do so.

There is also quite clear evidence in the surviving plays that the actors in the earliest tragedies had a smaller part to play, and that for most of the performance there was only one 'on stage' at any one time. This means that, although four or five characters might appear at various times, they could all be played by the same actor. We do not know precisely when a second actor was added to the cast; but where there are two speaking actors in conversation, the less important of the two is very commonly a narrator or bringer of news rather than a character involved in the action. A number of Aeschylus' plays consist almost entirely of choral songs, or dialogue between the *choros* and one actor, or narrative speeches by a messenger. The introduction of a third actor, an innovation which Aristotle attributed to Sophocles,<sup>25</sup> made it possible for the playwright to present a clash of personalities on the stage, such as the famous arguments between Creon and Antigone in Sophocles' play (*Antigone* 441–525) or between Jason and Medea in Euripides' (*Medea* 446–626). The effect of these developments was to curtail the musical element, by reducing the amount of the performance time occupied by the *choros* songs, and by taking away some of the functions earlier entrusted to the *choros*. In Sophocles they no longer act as narrators, that function usually being transferred to the prologue spoken by an actor. The result of this is not merely to change the personnel, but also to transform the mode of narration. In their songs, the *choros* did not tell the story in the leisurely, diffuse manner of the epic poets, with plenty of detail and an ordered sequence. Instead, they tended to use a very selective technique, picking

out the moments of climax in the story and presenting them graphically, dwelling on the emotions of the people concerned, and leaving out the mundane details. In fact, the poet often assumes that the listener is familiar with the essentials, and can be relied upon to fill in quite large gaps in the narrative. The same technique was employed by Pindar in those stanzas of his victory odes in which he tells an illustrative or admonitory story. There could hardly be a sharper contrast with the rather prosaic, matter-of-fact way in which (to give one example among many) the god Apollo speaks of the events leading up to the opening scene of Euripides' *Alcestis*, spelling out the details and explaining the situation in a way which might have tried the patience of the quicker minds in the audience.

However, the loss of the narrative function from the *choros* songs was partly compensated for by a simplification of their role. In some of the early plays there is an awkward inconsistency between some passages in which the *choros* sing of events with the poet's own understanding and interpretation, and other passages in the same play where they appear to be bewildered and mistaken. In the later dramatists, though they expound a good deal of generalized morality, they do not stand apart from, nor always fully understand, the action which they see on the stage. Sophocles is particularly fond of exploiting the irony of a situation in which the *choros* believe that events are moving to a happy conclusion – when the true parentage of Oedipus is about to be revealed, or when Creon decides to rescue Antigone from the cave in which she is imprisoned. Their elation and joy would be closely reflected in the musical setting of their song and in their dance movements, and both would contrast sharply with the dirge-like tones and movements of the next song – in the *Oedipus Tyrannos* when they reflect on the awful truth that has been told, and in the *Antigone* when Creon returns with the body of his son.

So far we have mentioned only two 'modes' in Greek tragedy – the dance-songs of the *choros* and the spoken words of the actors. There was another, which might be described as intermediate between the two. It is indicated by words written in a metre called 'anapaest', which consists of short lines, usually twelve syllables, in the rhythm

uu—|uu—|uu—|uu—|

(for more details see Chapter 4, pp. 117). Groups of these lines may be organized in two different ways, one of which was apparently 'recited' and the other sung. We have evidence that some passages in comedies written in this metre were accompanied by an *aulos*, and on this basis it is generally assumed that similar passages in tragedy were so performed. We cannot be sure whether the words were sung, chanted or spoken, but there is one argument from probability which may be useful. The power of the



speaking voice is very much less than that of the singing voice, and (as we shall see in Chapter 2) the notes of the *aulos* were loud and penetrating. It is likely that even a *choros* of twelve or fifteen men speaking would have been drowned by the accompaniment, and not clearly audible.<sup>26</sup> I am therefore inclined to believe that the words were chanted, perhaps on one note, or on a short, simple repeating pattern of notes.

When are these anapaests used? In early tragedies, exemplified in Aeschylus' *Persians* and *Suppliant Women*, the opening words sung or chanted by the *choros* as they make their entrance at the start of the play are written in this metre, and presumably this was the old tradition. However, Aeschylus makes the *choros* of women in his *Seven against Thebes* enter in a panic, and use a variety of strange metres, so there was apparently no fixed rule. The later tragedians tended to write a prologue scene, spoken by an actor or actors, before the entrance of the *choros*. When they do enter, they embark straight away on the first song, without any preliminary anapaests. Later in the play, certain passages which cover stage movements – entrances, exits and dramatic crises – may be written in anapaests. A characteristic example is the moment when Agamemnon enters in his chariot in triumph, in Aeschylus' *Agamemnon*, lines 782–809. Throughout the fifth century, the words sung or chanted by the *choros* as they left the theatre at the end of the play were normally written in anapaests. As the ancient theatre was open-air, and had no curtain, this was the way of signalling to the audience that the play was over.

From early times the playwrights used at least one 'combined mode' – an exchange between an actor on the stage and the *choros*, in which either or both sang their words. In a number of plays this occurs after the main tragic event, and consequently takes the form of a lament. Aristotle used the term *kommos* (which means 'lament', being derived from the word for beating the breast) for such songs; but the word is sometimes used in a more general sense for any exchange between actor and *choros* which is partly or wholly sung. The distinction between spoken and sung words is very clearly indicated by the Greek text; spoken words are almost invariably in six-foot iambic lines – the normal rhythm for all the dialogue – but the sung words are written in a variety of complicated rhythms. Sung words are also, in many such scenes, written in matching pairs of stanzas – that is, they are 'strophic', a term discussed in Chapter 4 (p. 124).

This seems a convenient point at which to raise an interesting musical question. All the actors in the ancient theatre were men, at least down to the third century BC, and all the female roles created by the great tragedians were intended to be played by male actors. The supposed sex of the *choros* in roughly half of the surviving tragedies is female, although the *choros* singers were all men. How, then, did they and the actors manage the sung passages? It may be that we are inventing a problem here which did not exist for the Greeks. We do not know how serious an attempt was

made to give the actors in female roles a feminine appearance. No doubt the masks and wigs (which were worn by all actors in all roles) would help, and to some extent the clothes. Comic actors playing female roles certainly wore false breasts, though we cannot be sure about the tragic actors. But it was the universal convention, familiar to the audience since time immemorial, that actors were in fact men, and if Antigone or Clytemnestra were to sing in a tenor, or even a baritone voice, I doubt very much if anyone noticed, much less worried about it. Those of us who have watched performances of Greek tragedy with a male actor playing a female role know that it seems a little strange for a few lines at the start, but the oddity is soon forgotten. If we had encountered tenor or baritone heroines in every play we had ever seen, surely there would be no problem at all. Conversely, the audiences of later centuries did not trouble themselves over Gluck's Orpheus being a contralto, or Handel's Julius Caesar being a *castrato* treble.

In some of the later plays of Euripides a device is used which was, in its day, an even more exciting musical development. There are a number of extended monologues spoken by actors in the earlier tragedies, usually containing some narrative of past experiences (for example, Deianeira's speech in Sophocles' *Trachiniae*, lines 531–587). But Euripides sometimes cast them in the form of a *monodia*, or solo song – something like an operatic aria. Without the music for any of these pieces, it is impossible to say what they sounded like; but we have the words for a few (e.g. Kreousa's song in Euripides' *Ion*, lines 881–922) and a very amusing and interesting parody of the style in the *Frogs* of Aristophanes (lines 1331–63). It seems that the playwright/composer exploited new musical techniques, and was inclined to sound rather avant-garde, so lending himself to the mockery of a traditionalist comic poet. One device in particular is parodied – the division of a single syllable between several notes, which the Greeks called *melisma*; by the conventions of writing this is indicated by the repetition of the syllable (*eieieieielissete*) in the text. This is of course very familiar to us and, if we judge by the standards of Handelian opera, seems a very modest adventure; but when it was heard for the first time, it seems to have had a considerable impact. It is also noticeable that these solo songs were not usually written in matching pairs of stanzas, as the *choros* songs were. This reflects two features of the performance; first, that the actor did not dance, or move about much during the song (in one famous example, sung by Andromeda in Euripides' play of that name he could not, as he was supposed to be chained to a rock!) and second, that the rhythmic pattern of the words could be much more freely and loosely constructed.

One final comment on the *monodiai* which, though it comes from a comic poet, has a nucleus of truth in it: in the *Frogs* of Aristophanes, Euripides claims that when he took over 'The Lady Tragedy' from Aeschylus, she had an obesity problem. He put her on a slimming course,



by which he means that he attenuated the high poetic style, and cut down on the long, sonorous compound words of which Aeschylus was very fond. Having thus made her slimmer and healthier, he 'fattened her up' on *monōdiai*.<sup>27</sup>

It is by no means easy to tell from an English prose translation how much of the text of a Greek tragedy was spoken, and how much sung. In order to give a general impression of the proportions, I have analysed the *Ion* of Euripides, a fairly representative play of the later fifth century. The analysis is crude, being based on a line-count, but is not, I believe, misleading. The whole play has 1,622 lines, and would take, at a guess, most of two hours to perform. About two-thirds of this time would be taken up with spoken dialogue, the rest (something like 40 minutes) being wholly or partly sung or chanted. The fully sung part, which consists of (a) all the *choros* songs, (b) Kreousa's *monōdia*, and (c) the opening song, shared between *Ion* and the *choros*, may have lasted about 24 minutes, and the passages in anapaests, together with the *kommos* bits which were partly sung and partly spoken, would have taken about 10 minutes. For the mathematically-minded reader who may have spotted that there are about six minutes unaccounted for, it should be said that there are about 84 lines written in a metre called the trochaic – longer lines which were probably spoken rapidly. They occur at dramatic moments of action in the play, and since Aristotle describes the metre as 'suitable for dancing', those lines may well have been spoken or chanted with a musical accompaniment.<sup>28</sup>

Ancient Greek comedy, which grew up with tragedy in the same theatre and at the same festivals, had its own important musical element. In fact, because the nature of early comedy allowed the actors to make frequent references to themselves and their theatrical setting, we gain much of our information on theatre music from this source. For instance, in a number of Aristophanes' comedies there is a section known as the *parabasis*, which occurs roughly halfway through the play. In this section the *choros* 'come forward' and address the audience directly, often making some claims on behalf of the poet. The opening lines of this section were written in anapaests – the metre which we have already met – and in one play, the *Birds*, the *choros* actually ask the aulos-player to 'lead us into the anapaests' (lines 682–4). It appears from some expressions in the text of this play that the player may have gone on to the stage, and engaged in some by-play with the actors (lines 665–75), though it might be argued that a non-speaking extra played the part of a 'pretty little bird' (Procne, the wife of Tereus the King of the birds) and mimed the action while the real aulos-player played in his usual place. We have no direct evidence of where this was, and the issue is confused for the English reader by a change in the meaning of the Greek word *orchēstra*. This meant a 'dancing-platform', and referred to the circular area in front of the stage

where the *choros* performed. In Roman times, if not earlier, when the *choros* ceased to have any importance, this area was used for seating, and in modern proscenium theatres those seats came to be called the 'orchestra stalls'. The musicians sat at the front of these stalls in the 'orchestra pit', and in the end the word orchestra was transferred to them. It is generally believed (for lack of any evidence by which to check) that in the ancient theatre the aulos-player and the kithara-player (if there was one, which is disputed) stood at the back of the dancing-platform, perhaps one either side of the stage. This is consistent with a very unusual feature in the text of Aristophanes' *Birds*; there are virtually no stage directions preserved in the texts of ancient drama, but at line 223 of the *Birds* there is a marginal note which says 'someone plays the aulos from behind the scene' (in Greek, *endothen*, 'from within'). This suggests that the aulos-player was normally in view of the audience, and that here we have a special effect. In the text of the songs sung by the *choros* of birds there are quite a lot of bird-song noises (e.g. 'tio-tio-tinx' or 'kikkabau, kikkabau'), and we may be fairly sure that the aulos-player contributed his share of bird-like trills and warbles.

In the majority of the surviving comedies the *choros* were dressed as human groups – men from Acharnai, for example, or women at a festival; but in a few plays they appear in animal costume, as birds or frogs, and in another play they are disguised as clouds. It is clear from vase-paintings of a century before Aristophanes that dancing by an 'animal *choros*' was a very ancient ritual, dating from a time long before the emergence of comedy in the form in which we know it. There are pictures of men dressed as cockerels, or riding on dolphins (perhaps real ones, or men dressed as such) and a very striking picture of a *choros* of men riding 'piggy-back' on others who have horses' heads and tails. The inscription nearby, which reads 'EI-OKHI-OKHI' would of course have been intelligible to a Greek horse. On first sight, this would appear to be an illustration of a performance of Aristophanes' *Knights*, but it was painted a century earlier than that play (Figure 1.9).

There is one very significant feature of all these choruses – they are led in their dances by an aulos-player, and this must surely have been true of a *choros* in fifth-century comedy.

The latter part of a typical Aristophanic play has a number of short (sometimes very short) scenes of a knockabout character, interspersed with short songs by the *choros*, most of them closely bound up with the plot of the play, though some contain satirical comment on contemporary affairs.

As a final comment on the importance of music in Aristophanic comedy, it should be said that a number of plays end with a musical celebration, by contrast with the tragedies which end with the *choros* chanting the anapaests as they leave the scene (see p. 16 above). The *Acharnians* ends with the triumphal song celebrating the hero's victory in



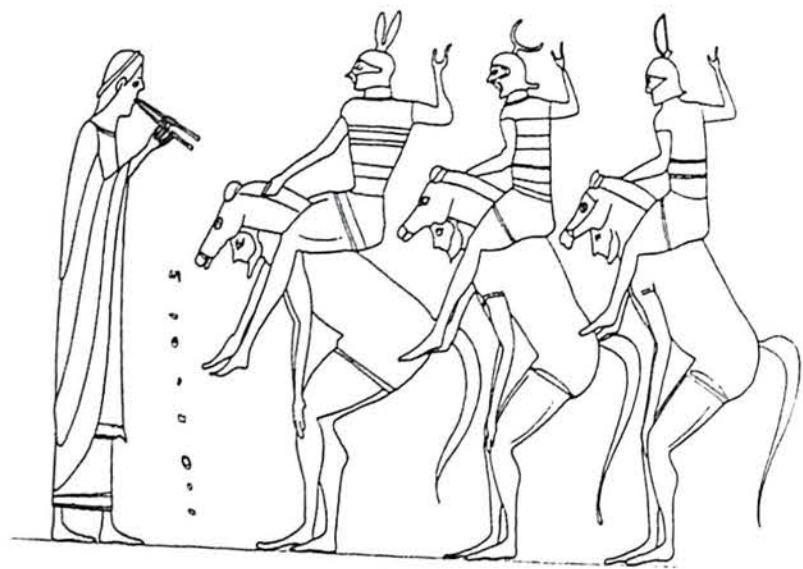


Figure 1.9 Animal chorus

a drinking-contest, and the *Birds* with a marriage ceremony – a very blasphemous fantasy in which the disreputable old Athenian is married to Universal Sovereignty, formerly the partner of Zeus. At the end of the *Wasps*, the plot more or less disintegrates, and a troupe of three dancers are brought on to do a vulgar dance (the *kordax*, roughly the ancient equivalent of the can-can, but danced by men) and so round off the play with a sort of cabaret turn.

Up to now we have been considering only the fifth-century comedy as we know it from the works of Aristophanes. In the fourth century BC a number of developments took place, some of which are already foreshadowed in the last two of his surviving plays, the *Women in Parliament* and *Wealth*. These led to a different form of comedy, known as the 'New Comedy', in which the musical element was much less important. As it was the forerunner of early Roman comedy, it will be examined in detail in Chapter 8.

Beside the tragedies and comedies, there was another type of play which was regularly performed at the Dionysia, the great drama festival. This was known as satyr-drama, and was a most peculiar art-form. First of all, it should be stressed that it had nothing whatsoever to do with satire, in the ancient or modern sense of that word. The drama got its name from the fact that the men of the *choros* were always dressed in the same costume – that of satyrs. These were strange creatures of the Greek imagination, part human and part animal, usually represented with human body but with horses' ears and tails, and a characteristic face marked by a high bulging forehead and snub nose, in complete contrast to the familiar elegant 'Greek profile'. There are abundant Greek vase-paintings of 'real' satyrs, in which they are characterised as drinkers, dancers and uninhibited lechers, a feature which is very explicitly shown by the Greek artists. There are other vase-paintings which show actors dressed as satyrs about to take part in a satyr-play. They wear masks with the appropriate

features – snub nose, horses' ears and hair which looks rather like a mane, and a pair of shorts covered with animal hair, with a tail on the rump and a large, obtrusive artificial phallus on the front.

The most remarkable feature of this type of drama was that it was written by the tragic poets. Three such poets were chosen each year to have their works performed, and each had to contribute three tragedies, which were performed consecutively, followed by a satyr drama. Aeschylus tended to favour the trilogy: a sequence of three tragedies which formed a saga, dealing with the fortunes of a single family through two or three generations, followed by a satyr play which had some sort of connection with the story. The later dramatists preferred as a rule to write three separate tragedies and a satyr play with unconnected stories. So the audience listened to a total of four plays by one author on each of the first three days of the festival. It is an interesting comment on the character of the Greeks that they liked to have the light relief at the end of the day, and not earlier.

The form of the satyr-drama was similar to that of tragedy, with prologue, entrance-song of the *choros* and so on, but the mood and tone were totally different from those of tragedy, despite the fact that the text was written and the music composed by tragic poets. The *choros* of satyrs were characterized as drunken cowards, with none of the virtues of the characters in tragedy, and with no capacity for endurance. Unlike the plots of comedy, which were usually invented by the poet, the plots for these plays were taken from mythological stories, as were those of the tragedies. Naturally, the stories chosen were of a light and comical kind, to give the satyrs plenty of opportunity to show their unheroic characters. In one play by Aeschylus, of which only fragments survive, they are required to go into training for the Isthmian Games, a prospect which appals them. In Euripides' *Cyclops* (the only complete satyr play which has survived) they are asked to help Odysseus to deal with the monster, which they are most reluctant to do. In Sophocles' *Trackers* (*Ichneutae*) they are struck with terror on hearing for the first time the notes of a lyre, which has just been invented and constructed by the infant Hermes.

This brings us conveniently back to the musical element in the satyr-drama. In vase-paintings of scenes of Dionysiac worship, in which 'real' satyrs and maenads (ecstatic female devotees) dance around the god, music is often featured. Satyrs play the aulos, occasionally the kithara, and most often the lyre or its 'big brother', the *barbitos*. Maenads usually play the hand-drum (*tympanon*, see p. 81 below). It is not surprising, therefore, to find that in representations of satyr-drama the members of the *choros* are shown with various instruments, most commonly the lyre or a particular variant of it (see p. 67). But the most valuable pictorial evidence comes from a vase of the very late fifth century BC known as the 'Pronomos Vase' (Figure 1.10).



The side of the vase shows on three levels a troupe of actors preparing for a satyr-play; Figure 1.10 shows four figures from the lowest 'level'. The one on the right of the picture is wearing his shorts but carrying his mask in one hand. The one on the left has put on his satyr mask and is practising the typical hopping dance of the satyr *choros*, which was called the *Sikinnis*. In the row above (not shown in Figure 1.10) are several actors dressed for the main roles, but carrying their masks. It is easy to recognize Dionysos, Ariadne and Herakles, and to their right a 'senior satyr' called Papasilenos, who is the leader of the *choros*. But most interesting of all are the two central figures in the lower row. One appears to be a 'main part actor', who is carrying a lyre, and presumably played it during the drama. The other is an aulos-player, dressed in very luxurious costume and seated on an elegant chair, who is named as Pronomos, a famous virtuoso player who came from Thebes. He was responsible for important developments in the design of the aulos (see below, p. 36). This seems to suggest that an outstanding soloist might be engaged to play for a theatre production, even a satyr-play. What is not so clear is whether the actor with the lyre actually played it, or whether he mimed the action while a kithara-player performed 'off-stage'; it is doubtful whether the sounds of a lyre would be loud enough to carry throughout the very large theatres, though their acoustics were excellent.

So, taking all the evidence together, it is clear that the theatrical experience of the Greeks in the Classical period involved a considerable element of music, singing and dancing. It is very difficult for the producer of a modern version, especially in translation, to replace this lost music. All that survives of the music of the three great tragedians is a very small fragment of Euripides' *Orestes* and an even smaller scrap of his *Iphigeneia in Aulis*, and of Aristophanes not a single note. Some attempts have been

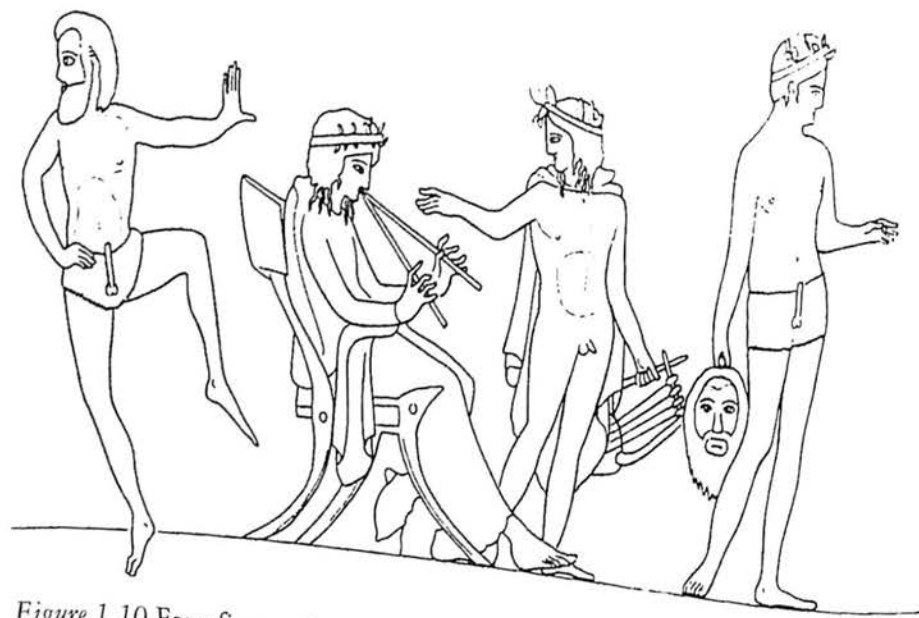


Figure 1.10 Four figures from the Pronomos Vase

made to compose music which sounds vaguely like ancient Greek; but the only substantial remains we have are the Delphic Hymns (see Chapter 10), which are liturgical music, and can hardly give us any reliable clues to the nature of theatrical music three centuries earlier. The Theatre of Dionysos in Athens is silent, and we shall never hear more than a few fleeting notes of the music which sounded there.



2(a)

## THE AULOS

The instruments used by the Greeks and Romans may be conveniently divided into the same categories that are used for modern instruments; to avoid irritating argument over fine-drawn definitions, I shall use the terms woodwind, stringed, brass and percussion. In this chapter the instruments will be dealt with in the order of their importance or popularity, which means that they are not necessarily treated in the historical order of their first appearance.

## The aulos

In the woodwind category there was one instrument which spanned the whole history of Greek and Roman music, and which appears more commonly in illustrations than any other – a double, reed-blown pipe, called *aulos* in Greek and *tibia* in Latin.

For many years it has been the practice of Classical translators, including some very distinguished ones, to use the word 'flute' for this instrument.<sup>1</sup> This is extremely misleading and inaccurate, in two respects. First, the *aulos* did not look like a flute; it was a double pipe, the two pipes being held out in front of the player (Figure 2a.1a). There was an ancient instrument which really was a single pipe of the flute type, and was held transversely, as a modern flute is held. It was called the 'transverse aulos' (*plagios aulos*, or *plagianulos* in Greek, *obliqua tibia* in Latin, Figure 2a.1b).

The *plagianulos* was entirely confined to the pastoral environment, and it does not appear in Greek literature or art until the Hellenistic period (third century BC onwards). The translation 'flute' should, therefore, be restricted to that instrument alone, and not used for any other type of *aulos*; nor should it be used with reference to any earlier period. Second, the ordinary *aulos* was, beyond reasonable doubt, a reed-blown instrument, and we can be quite sure that it did not sound anything like a flute. The two pipes spoke together, perhaps in unison, and ancient writers describe its sound variously as 'shrill', 'blaring' or 'booming', none of which would be appropriate to the sound of a flute. It is more difficult

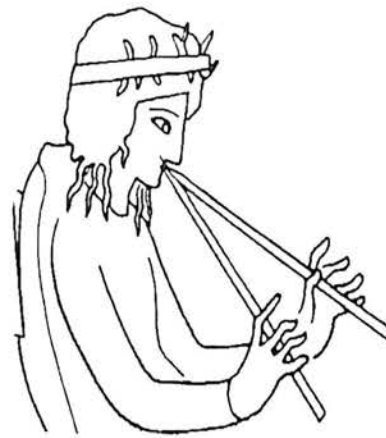


Figure 2a.1a Aulos



Figure 2a.1b Flute

to play two pipes than to play one, and the range of notes on each pipe is limited to six, whereas it could be much greater on a single pipe; but the Greeks and Romans were prepared to accept both these limitations in order to produce the brilliant and exciting effect of the two pipes sounding together.

So it is easy to show that the words *aulos* and *tibia* should not be translated as 'flute';<sup>2</sup> but to suggest a good alternative is not so easy, because there is no well-known instrument in modern use which corresponds on all three points – a double pipe, with double reeds and a cylindrical bore. In Europe the technique of double-piping survives only in folk music of remote regions, and to translate *aulos* by the name of (say) some Caucasian double pipe would be to explain the unfamiliar in terms of the unheard-of. For a technically accurate prosaic translation 'reed-blown double pipe' is perhaps the best available; for less exact requirements 'pipes' will do, given an explanatory footnote for Scottish readers that bagpipes are not indicated. In this book from now on, the instrument will be called *aulos*, which is to be regarded as a loan-word; but I shall retain the Greek plural *auloi*, as being less troublesome than 'aulosses'.

We cannot now discover the date or circumstances of the first introduction of the *aulos* into the Greek world. A marble sculpture from Keros in the Cyclades, dating (despite its curious resemblance to a modern sculpture) from between 2800 and 2300 BC clearly shows such an instrument;<sup>3</sup> but the island's culture at that time may have been Carian, not Greek.

The earliest surviving painted illustration, dating from about the fourteenth century BC, is on a sarcophagus found at Hagia Triada in Crete, in the context of a ritual in honour of the dead.<sup>4</sup> It shows an unusual type of *aulos*, with pipes of about equal length, one of them fitted with an upward-curving bell. This instrument, dating from the late Minoan period, bears no close resemblance either to the double pipes shown in near-contemporary Egyptian illustrations, or to the earliest



representations which can reliably be called Greek, which are in vase-paintings of the Geometric period from the early seventh century BC.

The two earliest mentions of the aulos in literature also date from that same period or a little earlier; they are in Homer's *Iliad*.<sup>5</sup> However, both these passages are slightly suspect, and it is very noticeable that there are many more references to stringed instruments in the Homeric poems. This is hardly surprising, since only stringed instruments were used by bards, both in real life in Homer's day and in the stories in which they portrayed their predecessors in the heroic age. The Greek myths relating to the invention or discovery of the aulos are discussed in Chapter 6: if they preserve a genuine folk-memory, which is possible but by no means certain, they suggest that the aulos was imported into Greece from Asia Minor. It may also be significant that, while the principal stringed instrument – the kithara – was associated with Apollo, who in the eyes of the ancient Greeks was the most Greek of all the gods, the aulos was closely connected with Dionysos, believed by the Greeks to have been an Asiatic deity whose cult was imported into Greece and later Hellenized. Indeed, it has been suggested that the reason and occasion for the introduction of the aulos to the Greek mainland (along with the hand-drum, *tympanon*) was the arrival of the Dionysiac cult and its ritual. However this may be, the aulos established itself in Greece as a very popular instrument, the use of which was by no means confined to cult; it appears in almost every department of Greek life, from the most solemn religious occasion to the most dissolute orgy (Figure 2a.2).

The aulos is shown in a developed form in Greek vase-paintings of the sixth century BC, and its outward appearance (or, at any rate, the way

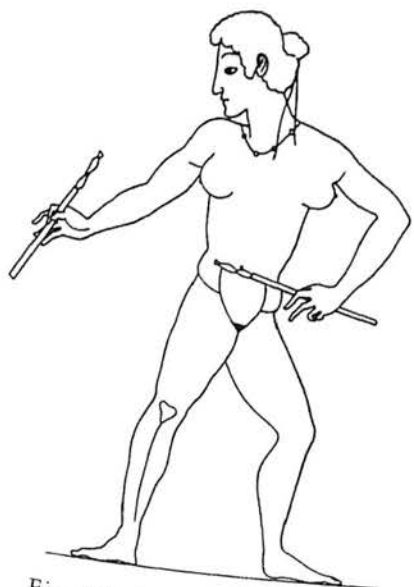


Figure 2a.2 Aulos not-so-solemn

of representing it) seems to have changed little during the following century.

Each pipe of the instrument was usually made in five separate parts – the body (usually in two parts), the two bulbs and the reed mouthpiece (Figure 2a.3). The stem of the reed was inserted into the top bulb and, as it was particularly vulnerable, it was removed when the aulos was not in use. The pipes were carried around in a long, narrow double pouch, usually depicted as made from the skin of a dappled animal (a leopard, or perhaps a deer) and the reeds were stored in a small oblong box fixed to the side of the pouch near the top. Its size was about  $5 \times 1\frac{1}{2} \times 1\frac{1}{2}$  ins ( $12 \times 4 \times 4$  cm) and it was called a 'reed-carrier' (*glōttokomeion* in Greek). The same word was also used for any 'long box' including (with a touch of dark humour) a coffin (Figure 2a.4).<sup>6</sup>

These parts will be treated in order, starting from the mouthpiece and working downwards.

In the great majority of vase-paintings the aulos is shown actually being played, with the most interesting and vital part of the instrument,

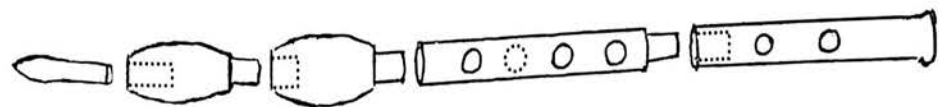


Figure 2a.3 'Exploded' diagram of aulos



Figure 2a.4a Aulos carrying-case 'de luxe'



Figure 2a.4b Aulos-player with spare pipes in readiness



the reed, hidden in the player's mouth. Usually the lips cover the reed to the top end of the upper bulb. In the few pictures in which the pipe is shown out of the player's mouth, the reed appears to be something like a modern bassoon reed in size and shape (Figures 2a.5 and 2a.6).

These pictures quite certainly represent double reeds, and not single ones (as used in the drones of Scottish bagpipes), which would appear as long, thin tubes with rounded tips. And apart from the pictorial evidence, there are other good reasons for believing that the reeds used on the aulos were double reeds.<sup>7</sup> We also have some literary evidence, albeit vague and difficult to interpret, on how they were made. This is mainly derived from an account in Theophrastos' *Researches into Plants* (Bk 4 Chapter 6) of how the 'aulos-reed' (*aulētikos kalamos*) was grown and prepared for reed-making. This plant has been identified as the species *arundo donax*, or a species closely akin to it, which still grows in large quantities all around the Mediterranean basin, though not in central or northern Europe, and is used to make the reeds for most modern woodwind instruments.<sup>8</sup>

The general gist of Theophrastos' account is as follows. He says that in early times, when the technique of aulos-playing was 'natural' or 'unforced' (in Greek, *aplastos*), the reeds were cut about mid-September in the second year of their growth, provided that the marsh in which they grew had not dried out during that season. (If that occurred, the reeds were presumably discarded as useless.) These reeds were not ready for use until 'quite a number of years later', and needed a long period of



Figure 2a.5 Reed seen from above



Figure 2a.6 Reed (side view)

manipulation and playing-in before they would speak properly. The openings of the reeds 'tended to close up easily', a feature which was useful for the early technique of playing.<sup>9</sup>

When aulos-players changed over to a 'forced' or 'artificial' technique (*plasis* in Greek) the reeds were cut earlier in the season – late June or early July – and they became usable 'after two or three years'. It is surely significant that in modern times the reed-makers' cane grown in the south of France is cut and stacked for two to three years before use. The change-over to *plasis* was associated with Antigoneidas, a famous virtuoso player from Thebes, who was active in the late fifth and early fourth century BC. The word itself literally means 'moulding' or 'shaping', and would be appropriate for any technique by which the pitch or tone was modified by the player's embouchure, such as a glide from one note to another (glissando) or a tremolo or vibrato effect. It might possibly refer to the production of harmonics; this is discussed later.

One possible explanation of the change from one technique to the other is that the older one involved putting the whole length of the reed-tongues inside the mouth, leaving them free to vibrate without any control from the lips. For this purpose, it is indeed necessary to have reeds which 'close up easily' – if they do not, they cannot be made to vibrate. The later 'forced' technique should then be interpreted as the modern one, used on an oboe or bassoon, in which the reeds, which are much stronger and more open,<sup>10</sup> have to be squeezed in order to make them speak; this is done by inserting only about half the length of the reed-tongues into the mouth, drawing the lips inward over the upper and lower teeth, and then squeezing the reed-tongues between the lips. The great advantage of this 'forcing' is that the volume, pitch and tone of the instrument can be varied, whereas with the reed uncontrolled in the mouth there can be little variation of loudness between *pianissimo* and *fortissimo*, and only very limited control of pitch.

Unfortunately, it is not possible to discover from Theophrastos' text the exact method by which the reeds were made.<sup>11</sup> In this context, he is dealing strictly with the choice and preparation of the material, and he writes on the assumption – perfectly justified – that his readers know exactly what the finished product looks like. It is unlikely, however, that the modern method, which involves splitting the cane longitudinally into three segments, bending one of them in the middle and binding its ends on to a metal tube (called a staple) was used. It is much more likely that the end of a short section of cane was softened by some process (perhaps by steaming), and then flattened and scraped into the characteristic double-reed shape.

A number of other terms which relate to the control of the reed and embouchure are used in the literary sources, and some are apparently illustrated in vase-paintings. Some authors speak of 'separating' the pipes



and 'putting them alongside', and players in vase-paintings are shown holding the pipes at various angles of divergence, up to about 45 degrees at the extreme (Figure 2a.7).

According to the literary sources,<sup>12</sup> these movements were used for delicate adjustments of pitch, which was sharpened by separating the pipes, and flattened by bringing them together. They might have brought about a very slight adjustment of the embouchure; the aulos-player had no thumb-rests, and it must have been very difficult to control the position of each reed on the lower lip with one hand only. Incidentally, the ability of the player to separate the pipes is a strong argument against the use of single reeds, which are by their construction necessarily much longer than double reeds, and would surely have collided inside the player's mouth. There is a rather incredible story told by an ancient commentator on Pindar *Olympian 12* about an aulos-player whose reeds stuck on the roof of his mouth, and were so badly damaged that he had to play the two pipes as though they were pan-pipes. The first part of the story would be quite credible if they were double reeds, but the reed-tongues of single reeds, which are cut in the sides of the tubes, would have been protected by the closed tips of their tubes from such damage. (One should never be too sceptical about stories of remarkable achievements by woodwind players: on being told this one, an oboist friend removed the reed from her instrument and, to my great surprise, played it as a trumpet.)

In the treatise on acoustics attributed to Aristotle (see p. 138) there are two references to tightening the embouchure, which he calls 'squeezing



Figure 2a.7 Aulos pipes held wide apart

the reeds' (*piezein ta zeugē*).<sup>13</sup> The word *zeugē* means 'pairs' (in the plural), and this must surely mean two double reeds.

Many illustrations show an aulos-player wearing a mouthband made of leather, which the Greeks called *phorbeia*; the word was also used to mean a strap or halter used to tether a horse to its feeding-trough or, more probably, to tie its nosebag on. The version worn by an aulos-player consisted of a broad strap with two round holes, looking rather like a highwayman's mask, but worn over the mouth and around the cheeks. In the great majority of vase-paintings it is shown in profile, but where the player is drawn full-face, the reed mouthpieces can be seen emerging from the holes. The strap tapered towards the back of the player's neck where, presumably, there was some kind of buckle or hook, and a thin cord ran from the cheekpieces up over the top of the head, to prevent it from sliding down on to the chin (Figure 2a.8).

A number of explanations have been offered for this device. Some ancient scholars said that it was to prevent the cheeks from bulging, but this is hardly satisfactory; the cheeks can normally be held in without any such aid, and an explanation so closely tied up with the story of Athena's rejection of the aulos must be suspect (see p. 154). I have suggested another explanation for the *phorbeia* which seems much more satisfactory. In all illustrations (leaving out a few ambiguous ones) the player wearing it is male, and he is taking part in a public competition, or at least playing it as a male. This would require strong, open reeds, and the lip muscles which control the embouchure (and, incidentally, restrict the bulging of the cheeks) would be subject to fatigue after a short time – present-day players of the shawm would testify to this. I do not know of any



Figure 2a.8 Aulos-player wearing *phorbeia*



undisputed illustration of a woman wearing a *phorbeia*, presumably because women normally played indoors, and used softer, weaker reeds. The *phorbeia* could, I believe, have been used to put pressure on the lips, squeezing them together and keeping them in position over the teeth, thus taking some of the strain off the lip muscles. The pressure could be varied and controlled to some extent by movements of the head, and in fact the illustrations usually show the chin thrust out; this would be the natural way to increase the tension in the strap. Moreover, when the *phorbeia* is used, the pipes are usually held well up in front of the player – horizontal or even higher. In a few exceptional cases the pipes slope downwards, but this is clearly artist's licence, intended to improve the composition of the picture.

There is ample evidence to show that the behaviour, or rather misbehaviour, of the reed was as much of a problem as it is today. The Greeks had two words for the odd noises made by beginners on the aulos – *krizein* (to squeak) and *chēniazein* (to blow a goose). We are also told of aulos-players who drew frantic applause in a crowded theatre by 'playing with a slack embouchure and blasting out a lot of repetitive, off-key shrieks' – early practitioners, it would seem, of a punk rock style.<sup>14</sup>

Between the reed and the body of the aulos there were normally two bulbs, sometimes only one. They took one of two forms, as shown in Figure 2a.9.

Two Greek words were used for these parts of the mouthpiece section – *bolmos*, meaning 'mortar' (the kitchen utensil), and *hypbolmion*, meaning 'mortar-stand'. Aristotle remarks on the similarity of shape between this part of the aulos and the egg-cases of dogfish, popularly known as mermaids' purses (Figure 2a.10).<sup>15</sup>

Some illustrations which show only one bulb give it a cone-shaped extension, making the mouthpiece as a whole thistle-shaped. This is exemplified in illustrations of the post-classical period, and in the Pompeian pipes. The function of this part may have been to act as a 'pirouette', to give support to, and relieve strain on, the lip muscles. If so, it would have been an alternative to the *phorbeia*.<sup>16</sup>

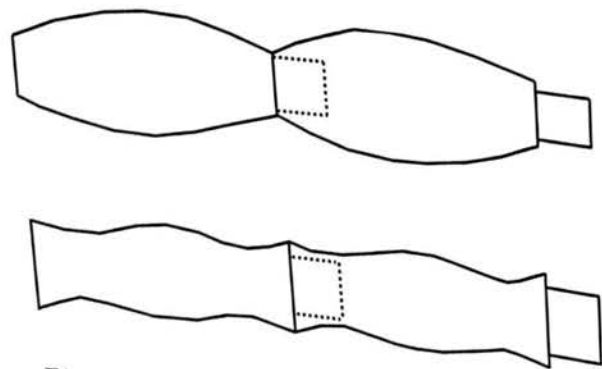


Figure 2a.9 Two types of bulb (*bolmos*)

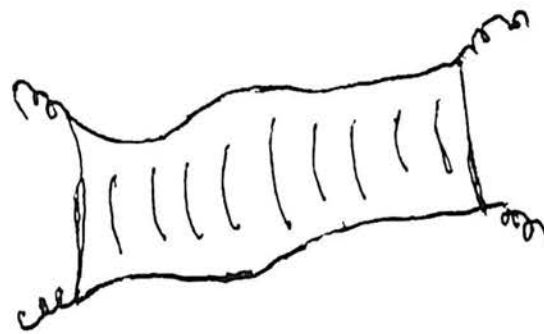


Figure 2a.10 Dog-fish egg-case

What was the function of the bulbs? We cannot be sure. They may have been purely decorative (there are pictures of auloi without any) or they may have contributed somehow to the balancing of the instrument – a difficult problem for the player, with only one hand to control each pipe. Where they appear to be larger in diameter than the body of the pipe, they may have served to protect the reed when the aulos was laid down on a flat surface: on some instruments, particularly the Reading aulos, the bulb is quite large.<sup>17</sup> It is unlikely that they had an acoustical function; the internal bore is the same as that of the rest of the pipe, and they could hardly have influenced the pitch or the tone of the instrument.

The material most commonly used for the body of the aulos in the classical period was the same species of reed (*arundo donax*) that was used to make the reed mouthpiece, except that it was cut at a much later stage of growth, when the stalks had reached an internal diameter of about 9–15 mm (0.3–0.6 in.). The length between two knots on the stem would usually be sufficient to make the body in one piece. Other woods were used, particularly one which they called *lotos*, probably to be identified as the nettle-tree, *celtis australis*. (It was native to north Africa, hence both the wood and the aulos made from it are referred to as 'Libyan'.) Two pipes in the British Museum, the 'Elgin auloi', were made from sycamore wood, which shows that solid stems could be used as well as hollow ones.

Unfortunately, instruments made from these materials do not as a rule survive. Bone was almost as commonly used, though a more difficult material to work in. The tibia bones of small animals such as sheep or deer were most suitable, and the portion of such a bone which can be bored out and shaped is usually not more than about 9 cm (3.5 in.) long, which means that the aulos body has to be put together from two or three sections. These were jointed together, as are the sections of a modern instrument, with tenons and sockets. There is some doubt whether the tenons were padded with some soft material, or lapped with thread, as they sometimes are on modern instruments. I am inclined to think that they were not, because the sections were permanently glued together. The carrying-case is almost always shown as being long enough to hold the complete instrument without its reed.



Bone is a much more durable material than wood, and a number of bone sections of auloi survive, giving us some valuable information on the instrument-maker's art. (Ivory was also used, which is sometimes very difficult to distinguish from bone.)<sup>18</sup> For example, we know that down to the middle of the fifth century BC the inside of each bone section was bored out to an exactly cylindrical bore, but the outside surface was usually left unworked, preserving the grooves left in the bone by the muscle attachments. Then, as lathe technique improved, the outside was shaved down to an exact cylinder, polished, and decorated with incised lines. Eventually, the bone sections were given a thin outer shell of bronze or silver. But this pattern of development is less useful than it may seem for the purpose of dating surviving fragments of auloi, because crude and simple instruments continued to be made to the old-fashioned pattern long after the refinements had been introduced.

The fingerholes were bored in the wood or bone with something like a modern centre-bit, probably rotated by a bow. It could cut a very clean and exact circular hole, as can be seen from some surviving fragments. On instruments made of wood or bone the outer surface was filed or gouged out slightly around the holes which were to be stopped by the player's fingers, so as to make a better 'seating' for the finger, and from the depth and position of the hollows made in this process it is sometimes possible to tell whether the pipe was designed for the left or the right hand. This shaping might have been done by the player himself, or by the maker on a custom-made instrument. The player used the flat of the finger near the last joint to stop the holes, and not the tips of the fingers; this makes the shaping of the holes even more important. Later instruments which had a casing of bronze (for example, the Reading aulos) could not be shaped in this way.<sup>19</sup> There is also evidence for 'under-cutting' – removing a small sliver of bone from the interior edge of the hole, for fine correction of pitch (see note 18).

Throughout the early Classical period, and down to the middle of the fifth century BC, the aulos apparently had five fingerholes, with or without a sixth hole further down the pipe, which could not be covered by the fingers. This is known as a vent-hole, and was used to sound the lowest note on the pipe.

Figure 2a.11 shows the typical arrangement, with hole I on top (stopped by the index finger), the thumbhole T underneath, and II, III and IV for the middle, third and little fingers respectively. The vent-hole V, if there is one, can be distinguished by its sharp outer edge, not shaped for the player's fingers. This arrangement imposes a limit on the distance between I and IV; the maximum stretch, even for a player with large hands, could not have been much more than about 15 cm (6 in.). Each pipe would normally be supported on the player's thumb; but when the thumbhole had to be uncovered, wholly or partially, the little finger was

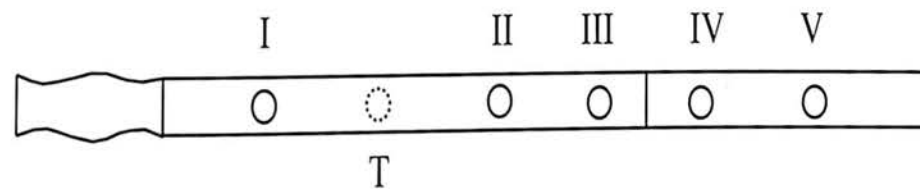


Figure 2a.11 Fingerholes on early aulos (total length about 35 cm, fingerholes about 9 mm diameter)

apparently tucked under the pipe to support it. It must have taken a lot of skill to do this (usually with both pipes at once) during a rapid piece of music.

The arrangement of holes would enable each pipe of the aulos to play a scale of six 'natural' notes, with the option of raising the pitch of five of them by a small amount. This was done by raising the finger slightly from the edge of the next hole above; so the note from the vent-hole could be modified in this way, but the 'natural' from the top one (I) could not. The small interval by which the pitch was raised was called a *diesis* in Greek, and in this context it means a 'leak' or 'escape'. (It is interesting that this seems to be the only term for an interval which is based on the playing technique of a wind instrument; all the note-names in the scales (see p. 54), and the names of the other intervals – for example, *dia pente*, 'across five' for the fifth – were based on the layout of stringed instruments.) The amount by which the pitch was raised (i.e. the size of a *diesis*) could vary between a quarter-tone and a semitone, according to the scale being used. If the finger were raised a little further, the pitch would rise by one more *diesis*. It would therefore be possible to play a scale of six notes, with a cluster of three closely-spaced notes (called a *pyknon* in Greek) based on each of them except the highest one. This, however, was not part of normal musical practice, though it might have figured in exercises set to pupils by aulos teachers. The Greek scales, which will be discussed in detail in the next chapter, allowed only one *pyknon* in any 'tetrachord' – a group of four notes, which normally spanned the interval of a fourth.

Apart from raising the pitch by means of 'leaks', the aulos-player could lower the pitch of some notes by cross-fingering. This involves closing holes below the open one which is sounding the note. Obviously, this technique is available only on holes I, T, II and III, and would in practice be very difficult to achieve on T (one should never say 'impossible' of any technique supposed to have been used on a woodwind instrument!). It has the advantage that the lowering of pitch, though very slight, is quite accurate, unlike the hit-or-miss technique of 'leaks'.

According to good literary evidence, there were three ancient aulos scales, the Dorian, Lydian and Phrygian, and down to the middle of the fifth century BC there were three types, or sizes, of aulos, one bored for each of the scales. In order to change from one to another, the player had to



change instruments, just as a clarinettist today may have to change from a B flat to an A clarinet in order to play in a different key. The nature of these scales, and their relationship to later systems, are discussed in Chapter 3. For the present, it will suffice to say that they probably differed in three respects – the pitch of each scale as a whole, the number and range of notes, and the patterns of intervals within that range.

A development took place some time about the middle of the fifth century BC whereby it became possible to play any of these three scales on the same instrument (i.e. pair of pipes). This 'invention' is ascribed to Pronomos of Thebes, a famous virtuoso player, who was active in the middle years of the century, and who in the 430s attempted (poor chap!) to teach the art of aulos-playing to the notorious aristocratic tearaway Alkibiades.<sup>20</sup> Unfortunately, the literary sources do not give any details of his innovation, but we can assume that he modified the design of the instrument, and perhaps transposed one or two of the scales to a different 'key' in order to make them overlap to a greater extent. It might then have become possible to play the three scales on an aulos with (say) eight fingerholes fitted with a form of keywork by means of which the holes which were not required for the scale being used could be closed off. The problem with this hypothesis is that the earliest surviving examples of instruments fitted with keywork date from a much later period. But the surviving instruments are not a representative selection. They have mostly been found in rubbish deposits (e.g. wells in the Athenian Agora), and while we might expect to find cheap or damaged instruments in such a context, we are not likely to find an expensive instrument casually discarded by a professional player. (The Brauron aulos is a different matter; it was thrown into an underground spring, probably as a thank-offering.) The best examples of keywork that we possess come from Pompeii, and of course date from centuries later. They probably represent the private collection of a musician, or perhaps instruments in a maker's workshop at the time of the volcanic eruption. As for the lack of contemporary pictorial evidence, that is easily explained by the nature of the keywork itself.

The mechanism is quite simple. The body of the aulos is covered with a thin layer of bronze or silver, and the holes are bored through it and the bone or ivory beneath. On the outside of this layer are fitted sleeves of metal which are tight enough to seal off the air, but loose enough to be rotated around the body. Each has a hole which can be made to coincide with the hole in the aulos body, or turned away from it so as to close it off. Each of them looks rather like the air regulator on an old-fashioned Bunsen burner, and they work in much the same way. Figure 2a.12 shows two sleeves, with the left one in the 'open' position and the other closed; there would normally be a minimum of eight.

This system of keywork is, of course, much simpler and much less effective than that on a modern oboe or clarinet. To begin with, no more

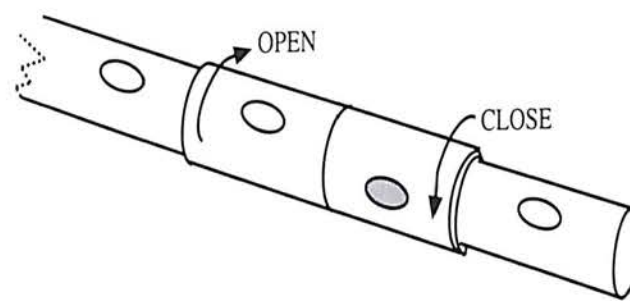


Figure 2a.12 Key mechanism of aulos

than six holes could be used at any one time, and the distance between I and IV was restricted to the span from the player's index finger to little finger, i.e. about 15 cm (6 in.), though the vent-hole could be at any distance below. Some later auloi (from the second century BC onwards) had long bronze rods which moved back and forth along the body, and caused half-sleeves or pads to slide up or down, so as to cover or open holes which were beyond the player's reach.<sup>21</sup> To give the sleeve extra strength and stability, it was bent around the body of the instrument (the one in Figure 2a.13 has quite a large bore) and held in place by staples, which were soldered into the bronze body (Figure 2a.13).

It might have been possible to manipulate one of these rods while playing, but it must have been very difficult indeed to twist the sleeves around and change the scale except during a pause in the music. On the remains and in illustrations of much later instruments there are small knobs on the sleeves, and on others there are sockets, perhaps for the insertion of a short lever, which would have made it easier; but no such details appear in Greek vase-paintings of the Classical period. Without them, of course, the sleeves would have been quite inconspicuous, and this would account for the fact that the artists did not bother to show them.

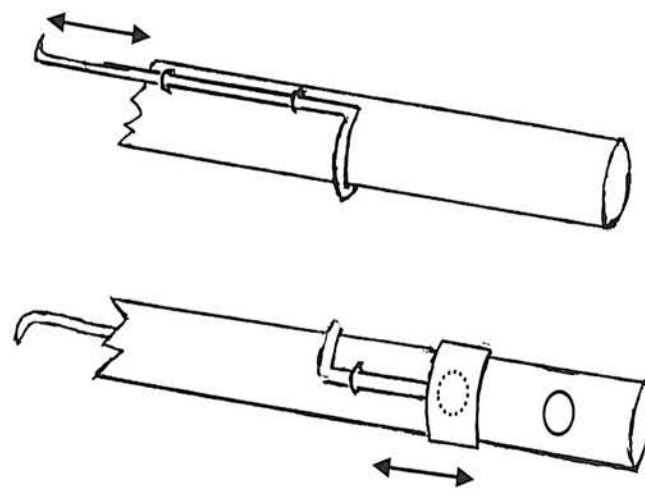


Figure 2a.13 'Remote-control' key on aulos, seen from above and below



We do not have any literary evidence about the exact nature of Pronomos' invention, but we do have two passages which testify to its effectiveness. One is from Simonides (perhaps mid-fifth century BC) and the other from Plato, writing in the 380s but pretending to report conversations in the last decades of the fifth century.<sup>22</sup> Both of them use the word *polychordos* ('many-stringed') in connection with the aulos. Plato is seeking to restrict the musical education of his 'Guardians of State' to the 'mood' or ethos associated with two particular scales (this is discussed in Chapter 3) and he mistrusts the aulos, because it is capable of playing all the notes needed for several other scales, and can therefore skip about from one ethos to another, in a way which he found highly objectionable. The lyre and kithara are the only instruments acceptable to him, because they could not change scale without pausing and retuning. The strange thing is that both of these writers should use the word 'many-stringed' to describe a wind instrument, though we have already seen that virtually all the terms relating to notes, scales or intervals were derived from the structure or playing techniques of stringed instruments, with the single exception of *diesis*, which was derived from the aulos. It seems probable that the ability to modulate (as we would say) had been encountered earlier than the mid-fifth century in instruments of the harp type (to be described later), which were literally 'many-stringed', having perhaps twenty strings as compared with the seven on a lyre or kithara; as a result the word *polychordos* may have been already established as a technical term simply meaning 'versatile' and applicable to any type of instrument.

Mention has already been made of the possibility of playing harmonics on the aulos, and this whole question must now be investigated.

It would be very surprising indeed if the Greeks had failed to discover that by 'overblowing' and tightening the embouchure it is possible to make a reed instrument play the same pattern of intervals as its normal scale, but in a higher register. Because the aulos had a cylindrical bore, this higher register must have been 'at the twelfth' – that is, an octave and a fifth higher, as it is for the same reason on a modern clarinet. (The recorder and the flute both have a cylindrical bore, but can produce the octave harmonic; this is because they are not reed-blown, and are open to the air at both ends of the air-column.) There is some ancient evidence, dating from the mid-fourth century BC, that aulos-players made use of this technique. The most telling evidence comes from Aristoxenos' *Harmonics*, where he is talking about the upper and lower limits of pitch in practical use in music.<sup>23</sup> Having said that the total range of the human voice from low bass to high treble is more than three octaves, he says that an even greater range of notes can be played on an aulos by the use of a device which he calls a *syrinx*. This word is the regular name for the pan-pipe, a rustic instrument of the flute type, which will be discussed in detail later. But in this context it probably signifies a device analogous to the 'speaker'

on a modern clarinet, which makes it much easier to obtain the harmonics. The word itself can be used to mean any kind of tube or pipe, which gives some clue to its shape. The same device is also mentioned in the work on acoustics attributed to Aristotle (see Chapter 5), which was probably written at about the same time, mid- to late-fourth century BC, and by one or two other authors.<sup>24</sup> The only real problem is that the authors disagree as to whether the *syrinx* was 'drawn down' to obtain the higher register (Aristoxenos) or 'drawn up' (Aristotle, Plutarch). An ingenious answer to this problem was given more than a century ago by A.A. Howard.<sup>25</sup>

He suggested that the *syrinx* was a small tube which fitted around the upper end of the aulos body, similar to one of the sleeves but without a hole in it. This would normally cover a small 'speaker hole' drilled in the body of the pipe. When the upper register was needed, the *syrinx* might have been moved either up or down on the pipe, so as to uncover the speaker hole – hence the apparent disagreement in the evidence. The Aristotelian work mentions 'stopping' (with the finger) as an alternative to drawing down the *syrinx* to obtain the lower register, saying that it 'increases the volume of sound, just as with thicker strings'. Aristoxenos also uses a verb *syrinthein* (derived from the noun *syrinx*) meaning to 'play on the upper register', as against *aullein*, to 'play on the normal register'. There is also some evidence to support this interpretation to be found in the surviving fragments of auloi. One from the Athenian Agora, which is clearly a bulb (*bolmos*), has a small hole drilled in it at about the right distance from the mouthpiece end.<sup>26</sup> Another similar fragment from Delos has a similar hole, about 1.5 mm (0.06 in.) in diameter – obviously much too small, and in the wrong position, to have been a fingerhole. The Reading aulos also has a slightly larger hole in the mouthpiece section above the bulb. It is difficult to say with any certainty whether these holes are in the right position to act as speakers, but as a speaker hole does not determine the pitch of the notes, but merely prevents a full pressure-wave from building up in its vicinity, its position is not critical.

Even if there were such a device on the ancient instruments, however, it cannot be compared with the speaker key on a modern clarinet. Almost invariably, it would be necessary for the player to alter the setting of the sleeves when changing register (unless he were playing a musical phrase immediately followed by the same phrase a twelfth higher or lower, which seems unlikely). It is much more credible that such changes would be made during pauses in the music. If, as Aristoxenos suggested, the total range of an aulos over both registers was more than three octaves, there must presumably have been a gap between them, unless the lower register covered a twelfth, which is hardly possible.

There is one other interesting passage which sheds a little light on the *syrinx*. In the treatise on music attributed to Plutarch<sup>27</sup> we are told of an aulos-player called Telephanes from Megara, who disapproved of the



*syringes* (plural) to such an extent that he would not allow the instrument-makers to fit them on his instruments (or on any instruments – the Greek is ambiguous) and for that reason he refused to take part in the musical competitions at the Pythian games. There are two possible interpretations of this. One is that he disapproved of the special ear-piercing effects which could be obtained by their use (perhaps during the ‘Pythian *nomos*’ to imitate the dying hisses of the serpent, see p. 5), regarding them as ‘gimmicky’. The other is that he was himself able to play the harmonics without them, and regarded them as a cheap trick by which inferior players could appear more skilful than they really were.

This brings us to the general question of range. The early, simple form of the instrument was bored to play in one of the old aulos scales – Dorian, Lydian or Phrygian. The compass of these scales is not known for certain, but it was probably about an octave or less (see Chapter 3). The scale system and the aulos key system presumably developed together and along the same lines, and by the time the Aristoxenian two-octave ‘complete system’ had been evolved (see p. 88), the aulos probably had a potential range of at least an octave and a half, not forgetting, of course, that at any one time only six of the possible notes would be available, all of them within the reach of the fingers and thumb. By this time the old scale-names had come to denote little more than key or pitch (again, see Chapter 3) and a new set of names for the aulos types came into use. There were apparently five of these, listed in descending order of pitch:

- (1) *parthenikos*, or ‘girl’ aulos, presumably ‘soprano’.
- (2) *paidikos*, or ‘boy’ aulos, presumably ‘treble’ – perhaps of about the same size and pitch range. At a guess, these were probably about 25–30 cm (10–12 in.) long, and would have a lowest note about a fourth or a fifth above middle c (about 356 Hz).
- (3) *kitharistērios*, or ‘aulos-to-go-with-the-kithara’. This was almost certainly the instrument occasionally shown being played with the kithara, and which presumably had about the same pitch range. It appears to have been about 35 cm long, and would have had a lowest note just below middle c (about 244 Hz).
- (4) *teleios*, or ‘complete’ aulos – either because it had the range of an adult male voice (*teleios*), or because it could play any selection of six consecutive notes from the ‘full’ system (*systema teleion*) of two octaves. The Pompeian instruments were probably of this type; the longest of them is about 54 cm (21 in.) which, allowing 3 cm (1.2 in.) for the reed, would have a lowest note around e flat below middle c (about 150 Hz) – roughly the lowest note of a modern B flat clarinet.
- (5) *hyperteleios*, or ‘super-complete’. This appears only in a few illustrations, the best being a wall-painting from Herculaneum, thought to be based on an earlier Greek painting of perhaps the third

century BC. (see Figure 8.14 on p. 199). The pipes appear to be about 90 cm (3 ft) long, which would give a lowest note around G, an octave and a fourth below middle c (about 95 Hz). However, to judge from the picture, the player is using a group of notes played from holes about two-thirds of the way down (i.e. from about d upwards); if he used the note from the whole pipe, which the Greeks called the *bombyx*, or ‘boomer’, it would have been a sort of pedal note a fifth lower.

In addition to the types of aulos named from the scale they were designed to play (Dorian, Phrygian, etc.) and those named from their range of pitch, there is a bewildering list of some 35 other types. Some were apparently named from a particular feature of their construction, such as the *hēmiopos* or ‘half-holed’ aulos. Ancient scholars explained this as meaning ‘half-size’, or ‘with half the usual number of holes’, taking the second element of the word to refer to fingerholes. But this is to strain the sense of the Greek, and it is much more likely to have meant ‘with half-size bore’ – perhaps a pipe with a ‘throat’ or diaphragm with a small central hole at the lower end, to make the tone softer and more mellow. If this is so, the type-name *hypotrētos* (‘not fully bored’) may have meant the same instrument, and a mysterious device called the *pantron*, which is referred to only once,<sup>28</sup> may have been a key or lever by which the full bore of the aulos could be opened up, and its tone made much louder and clearer. Another interesting type-name is the *magadis* aulos. Until recently it was thought that the *magadis* was a stringed instrument of the harp type, with perhaps as many as 20 strings, and that the technical term *magadizein* (to ‘magadize’), which meant to double a melody in octaves, was derived from the name of the instrument. Now most scholars agree that it was the other way round, and that *magadis* was a descriptive term meaning ‘playing in octaves’ (something like our ‘diapason’) and not the name of an instrument.<sup>29</sup> Some of the other names for types of aulos may in fact be names of compositions for aulos, and most of the rest are unintelligible.

The most vital and difficult question about the aulos has been left until the last. How were the two pipes of the aulos combined? Did they sound together, and if so, was it in unison, or in some kind of counterpoint, or in octaves, or twelfths? This question has been discussed at length by many scholars, but no firm or generally agreed conclusion has been reached. The question is greatly complicated by the fact that the techniques used by Roman tibia-players may not have been the same as those of the Greeks, and evidence from (say) the first century BC onwards may refer to contemporary Roman practice, or may be derived from a Greek source and refer to the Greek practice of two or three centuries earlier, and it may be very difficult indeed to decide which. A specific example of this problem



arises in connection with the 'Phrygian' aulos. To the Greeks, this apparently meant an instrument bored to play the Phrygian scale, but otherwise similar in design and appearance to the rest, while to the Romans it seems to have been a different type, with (perhaps) unequal pipes, one or both of them fitted with a horn bell. This question is discussed later, in Chapter 8.

The evidence on which we have to rely falls into four categories. The first, and by far the most valuable, is the pictorial evidence from vase-paintings. This dates from the mid-sixth century BC onwards, and covers a period of more than two centuries, over which there are a number of features which appear consistently, and must surely be significant. The literary evidence is much less satisfactory; in fact, there is no explicit statement about the piping techniques of the Classical period. The surviving instruments and fragments of instruments are of little help, since no two of them can be said with any certainty to have formed a pair.<sup>30</sup> So the one piece of evidence which could settle the question once and for all is denied to us. Finally, there is the evidence drawn from comparative musicology – from the way in which pairs of pipes have been played in folk-music of more recent times. This type of evidence is favoured by many historians of wind instruments, but seems to me to be very unreliable. It cannot possibly 'prove' anything about the ancient Greek practice. At best, it can only show that a given technique is possible; and, unless it is drawn from a musical culture which resembles that of the Greeks in the most important respects, it is of little value. This effectively rules out any non-European culture; and it would be difficult to find a folk-music tradition in present-day Europe which has not been profoundly changed over the intervening centuries.

In dealing with this very complex question, it seems best to begin with what is, in my opinion, the most credible theory, discussing the evidence which supports it and that which may tell against it, and assessing its implications for Greek music. The other theories which have been put forward will then be reviewed in turn, with discussion of the evidence offered in support of them, and of the serious objections which can be raised against them.

The pictorial evidence suggests that the two pipes of the aulos sounded together, and in unison. In the vast majority of pictures the pipes appear to be of equal length. One may appear to project further than the other, but this is almost invariably the artist's way of trying to indicate that it is nearer to the viewer – a crude attempt at perspective drawing. The player's hands are shown in exactly corresponding positions on the two pipes, and where fingers are shown raised, it is normal for the same ones to be raised on each pipe, indicating that the fingering position is the same. And finally, in the few illustrations which show the fingerholes uncovered, they appear to correspond in position on the two pipes, so as to have sounded

the same notes. However, there must have been a very good reason for using two pipes rather than one. The player had to prepare and manipulate two reeds, and most woodwind players would agree that one reed gives more than enough trouble. He also had to blow much harder, and had to control the embouchure on two reeds, using a region of the lips on each side which is less supple and less sensitive than the central region. Why then go to all this trouble, merely in order to play the same note on another pipe? The reason is that the two pipes together produce a totally different tone quality. The two notes are very nearly, but not exactly the same pitch, and this produces a beating or tremulant effect; a similar sound is made by the *vox humana* stop on a modern organ, which has two metal reeds for each note, one very slightly out of tune with the other. The degree of pitch difference, and hence the speed and intensity of the 'beats', could be controlled by a skilful player, and no doubt contributed to the mood or ethos of the music. The technique of 'separation' and 'putting together' of the two pipes (see p. 30 above) may have been used for this purpose. By contrast, the double pipe most commonly used in the Middle East today, the *zummarā*, has its pipes fixed together, and has single reeds which are not very effectively controlled by the embouchure. I have only encountered one illustration which is seriously inconsistent with this theory.<sup>31</sup> It shows a scene of Dionysiac revelry, with the unusual combination of aulos and kithara, both played by satyrs. The one playing the aulos is shown in profile, but the right-hand pipe, nearer to the observer, is actually shorter than the more distant one, and the right hand seems a good deal further down the pipe than the left (Figure 2a.14 p. 44).

Although the drawing is meticulous enough to show the little finger of each hand tucked under the pipe to support it while the thumb is taken off the thumbhole, it is still possible to see the hand position as a mistaken attempt at perspective, which may have been partly due to yet another odd feature. In accordance with the convention of black-figure painting, the flesh of female figures is painted white, but so also are the pipes of the aulos. Putting the hands in line would have created a confusing mess of black fingers and white pipes, which the artist may have wished to avoid.

Of the other theories which have been advanced on the use of the two pipes, four deserve mention.

- (1) It has been suggested that one pipe was a drone, sounding a single note throughout a piece of music. This is hardly a tenable theory. All the evidence cited above shows that both pipes had more than one fingerhole, and both were fingered at all times. It is scarcely credible that the fingers of one hand would be wasted in an unnecessary operation, limiting the 'chanter' or melody pipe to six notes, when other much better arrangements were possible. The word *bombyx*, which for the purposes of this theory was interpreted to mean 'drone',





Figure 2a.14 Aulos-player's hands not in line

in fact means the lowest note obtainable on the aulos, or any other bumbling or buzzing noise.

There is, however, another technique which involves a drone note, which might be reconciled more easily with the evidence. It is used on several folk-instruments with double pipes (e.g. the Sardinian *launeddas*), and is therefore favoured by those who rely on evidence from comparative musicology. The technical name for it is an 'articulated drone', and it works as follows. The two pipes have a range of (say) six notes each, the two lowest on one pipe overlapping with the two highest on the other (c' and d' in Figure 2a.15).

When the melody (I use the term loosely) rises above these notes, it is played on the higher pipe, the other one sustaining one of the overlapping notes as a drone; when it falls on one of the overlapping notes, it is played on both pipes in unison, and when it goes below those notes it is played on the lower pipe, while the higher one sustains the drone note. Anyone listening who could not see the player's fingering might think that he had a pipe with a range of ten notes and a drone pipe with two. The objection to this theory is that pipes designed to play in this technique are usually unequal in length, the difference being quite unmistakable, and this is not what the vase-paintings show. Even if we hold that the pipes were made equal for the sake of a symmetrical appearance, the player's hands ought not to be level on the two pipes. Apart from the awkward example discussed on p. 43, the evidence is against this.



Figure 2a.15 Two pipes playing with articulated drone

- (2) The theory offered in the older textbooks was that one of the pipes played the 'melody line' and the other played an 'accompaniment'. There is, in fact, some evidence to show that when two notes sounded together in harmony, the melody was the lower of the two, so perhaps 'descant' would be a better term. The main evidence in support of this theory comes from Varro, a Roman writer of the first century BC, and should, in my opinion, be disregarded as evidence for the Greek techniques. It is discussed in Chapter 8, in relation to the Roman musical practice. It is entirely reasonable to suggest that on occasion (at a cadence, for example, or at the end of a piece) the two pipes might sound a fifth apart, a fourth apart or an octave apart, these intervals being regarded as harmonious by the Greeks; but there is virtually no evidence for polyphony (in any real sense of the term) in Greek music.<sup>32</sup>
- (3) It has also been suggested that the two pipes did not sound together – that the player stopped one from speaking, either by tonguing the reed, or by some key device, and that the two pipes between them were thus able to play an extended scale. This, I believe, should be discounted on the grounds of improbability. A single pipe, fingered by both hands, is capable of a greater range of notes, because it can be held more easily, and there are more opportunities for cross-fingering. Also, as was said earlier, the difficulties of using two reeds would have been avoided if possible.
- (4) Finally, there is the theory that the two pipes played the same melody, an octave apart. This is open to the same basic objection as the articulated drone theory – that the pipes should not be of the same length (in fact, one should be twice the length of the other) or at any rate that the hands should not be level. This has been answered by the suggestion that the two pipes were of the same length, but that one of them was played in a higher register. However, as we have already seen, the aulos had a cylindrical bore, and the higher register, produced by the use of the *syrinx*, was not an octave but a twelfth above the lower register. This would have given a strange sound, which does not seem to have any parallel in other double-piping traditions. I am inclined to think that the octave effect was used at times, but that a special type of aulos, the *magadis aulos*, was designed



for the purpose. It is possible that this is the instrument mentioned by Herodotus, and called 'the female and male aulos', used to accompany the soldiers of Alyattes the king of Lydia on the march.<sup>33</sup> In Chapter 8 it will be argued that this may have been the ancestor of the 'unequal pipes' of Roman music, introduced via the Etruscans who, according to the ancient tradition, had Lydian connections.

2(b)

## KITHARA AND LYRE

The most important stringed instrument used by the Greeks was called *kithara* in Greek, and, since there is no obvious equivalent among modern instruments, will henceforward be called *kithara* in English. This is the normal practice among translators of the Classics, though many use the Latin spelling *cithara*.

There were two distinct basic forms of the *kithara*, the earlier one of which had a round base (Figure 2b.1).

This form appears very early in the pictorial evidence. It is shown in a painting on the Hagia Triada sarcophagus dating from the fourteenth century BC or earlier<sup>1</sup> and in geometric vase-paintings from the Greek mainland from the mid-eighth century BC onwards. As these vase-paintings are roughly contemporary with Homer, it is generally held that the stringed instrument played by the bards in his narrative was of this type. He uses two names for it: *kitharis*, an older form of the word *kithara* (also used by later poets who wish to sound archaic), and *phorminx*; his choice between the two seems to depend only on the rhythm of the

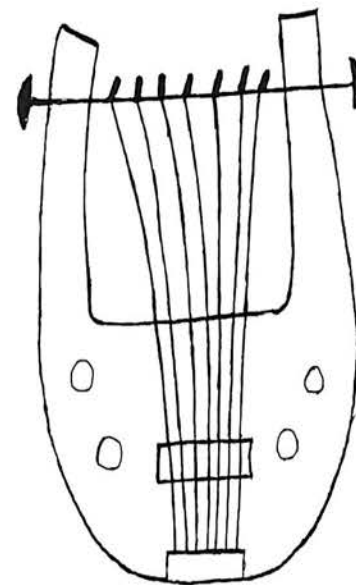


Figure 2b.1 Round-based kithara, seventh century BC



verse. As the instrument has the general appearance of a horseshoe, I propose to call it the 'horseshoe-kithara', though other names have been used.<sup>2</sup>

A great deal has been written about the earliest forms of this instrument, and its probable ancestry in similar, older instruments of the near East. The only important question as far as Greek music is concerned is whether there was a stage in its development when it had only four strings. The trouble is that, though some early pictures clearly show four strings, we cannot be certain whether this represents the reality, or whether the number of strings is limited by the artist's medium or technique. In vase-paintings the four lines representing the strings occupy most of the available space between the arms of the instrument, but are as thin as any in the picture. The same limitation applies to a few surviving miniature models in bronze – at this stage of the art, the strings could not have been made thinner. This problem is complicated still further by the fact that some of the earlier Mycenaean paintings are of a superior artistic quality, and show a more elaborate design of instrument, with more ornamentation than the later ones, and apparently as many as eight strings. The horseshoe kithara is the only one to appear before about 520 BC. After that, however, the flat-based type seems to take over as the standard instrument for the professional musician – indeed, for the great divine musician, Apollo himself.

The horseshoe type more or less disappears for a time, but then re-emerges in a different context – that of indoor, informal music-making in a relaxed atmosphere. Curiously enough, it is commonly shown hanging on the wall at the back of a scene, but not so often being played as part of an ensemble; it should therefore perhaps be viewed as a 'scene-symbol' rather than an actual instrument, comparable to the mirrors which indicate a lady's boudoir, or the gravestone which indicates a funeral context without necessarily being a physical part of it. In the meantime, it has undergone a slight change of shape, whereby the arms seem to be set a short distance from the outer edges of the curved base. Whether this is a change of design, or a more accurate drawing of the older shape, it is difficult to say. By this date it has seven strings, like the flat-based version (Figure 2b.2).

A few vase-paintings show a variant of this design which has a bar across the front of the strings, fixed to the arms each side. Its function is doubtful, but it may be significant that it appears to be about one-third of the vibrating length of the string above the bridge. If so, it might have been possible for the fingers of the left hand to use it as a fret by pressing the strings against it, and to play all the notes of the normal register a twelfth (that is, an octave and a fifth) higher. If, as I shall suggest later, the octave harmonic could also be sounded, this would greatly increase the range of notes (Figure 2b.3).

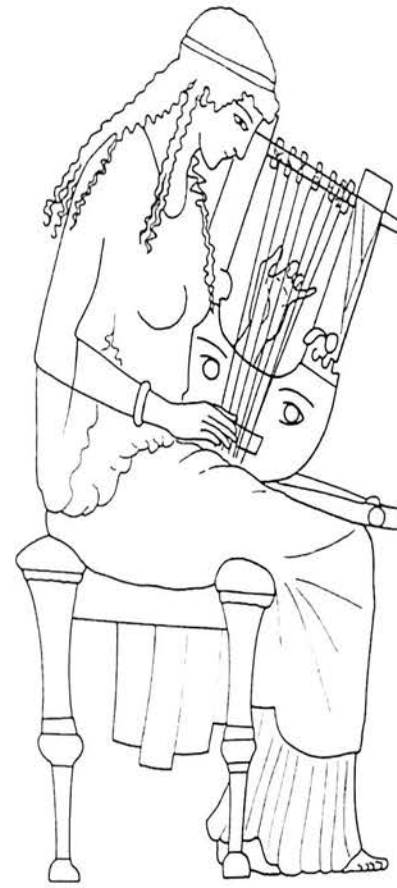


Figure 2b.2 Round-based kithara, fifth century BC

The flat-based kithara was the 'concert instrument' of the Classical Greek world, through antiquity until the late years of the western Roman empire. It was the instrument of the solo kitharist (*kitharistēs*), the kithara-singer (*kitharōdos*) and the accompanist for a *choros* in all its various functions. It first appears in vase-paintings about 520 BC, and the fact that a number of representations by various different artists show close

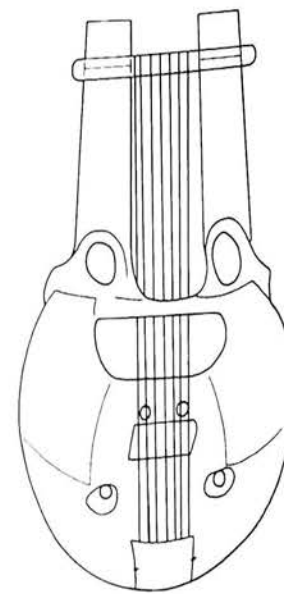


Figure 2b.3 Round-based kithara with 'cross-fret'



similarities suggests that the design was standardized (Figure 2b.4).

The flat-based kithara seems to have been made in five distinct parts. The soundbox (A), rather larger than that of the horseshoe kithara, has a flat bottom and straight sides which diverge up to a point about one-third of the height of the instrument. Instead of the wide, solid-looking arms of the older instrument, this type has two pointed extensions (B), which are sometimes shown as obviously jointed into the top of the body. Rising from the tops of these, which slope at an angle of about 30 degrees, there are two vertical posts (C), of about the same height as the body of the instrument. They extend well beyond the height required by the length of the strings – the cross-bar (D) runs between them about half-way up. There appears to be a curiously weak point where the body extensions join the vertical posts, and a quite elaborate wooden structure (E) is inserted between the top of the body and the bases of the vertical posts, presumably to reinforce the structure as a whole. The central part of this wooden structure is in the form of a horseshoe turned on its side (F); this is braced from the top of the body by a curving strut (G), and a round or mushroom-shaped element (H) is wedged between the top of the 'horseshoe' and the base of the vertical post. It seems hardly credible that this elaborate design was merely decorative. There is no inherent reason why the body of this type of kithara should not have extended upwards into two wide arms, exactly as the early horseshoe type had done, and as the 'Italiote' kithara (see p. 168) did later. We must assume, therefore, that it had some acoustical function; but it is difficult to see what that might have been. It has been suggested that the instrument was deliberately designed to bend at the apparent weak point when extra stress was applied, and then to resume its former shape exactly when the extra

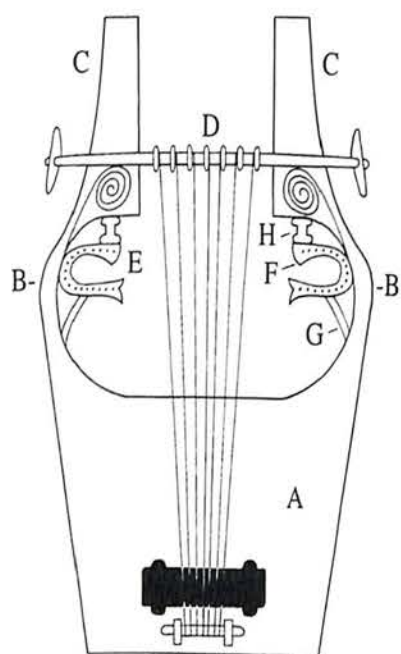


Figure 2b.4 Flat-based kithara

stress was removed. This will be discussed later, in connection with the playing technique (see p. 60 below).

In some of the earliest pictures (of Mycenaean date) the strings are bunched together at the lower end, and diverge towards the crossbar at the top, but in the classical period they are shown exactly parallel. They were anchored at the bottom end to a 'string-stretcher' (*chordotonon*) which apparently consisted of two vertical pieces with a round metal rod stretching across between them. In contrast to the bridge, this part is drawn in outline, and not blocked in in black by the red-figure vase-painters, which suggests that it was metal – not surprising, since it had to take the tension of all seven strings.<sup>3</sup> The exact shape of the bridge cannot be determined with any certainty from the two-dimensional drawings, but it seems to have been remarkably large. Its width from side to side was obviously determined by the spacing of the strings, but from top to bottom it appears to have been at least 5 cm (more than 2 inches) as compared with the bridge of a modern guitar, which is about 1 cm, and usually has a sharp metal ridge across its centre. It is not possible to say whether the top surface of the bridge on which the strings pressed had a clearly-defined ridge, or a gentle curvature. This might affect the tone of the vibrating string to some extent, but would certainly not cause the rattling effect of the Indian *sitar* strings, which are steel wires. It has been suggested that the vertical lines at each end of the bridge in some illustrations represent legs which stand on the soundboard, and support the bridge itself a short distance above it, looking like a miniature coffee-table when seen from the side. In other pictures the bridge seems to rest on its own top and bottom edges, and curve up like an arch between them.

A further problem, created by the preference of the vase-painters for painting a 'full frontal' kithara, is that we cannot be sure whether the front of the instrument was straight and flat, or concave. Certainly, there are some sculptures which show a very marked vertical curvature, but these belong to the Hellenistic period at the very earliest (third to second century BC) and most of them are Roman. Another feature which can be seen in some illustrations is a vertical ridge down the centre of the back, which makes the base, when viewed from below, look triangular. This feature may well go back to the earliest instruments.<sup>4</sup>

The strings ran over the bridge and up to the crossbar, which the Greeks called the 'yoke' (*zygon*). Here we come to one of the most problematic areas – the tuning mechanism, which was apparently the same for the lyre and the kithara. There is no doubt whatsoever that it was situated on the crossbar, since a number of illustrations show a player tuning the instrument, usually plucking the string with the left hand while making some adjustment with the right hand on the crossbar. But here, instead of a consistent and recognizable pattern, the vase-painters



show a variety of different arrangements, some with round black tabs, some with round dots above and below the bar, some with the string in line with the tab and others with the string to one side of it. What are we to make of them?

There are two general considerations which must be borne in mind. First, it is surely unwise to assume that there was only one method of tensioning the strings, and to insist that all the illustrations must be reconciled with one and the same device. Since the subtle intonations of Greek music required very accurate tuning, it is likely that the mechanism was developed and improved over a period of three or four centuries, and its appearance may have been changed in the process. Second, when studying the vase-paintings we have to deal with an artist's impression, not a technical draughtsman's diagram. Just as an artist, for his own reasons, might have drawn the aulos to look more elegant than it really was, so the tuning mechanism of the kithara may appear in illustrations to have been much tidier than it was in real life.

As it happens, there is a mention of the tuning device, which was called *kollops* in Greek, as early as the seventh century BC, in the *Odyssey* of Homer.<sup>5</sup> Odysseus is described as having strung his bow 'as easily as a skilled kitharist and singer stretches a string on to (or around) a new *kollops*', which tells us at least that it was something which might wear out and need replacement. It also tells us (in the next line) that the string was made from twisted sheep-gut, which seems to have been the material most commonly used on Greek instruments. Cord made from flax fibres (*linon*) was a possible alternative, and so also was animal sinew (see p. 141). Commentators from much later times<sup>6</sup> give us the information that a *kollops* was a strip of hide cut from the neck of an ox. It has been suggested that some vase-paintings show this. The tabs which appear above and below the crossbar represent the ends of a tongue-like strip, bound to the crossbar by a criss-cross set of thongs, so that it could be pulled up to sharpen the pitch, or downwards to flatten it. But I find it difficult to believe that the hide would not stretch after adjustment, unless it was hardened by some process. There is also the problem that leather (whether cured or raw) extends and contracts with changes in humidity, and this would put the tuning out very badly.

Another explanation of the tuning mechanism depends on an expanded version of a commentator on Homer, according to which the strips of leather from the neck of an ox 'still had the fat adhering to them'. This suggests that the string was somehow interleaved with the greasy strip of hide, and both were rolled around the crossbar. Comparative musicologists assure us that this method is used on the *kissar* (a lyre-type instrument from Ethiopia). It is difficult to see how an accurate tuning could be achieved, but apparently it is possible. A similar method, using strips of cloth instead of leather, has been successfully used on a

reconstruction of the Greek lyre by Dr Psaroudakis. With the leather strips there is the added problem that the fat would eventually dry out, and (presumably) allow the *kollops* to slip; perhaps that is why the Homeric bards, if they really used this method of tuning, might have had to fit a new one from time to time.

Another suggested explanation of the word *kollops* is based on a passage in Aristotle's *Mechanics*.<sup>7</sup> Here a detailed analogy is drawn between the *kollops* (which apparently rotates around the crossbar of a kithara) and a form of capstan, called a 'donkey' (*onos*). The point of the comparison is that in each device the force required to turn it depends on the length of the lever or handle – the longer the handle, the easier it is to turn. In fact, the text might possibly be taken to mean that kitharists used an extension arm of some kind to help in turning the *kollopes*, which might have been wooden collars of some kind. They must have fitted tightly enough around the crossbar to prevent slipping, and may perhaps have been rubbed with resin. A slight problem is that the handles of the *kollopes* would normally be at various different heights when the strings were tuned, whereas they appear on one level in the vase-paintings; but this may be artistic licence. A relief sculpture on the 'Ludovisi Throne' shows a lyre-player (who would have used the same tuning mechanism) with what look like wooden collars on the crossbar, and they are not neatly in line. Finally, the explanation derives some support from rude popular slang. The comic poets of the late fifth and early fourth century BC use the word *kollops* and the derived verb *kollopeuein* to refer to the homosexual activities of young aspiring politicians, 'running around and making friends', as the ancient dictionaries politely put it.<sup>8</sup>

Another interpretation of the tuning mechanism has been put forward by Dr Helen Roberts.<sup>9</sup> The word *kollops* is sometimes confused by ancient writers with the word *kollabos*, which apparently meant a kind of bread roll.<sup>10</sup> This may be a simple confusion of similar-sounding words, but it may have more significance. The *kollopes* may have been short wooden rods, shaped roughly like a baguette, about 8–10 cm (3–4 inches) long. They could have been placed against the crossbar, with the top end of each string anchored to the middle of its rod, and wound around above and below the crossbar in a particular way, so that turning the *kollops* would adjust the tension.

This explanation is commended by the fact that it has been used by Dr Roberts on reconstructed models of the kithara and lyre, and was found to work effectively. Once again, there is the problem that the rods should be in various different positions, and not in a neat line as they usually appear, but once again, artistic licence can be invoked.

The crossbar runs across between the arms, some distance below their tops, and the vase-painters seem quite concerned to show that it was a separate element, jointed or slotted in some way on to the arms as though



it was made to be removable. I have previously thought that it fitted into slots on the front faces of the arms, but after a meticulous examination of a section of the Parthenon frieze in the Acropolis Museum Dr Psaroudakis concluded that the arms actually pass through rectangular slots in the crossbar. I have since examined more carefully the kithara shown in a black-figure vase painting<sup>11</sup> which gives (most unusually) a rear view. The crossbar cuts across the backs of the arms of the instrument exactly as it does across the front in the usual view. This would give a firm fixing, and would enable the tuning mechanism to be rotated around the crossbar without any danger of the bar itself twisting. It would also, since the arms are straight and parallel, allow the crossbar to be moved a short distance up or down the arms, which might be useful (assuming that the strings had enough spare length) for re-tuning the whole instrument to play in a higher or lower key. It is certain, however, that the spirals which are often shown on the arms below the crossbar were purely decorative, and could not have represented any sort of device for moving the crossbar up and down.<sup>12</sup>

The two vertical lines near the ends of the crossbar represent two round discs, which may have had the effect of transmitting to the air vibrations of very high pitch, which the main mass of the instrument would tend to absorb owing to its inertia. The fact that they are discs can only be inferred from much later illustrations in sculpture, since the vase-painters almost invariably show the front face of the instrument. They were probably made of metal for high speed of sound transmission; they correspond to the very small cones in modern hi-fi loudspeakers, which transmit the very high audio frequencies.

In the vast majority of vase-paintings of the Classical period the kithara has seven strings, and the old names given to the strings were regularly used by the musical theorists for the notes of the basic scale; they are in fact feminine adjectives, with the word for string (*chordē*) understood. Some useful information can be gleaned from them.

1	2	3	4	5	6	7
Hypatē	Parhypatē	Lichanos	Mesē	Tritē	Paranētē	Nētē

The string nearest to the player (i.e. on the left in frontal pictures, which never show a left-handed player) was called *hypatē* in Greek. This means 'highest', or 'first', but the string of this name sounded the lowest note, which is slightly confusing. The reason is that the Greek words for 'high' and 'low' never had any reference to pitch. The Greek word for high-pitched is *oxy*, meaning 'acid' or 'sharp' (hence our use of that word for a note a semitone higher) and the word for 'low-pitched' is *bary*,

meaning 'heavy'. (By the way, why is it 'flat' in English?) So the word *hypatē* means the 'first' string, played with the left thumb which, incidentally, is also called the 'highest' of the fingers. The meaning 'highest' is more obviously appropriate for the corresponding string of the lyre or *barbitos* (see below) which was often held sloping away from the player. A modern guitar preserves the same arrangement – the uppermost string is the lowest in pitch. Conversely, the string at the far end from the player was called *nētē*, meaning 'last' or 'lowest', and sounded the highest note. Two more strings were named in relation to these – *parhypatē* meaning 'next to *hypatē*' and *paranētē*, 'next to *nētē*'.<sup>13</sup> The central string of the seven, logically enough, was called *mesē*, the 'middle'. The names of the remaining two are interesting. The third one from the player, between *parhypatē* and *mesē*, was called *lichanos* which, despite its appearance, is also a feminine adjective – the 'index-finger string'. It could, of course, be played with the index finger of either hand. The string between *mesē* and *paranētē* was called the 'third' string (*tritē*), one of a number of indications that the Greeks normally counted the notes in descending order of pitch.

Although the techniques of holding and playing the kithara are copiously illustrated in the Classical period, it is not easy to give a detailed account of them. The reason is that a playing technique is essentially a set of movements, whereas the vase-paintings show static poses. What is more, the artist chooses a particular point in the player's movements for his own reasons – to give an impression of dramatic flourish, perhaps, or languid elegance, or soulful inspiration. There may, in fact, be very few pictures which make an honest attempt to show what a kitharist in action really looked like. However, there are some certainties. Both hands were used, although the movements of the left hand were limited by a sling, which passed around the left wrist and around the far arm of the instrument, and was used to hold the kithara against the player's left shoulder and chest. This sling was made from cloth, and sometimes had ornamental tassels (Figure 2b.5).

The player is almost invariably shown standing upright, unlike the players of the lyre and *barbitos*, who may be shown stooping or seated. Despite the load on the left hand, its fingers and thumb were apparently able to reach, pluck or damp the strings as required. The nomenclature of the strings suggests that the thumb was used for the nearest string (*hypatē*), the index finger for the third string (*lichanos*), the middle finger for *mesē* and the third finger for the fifth string. The little finger would obviously be used for the seventh string (*nētē*), and probably for *paranētē* also. The thumb is sometimes shown bent into the palm of the hand, suggesting that it could reach any of the first four strings. The right hand is normally shown holding a plectrum, which looks rather like a teaspoon, and is attached to the kithara (usually at the base) by a cord about 2–3 ft (60–90 cm) long. The obvious explanation of this is that the plectrum



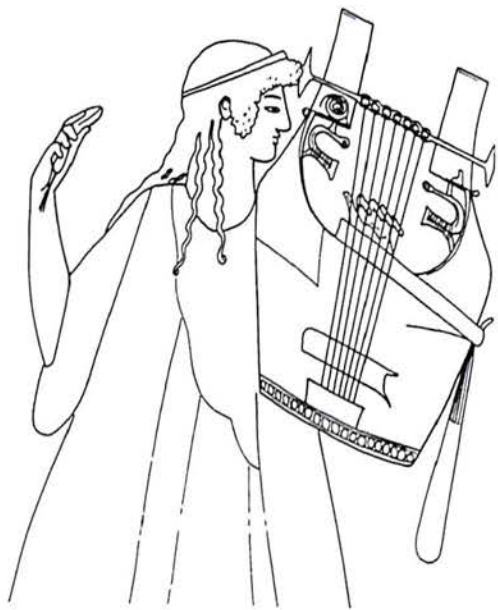


Figure 2b.5 Support sling on kithara

might have to be dropped while the fingers of the right hand were used to pluck the strings, but when it was needed again it could be rapidly retrieved. These two methods of playing were distinguished by two different words in Greek – *krouein*, to 'strike' (with the plectrum), and *psallein*, to 'pluck' (with the finger). We know from the literary sources that the plectrum was normally made of animal horn. There is a hint in the treatise on acoustics ascribed to Aristotle (see Chapter 5, pp. 140–1) that kithara-players sometimes used the plectrum very close to the bridge, in order to obtain a harsh, penetrating sound with strong harmonics. Modern string players achieve the same effect by bowing *sul ponticello*. The two playing techniques would obviously produce two different tone qualities – the plectrum a clear, loud, brilliant sound and the fingers (of either hand) a softer tone, with fewer of the high-pitched overtones. Since the majority of kithara-players were singers who accompanied themselves on their instruments, it would be natural to assume that the fingers were used for the accompaniment, which would for most of the time be in unison with the voice, or doubling at the octave. The notes played with the plectrum would probably be loud enough to interfere with the voice, and would be used mainly for introductory passages (called 'preludes', *anabolai* in Greek) or link-passages between sections of a work.

One difficult problem posed by the vase-paintings is that the favourite position for a player using the plectrum is 'at the follow-through', with the plectrum high in the air to the right of the instrument, and the playing arm almost straight. Should this be taken to mean that the plectrum was dragged across all the strings at each stroke? If so, it must be assumed that the left hand damped out all the strings except the one which was required to sound; and though there are a few vase-paintings which apparently show this, there are some which show several strings free and undamped.

Though the technique is well illustrated in other musical cultures, and therefore attributed to the Greeks by comparative musicologists, it seems rather clumsy, and it is difficult to see what quality it would add to the sound, apart from a rather tuneless jangling.<sup>14</sup> The vase-painters' favourite position may have been chosen simply for dramatic effect, or to reveal fully the instrument itself and the player's left hand.

Another piece of evidence has been adduced to suggest strumming. In a parody of Aeschylus' musical style in Aristophanes' *Frogs*, Euripides offers two specimens of *choros* song. The first is introduced by a short prelude on the aulos (played by the theatre piper)<sup>15</sup> and has a repeating refrain. This is quite in accordance with Aeschylus' practice in his tragic choruses. In the second specimen Euripides intersperses the lines with the words *tophlattotbrat*, *tophlattotbratt*. There is a problem here: the lines are in fact garbled reminiscences of Aeschylus' *Agamemnon* and other plays (which would have been sung by a *choros* with aulos accompaniment) but Euripides says they are 'worked up from kithara-singers' compositions'. This is usually taken to mean that Euripides is parodying a kithara-singer and, having no kithara on which to accompany himself, imitating its sounds vocally ('plink-plank-plonk', so to speak). But we must beware of the English dimension here. If the words are pronounced 'tofflatto-thr-r-r-ratt' they do indeed suggest strumming, but it is now accepted that the Greeks pronounced the aspirates as two separate sounds, 'top-hlattot-hrat', and there is no good evidence for a Scottish-style trilling of the 'r'. Incidentally, Dionysos, the patron god of the drama, who has a prominent (though not very dignified) role in the play, compares this song to a 'work-song he picked up from Marathon or somewhere', not to a kithara-singer's work.<sup>16</sup> Does this suggest an element of folk-music in Aeschylus' compositions?

We also know of a technical term, *katalēpsis*, used in relation to kithara-players. The word means 'grip' or 'hold', and its effect is described as 'preventing the prolongation of the note'. The exact meaning of the passage is obscure, but it appears that the string could be struck with the plectrum and then almost immediately damped out, making a sound rather like a violin played *pizzicato*.<sup>17</sup>

This brings us to the question of the tuning of the strings and the range of the instrument, both of which have been the subject of much controversy. The basic problem is that the kithara is shown throughout the fifth century BC with seven strings (in a few exceptional cases, eight), but the literary sources, in particular Plato, suggest that kitharists played florid and elaborate passages,<sup>18</sup> which hardly seems possible if only the seven open notes were used. Also, since it is almost certain that the seven strings were tuned to a continuous scale, its range is likely to have been about an octave, or a ninth at the most. The material from which the strings were normally made – sheep-gut – also imposes some limitations



on the pitch range. The strings were all of the same length – about 30–40 cm (12–16 in.) – and it would have been difficult to create enough tension in a thin string of that length, even assuming that the tuning mechanism would stand it, to raise its pitch higher than about an octave above middle c (say about 500 Hz). At the lower end, a thicker string cannot be made to give a loud or sustained note unless its tension is above a certain minimum, which would probably have given a note in the region of f below middle c (about 170 Hz). The terminology used for the *harmoniai* (see Chapter 3), which described the high-pitched scales as ‘tight’ or ‘tense’ (*syntonōterai*) and those of lower pitch as ‘relaxed’ or ‘slack’ (*aneimenai*), if it is to be taken literally, suggests that the general location of the notes was within the range of about a twelfth (f to a’).

A number of scholars have offered theories which claim to explain how the kitharist might have obtained more than the seven open notes from the seven strings of his instrument. One of them has been effectively refuted, but it has found its way into some of the textbooks and encyclopaedias, and must therefore be discussed. It was put forward in the 1920s by Curt Sachs,<sup>19</sup> and was largely based on a phenomenon to be seen in the instrumental notation, as preserved by Alypius (for more details, and the true explanation, see Chapter 9). There are a number of groups of three notes, separated by two small intervals, which are represented in this notation by the same symbol in three different positions, ‘normal’ for the lowest note, ‘lying on its back’ for the middle one, and ‘reversed’ for the highest. Sachs observed that the notes corresponding to the ‘normal position’ symbols formed a pentatonic scale, such as can be obtained by playing the black notes on a modern keyboard instrument, with two other notes of variable pitch among them. He therefore argued that the Greek lyre and kithara were tuned to a scale of this type. The fact that the symbols were used in three positions indicated, he thought, a system of fingering whereby two additional notes could be obtained from each string, the ‘second position’ (denoted by the symbol on its back) being used to indicate the open-string pitch raised by a small interval, and the ‘third position’ (symbol reversed) to indicate a further rise of about the same interval. In other words, this notation is in the form of a tablature, which gives direct instructions to the player on the fingering positions. According to this theory, the seven strings of the kithara would have a range of more than an octave (despite its name, the pentatonic octave scale has six notes) and offer the player a possible choice of 21 notes.

The theory was meticulously examined by Winnington-Ingram.<sup>20</sup> He pointed out a number of illogicalities which cast grave doubt on Sachs’ argument. But the argument really founders on the question of how the strings were manipulated to produce the higher notes. There is not one single illustration which could be claimed reliably to show the operation. Sachs supposed that the left hand was used to stop the string (perhaps

increasing its tension at the same time); but that could hardly be done except by reaching up and over the crossbar, to press on the string a short distance down its length. It is pretty clear that almost all the illustrations which show the left hand in that area are in fact concerned with the manipulation of the *kollopes* in order to tune the instrument, and not with the actual playing. Also, since there was no fingerboard for the string to be pressed against, the notes obtained by this method must have had a less satisfactory tone, and less reliable pitch, than those from the open strings. They too must have sounded rather like a violin played *pizzicato*.

An alternative solution was offered by O. Gombosi.<sup>21</sup> He suggested that the pitch of any string could be raised by using the plectrum to press on the non-sounding portion between the bridge and the tailpiece, and thus increase the tension, a technique which can be paralleled from the Japanese *koto*. But this also is unsatisfactory. It means that only the left hand could play the sharpened notes, the right hand (and the plectrum) being limited to the open strings. And, once again, reliable pictorial evidence is completely lacking.

Yet another attempt was made by Ingemar Düring to suggest how the number of notes obtainable on a seven-stringed kithara might have been increased.<sup>22</sup> The comic poet Pherecrates, who was roughly contemporary with Aristophanes in the late fifth century BC, wrote a highly amusing (if rather rude) comedy called *Chiron*, of which a short fragment survives. It clearly dealt with musical trends in the second half of the century, ‘Music’ being personified as a woman who has suffered a series of indecent assaults, and the various composers’ innovations being described in terms which could have a musical or a sexual significance. The one in question here is Phrynis, who is accused of ‘inserting his own special *strobilos*-thingy, and bending and twisting me until I was completely undone; and he had twelve *harmoniai* on five strings’. The word *strobilos* has the basic meaning ‘twister’, and can signify a whirlwind or eddy; hence it was taken by earlier scholars to be a musical term meaning ‘turn’ or ‘excursion’. Düring took it to refer to a mechanical device on the kithara, which functioned in the same sort of way as the double action on a modern harp, raising the pitch of some of the strings by a small amount, and thus enabling the player to obtain ‘twelve scales from five strings’. Incidentally, the passage makes much better sense if, as Düring suggested, the number five is amended to seven. But *strobilos* could also mean a spinning-top or a pine-cone which, in conjunction with the word ‘insert’ would sound suggestive to the more schoolboyish minds in the audience. Also, the expression ‘twelve scales’ is in itself suspect; two other composers are accused of employing twelve strings on their instruments, and (bearing in mind the style and spirit of the passage) the number twelve might well have been pornographically suggestive.<sup>23</sup> Perhaps it would be safer to treat this item of evidence as a comic poet’s extravagance. In any



case, Düring's hypothesis depends on assigning a technical meaning to a single word in one context, and there is no reliable pictorial evidence to support this hypothesis.

A totally different theory has more recently been advanced by Bo Lawergren.<sup>24</sup> He suggests that the rather peculiar design of the kithara, which we have already examined, was intended to make the whole structure elastic. One or more of the strings could be pressed by the thumb of the left hand, so as to increase the tension in those strings and compress the whole frame of the instrument. This would reduce the tension in the remaining strings and lower their pitch. This is an attractive hypothesis, and can be supported from some pictorial evidence, but there are a number of difficulties involved.

First, there would be a serious danger that the string or strings used to compress the frame might be stretched, and not return to their original pitch.

Second, they must have been pressed against some resistance, either the sling (i.e. away from the player) or the shoulder (towards the player). It would be difficult to apply the right pressure to more than one string.

Third, the most natural way for the arms to bend, given the structures supporting them, would be inwards; but the crossbar would prevent them from doing this. Moreover, the apparent thinness of the crossbar suggests that it would bend more readily than the more substantial parts of the body.

Fourth, this theory cannot easily be reconciled with the evidence of the instrumental notation, which Sachs regarded as very important. The 'normal' position of the symbol denotes the lowest of the three notes, and the 'modified' positions indicate notes which are sharpened to a higher pitch. According to Lawergren's theory, the modified notes would have a lower pitch. My own explanation of the notation, which I believe to be correct, is that it refers to the aulos, and not to a stringed instrument at all (see pp. 207–9).

Fifth, since this technique depends specifically on the design of the kithara, it could not have been used on the lyre or the *barbitos* (see p. 61). It is true that professionals usually played the kithara, and that its playing techniques required more skill, but it is difficult to imagine that ambitious amateurs would be satisfied with a very restricted range of notes on the other instruments.

In view of these difficulties, it seems wise to regard the theory as 'not proven', though we should keep an open mind about it.

Finally, one technique should be examined which could have extended the range of the kithara and of the lyre and *barbitos*, which has been proved to be workable by experiments, and which may be shown in some vase-paintings. It was called 'division' (*dialēpsis* in Greek), and involved the production of harmonics in much the same way as they are produced

by a modern harpist. A finger of the left hand (the kitharist could use any finger) was allowed to rest lightly on the central point of the string, and was removed immediately after the string had been struck by the plectrum. This causes the two halves of the string to vibrate, each at twice the frequency of the open note, thus sounding an octave higher. My own experiments on a monochord, and those of Dr Helen Roberts on reconstructions of the ancient instruments (see note 3) have shown that the tone quality of these harmonics is almost as good as that of the open string, unlike that produced by stopping. Here, then, is a technique which could have doubled the range of the kithara, enabling it to play a scale of fourteen notes over a range of two octaves or more. It may also be significant that above a certain pitch both notation systems use octave marks (see p. 212), a feature which may have been added to the basic system when the technique of *dialēpsis* became popular.

Among the woodwind instruments, the aulos was clearly the king, and no other instrument had anything like its popularity or range of use. But there were two other stringed instruments which almost rivalled the kithara in popularity – the lyre and *barbitos*, two instruments which were, in effect, the alto and tenor versions of the same instrument. Here we meet an interesting phenomenon. They differed from the kithara in size and loudness of tone, but apparently had much the same range of pitch, and were played with similar techniques. The social attitudes towards them, however, were in sharp contrast. A kithara-player (*kitharistēs*) was almost invariably a professional musician who dressed in a florid costume when performing at public ceremonies; many kithara-players were also teachers of music, and though they naturally played a lyre when teaching their pupils to do so, they were none the less called 'kitharists'.<sup>25</sup> The proper instrument for the amateur – that is, for the free-born man who did not earn his living by playing – was the lyre or *barbitos*.

In many respects the lyre-type and the kithara-type instruments were very similar. The essential difference was that the soundbox and frame of the kithara formed a single structure, all made of the same material, whereas the lyre had a soundbox made from tortoiseshell and animal hide, with wooden arms jointed into it. So important was the choice of this material for the soundbox that the words for 'tortoise' (*chelys* in Greek and *testudo* in Latin) were regularly used as poetic alternatives for 'lyre' (*lyra* in both Greek and Latin).

Our evidence for the lyre is copious, and extends over a long period. The earliest representation in a vase-painting dates from about 700 BC, and there is a very useful piece of literary evidence in the Homeric Hymn to Hermes, in which the poet gives an account of the invention of the instrument by the infant god. That poem is usually dated to the early sixth century BC at the very latest. The type of tortoise used in the making of lyres was not the familiar type kept nowadays as pets, but a larger





Figure 2b.6 Lyre (front view)



Figure 2b.7 Tortoiseshell body of lyre

variety called *testudo marginata*, which when fully grown may be as long as 10–12 ins (26–30 cm). It is native to Greece, but rarely found in other places. This has been used as evidence that the instrument originated in Greece, and was not imported. It also fits the evidence (such as it is) of the myth, which placed the birth of Hermes and his invention of the lyre in Arcadia, in the central Peloponnese (see p. 161).

Though couched in poetic language, the account of Hermes' achievement can be interpreted with some confidence. He first killed the tortoise and scooped the flesh out of its shell. Then he 'cut reeds to the correct length and fitted them inside' – an obscure operation to which we

must return later. He then 'stretched ox-hide around it by his ingenuity, and inserted arms and jointed a yoke on to both of them, and then stretched seven guts of female sheep on it'. From this it is quite clear that the ox-hide formed the sounding-board on which the bridge stood, while the tortoiseshell acted as a hollow resonator behind it. The use of animal hide for this purpose is common in primitive stringed instruments, and survives in many primitive cultures today. But there is a serious problem involved here. The shape of the underside of a tortoise is a plain oval, and if the ox-hide was 'stretched over' it, the sound-box should appear oval when viewed from the front. But although some early and crudely-drawn illustrations show this shape, the characteristic picture in fifth-century vase-paintings, which are very carefully drawn, is rather different (Figure 2b8).

The most natural way to interpret the poet's phrase 'inserted the arms' would be to suppose that the two curved lengths of wood passed through the recesses in the rim of the shell where the animal's hind legs had been (the shell was probably used upside-down, with the 'head' end at the bottom), and extended to the rim at the base, where they were probably jointed together. This would ensure that they, and not the tortoiseshell, bore the stress caused by the tension in the strings.<sup>26</sup>

However, the lyre body in the classical vase-paintings has 'wings' or 'ears' towards the top, and the arms appear to be fixed to them, and to extend no further down the front of the instrument.

This leads me to suggest that these pictures represent a change in the construction, involving the use of a wooden frame, shaped on the outside as it appears in the vase-paintings, with the hide stretched over the front, but with an oval hole inside, into which the tortoiseshell was fixed at the back. The arms could have been fixed on the front surface by means of

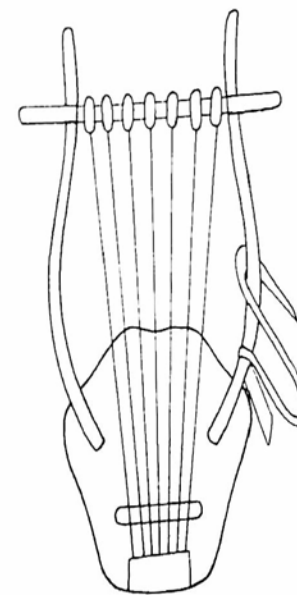


Figure 2b.8 Shape of lyre sounding-board



dowels. This arrangement would take all the stress off the tortoiseshell itself, and transfer it to the frame. It may be objected that such a frame would greatly increase the weight of the instrument, and it must be admitted that some pictures show players waving a lyre about with one hand in a way that implies a very light instrument, but I am not sure that the objection is decisive.

In the illustrations of the lyre we are faced with the same problem as with the kithara. They are, almost without exception, frontal views, and it is impossible to tell whether the arms were bowed in one dimension only, as shown in the flat plane of the illustrations, or whether they also curved forwards towards the viewer. If they did, the vase-painter would have had no possible way of showing it except in a side-view or three-quarter view. As it happens, there is one such illustration on a 'white-ground lekythos' dating from the middle of the fifth century BC.<sup>27</sup> There is some controversy over the interpretation of this picture. At one time I was convinced that it was not a lyre, but after having taught Greek vase-painting for some years, and having come to respect the perspective skills of the painters in the 'white-ground' technique, I now think that it is. The fact that the arms (the far one is faintly visible) appear to be bowed has been taken by some (especially West) to indicate a bowed or arched harp; but the strings of that instrument are at various distances from the sounding-board, and would all be clearly visible, whereas here the artist has shown just enough to indicate that there are more than one. The cross-bar is seen end-on – something which a red-figure vase painter would find difficult to show – and the arms extend beyond and above it, while at the bottom there is quite unmistakably a bridge and tailpiece, both of which are inappropriate for a harp.

There is another important piece of evidence which suggests that the arms of the lyre were bent both inwards and forwards. The philosopher Herakleitos, renowned for his obscurity, spoke of the unity of all things in the world as 'a *harmonia* of contrary tensions, like that of a bow or a lyre'.<sup>28</sup> He has just said that 'by pulling itself apart, it pulls itself together'. This analogy with the lyre (interesting that he should use the word *harmonia*) would be much more effective if the arms of the lyre appeared to be 'bowed' and in tension themselves.

The Homeric hymn tells of Hermes 'cutting reeds to the correct length and fitting them inside (or across) the shell'. There are also a few allusions in fifth-century literature to something called a 'reed under the lyre', and a phrase used by Sophocles suggests that 'taking away the reed from under someone's lyre' was an expression roughly equivalent to 'taking the ground from under his feet'.<sup>29</sup> The first explanation which immediately suggests itself is that these lengths of reed were sound-posts, propped against the tortoiseshell body at the back, and under the ends of the bridge to prevent it from depressing the surface of the hide sounding-board. But

this is not acceptable, because they are said to have been put in place before the arms were inserted or the hide fixed on the front. It is better to assume that they were some kind of reinforcement for the tortoiseshell, placed horizontally and vertically across to prevent it from distorting when under stress.

The arms of the lyre (the Greek word was *pēchys*, which strictly means 'forearm') have a fairly standard and simple shape, being curved symmetrically. There is one significant variation; some early pictures show S-shaped arms which taper to a point. This probably represents an archaic design in which large animal horns were used for the arms.

In most other respects the lyre seems to have been closely similar to the kithara. The fixing of the crossbar may have been the same (it is drawn in the same way) but there is the problem in the lyre that the arms are not parallel at their top ends, and the crossbar could not have been slid over them. The tuning mechanism appears to be the same, and the lyre regularly has seven strings. The techniques of playing also appear similar, both hands being used. However, because the lyre was much smaller and lighter, it could be played standing or seated, and though a sling around the left wrist was used to support it, it was not necessary to hold the instrument upright. In many pictures it is shown sloping away from the player at an angle of 45 degrees or even more (Figure 2b.9). It was altogether a less exacting and more comfortable instrument.

It is difficult to assess the pitch range of the lyre with much confidence. Its structure was not strong, so the maximum tension allowable in the



Figure 2b.9 Seated lyre-players (teacher and pupil)



strings could not have been high. A reasonable guess would be an octave somewhere around a–a', about 216–432 Hz.

The version of the lyre which had longer strings and a lower range of pitch was called the *barbitos* (sometimes *barbiton*). It is found in a lot of the contexts in which the lyre is seen, and a few others which are specific to it. The regular instrument for musical instruction in school scenes is the lyre, and the *barbitos* is not to be found there; however, it is more common than the lyre in scenes of revelry, such as the *kōmos*, or band of revellers going home from a party, or going from one party to the next – a favourite subject with the vase-painters. It is also, rather surprisingly, often played by 'real' satyrs in Dionysiac revels (as opposed to actors dressed for satyr-plays, see p. 22). The 'solo lyric' poets Sappho and Alkaios are shown playing the *barbitos* in Figure 1.8 on p. 11. On this basis Winnington-Ingram humorously suggested that Sappho sang contralto.

The name '*barbitos*' was almost certainly a foreign word, and ancient attempts to give it a Greek etymology should be ignored. According to tradition, it was 'invented' by Terpander, who lived in Lesbos in the mid-seventh century BC, but this may simply mean that it was imported from a musical culture in Asia Minor at about that time. It was very similar indeed to the lyre, except that the arms were shaped differently, and its strings were about half as long again as those of the lyre. The body was made from a tortoiseshell of the same size as that used for the lyre, but because the arms are proportionately longer, it appears smaller. Instead of a uniform curve, the arms have a special shape (Figure 2b.10).

For the first two-thirds of their length the arms are almost straight, diverging to about two and a half times the width of the body. Then they curve inwards quite sharply through a quarter-circle to the horizontal, their ends being about the width of the body apart. Two vertical bars about 4–6 ins (10–15 cm) long are jointed at right-angles, with forks to

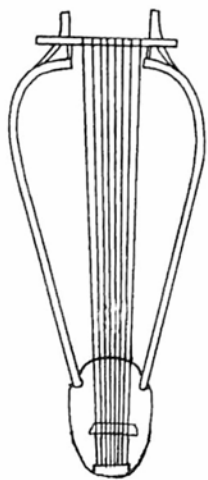


Figure 2b.10 *Barbitos*

support the crossbar, making the strings apparently longer than those of a kithara. As the structure of the instrument is lighter and less robust than that of the kithara, it is likely that the tension in the strings was less, so that the lowest note may have been about an octave below middle c (about 128 Hz). This would make it ideal for accompanying a baritone voice in the comfortable part of its range. It is also significant that of all the combinations of woodwind and stringed instrument shown in vase-paintings, that of aulos and *barbitos* is by far the most popular.

Finally, there was a variant of the lyre which could be called the 'Thamyris-lyre' or 'Thamyris-kithara' according to taste. It is so called because it appears in a vase-painting depicting the famous musician who was punished for his presumption (see p. 152). It is also referred to as the 'Thracian' kithara or lyre. Two players are shown in Figure 2b.11.

It is difficult to be certain whether these are 'real' satyrs or actors dressed for a satyr-play; there is an aulos-player standing in front of them (not shown in Figure 2b.11) which would suggest a theatrical context. The differences between this type of instrument and the standard lyre are:

- The sound-box is not made from a tortoise-shell, but probably of wood (hence, perhaps, it should be called a kithara). It has a flat base (we cannot tell what the back was like) and a semi-circular top edge, with quite a lot of decoration.
- The strings run from a 'stretcher' (*chordotonon*) over a bridge to the

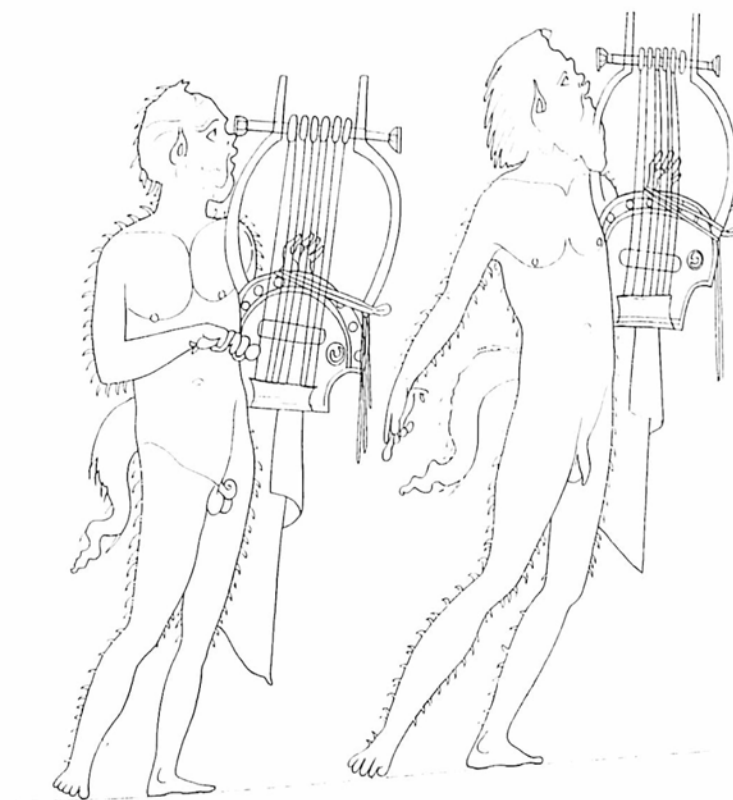


Figure 2b.11 'Thamyris' or 'Thracian' kitharas



crossbar, as on a lyre, except that the bridge is higher up on the soundboard. They are not very carefully painted, but the instrument on the left has got eight, the one on the right the usual seven.

- The arms are of different shape, much nearer to arcs of a circle, and they appear to enter the body behind the soundboard instead of being 'pegged' on the front. The extensions which go beyond the crossbar are parallel, so that the crossbar might have been adjustable to different heights, but there is nothing obvious to suggest how.

2(c)

## OTHER INSTRUMENTS

The remaining instruments in general use may be dealt with much more briefly. They do not appear in vase-paintings with anything like the same frequency as the aulos, kithara or lyre, and the literary references to them are comparatively few, some of them confined to specific literary genres. For the sake of variety, let us return to the woodwind instruments.

The *Syrinx*

The aulos was a reed-blown instrument; but the Greeks used two wind instruments which worked on the flute principle – that is, the oscillations in a tuned pipe were set up by so-called 'edge tones', generated by the player blowing a stream of air on to a fixed edge at or near one end of the pipe. The most important instrument of this kind was the pan-pipe, called *syrinx* in Greek and *fistula* in Latin. This instrument was perhaps among the very first to be used by primitive peoples, being the most simple of them all. Indeed, it was probably not invented by people, but copied from nature, as told in the charming Greek myth of its origin (see Chapter 6). It is occasionally mentioned in literature down to the end of the Classical period, almost invariably in connection with herdsmen or their patron god, Pan. It is even used by the divine herdsman Argos in the Io story in Aeschylus' (?) *Prometheus Bound* (574–5). This presumably reflects the restricted use of the instrument in real life in a pastoral setting, which even Plato is prepared to allow in his *Ideal Republic*.<sup>1</sup> The earliest illustration of it is on the François Vase, dated about 575 BC, where it is shown being played by one of the Muses at the wedding of Peleus and Thetis, and almost the only literary evidence for its use in such a setting is in a choral song written nearly two centuries later by Euripides,<sup>2</sup> which happens to refer to the same event. It did not really come into its own as a serious instrument until the third century BC, when Theokritos developed the genre of pastoral poetry. From then on, it became a powerful symbol of the pastoral poet's art. This is discussed in Chapter 7.

The Greek version (Figure 2c.1) was made with all its pipes of the same



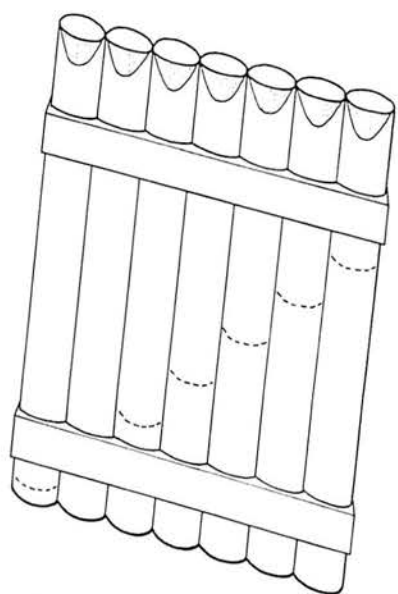


Figure 2c.1 *Syrinx* (Greek form)

length, the tuning being effected by filling them up to various depths inside with beeswax. The same material was also used to fix the pipes together, though illustrations appear to show some signs of binding with criss-cross twine or straw. This use of wax gives rise to a curious error among the writers of late antiquity. Theokritos, describing the construction of the instrument, regularly uses the verb *pēgnymi*, meaning 'fix' or 'solidify', and the adjective *pēktos*, meaning 'fixed together (with wax)'. There was an instrument called *pēktis*, which was almost certainly one of the harp family (discussed on p. 75), but owing to the similarity of the term came to be used mistakenly for the *syrinx*.<sup>3</sup> The pipes themselves were made from the ubiquitous reed (*kalamos*), or from fennel-stalks, or any other plant with hollow stems. Most of the illustrations suggest that the pipes were fixed together in a straight line. The Rumanian *naiu*, which is a direct descendant of the Roman form, is made with a curve of about a foot radius, and it is certainly easier to move rapidly from one note to another as a result. There is only one slight suggestion, in a rather vague phrase of Theokritos,<sup>4</sup> that the Greek version was curved. There are frequent allusions to 'rubbing the lip' on the instrument, which may be a problem for the player, because the near side of the pipe has to be filed away at its top to make a sharp edge, over which the player's upper lip forms the embouchure, and the lower lip then has to be pressed against the area from which the smooth outer skin of the reed has been removed. The range of pitch was apparently quite small: larger instruments with a greater number of pipes were not developed until Roman times. The characteristic number of pipes in Greek illustrations is seven, some earlier pictures showing five or even fewer. Because the pipes of the Greek version were necessarily 'stopped' pipes (closed at the bottom end), the pitch of each pipe would have been the same as that of a flute of

twice the length, and only the odd-numbered harmonics (3rd, 5th, 7th, etc.) would be produced. This gives a pungent, penetrating tone which, though it lacks the fullness and roundness of the flute, has a certain plaintive and mysterious quality, especially if the player uses a *vibrato* breathing technique. The range of contrast between the loudest and softest notes (the 'dynamic range') is fairly limited. The instrument can be 'overblown' so as to produce harmonics, but the upper register is a twelfth higher, and on an instrument with seven pipes there would be a gap of about a fifth between the registers. In any case, the upper register is something of an ear-splitting whistle, and for occasional special effect the ancient players are more likely to have used a technique of partial overblowing, which combines the fundamental pitch with the third harmonic – a husky, wheezy sound, much loved in the 1980s by makers of natural history films.

### The *plagiaulos*

The other instrument of the flute type used by the Greeks was the 'transverse aulos', called *plagios aulos* (or in shortened form *plagiaulos*) in Greek and *obliqua tibia* in Latin. Like the *syrinx*, this instrument had strong pastoral connections; the simplest explanation for this is that it was originally a modified form of the *syrinx*, developed in the same environment and used by the same players.

In a number of textbooks and articles<sup>5</sup> it is suggested that the *plagiaulos* was a reed-blown instrument, the reed being inserted into a socket near one end, either at right-angles or at an obtuse angle to the pipe. This suggestion is based on a misinterpretation of a passage in the work on acoustics attributed to Aristotle (see pp. 141–2) where the text is almost certainly corrupt, and also on a misinterpretation of sculptural evidence from later periods. In fact, a reed cannot be made to function in this way – it must be 'end on' to the resonant tube, and its stem must be of the same diameter. As a result of this mistake, a few surviving instruments (for example, the so-called 'Maenad Pipes' in the British Museum) have been wrongly described as *plagiauloi*.<sup>6</sup> There are a number of illustrations in Egyptian art from an earlier period of an end-blown flute, which is no more than a single pipe of a *syrinx* with fingerholes bored along its side. It can be held vertically in front of the player, or sideways like a flute, the latter position being preferred. But virtually all the illustrations in Greek, Etruscan and Roman art show a flute of the modern type, with an embouchure hole near one end, over which the player blows. Its sharp edge (on the far side from the player's mouth) is used to create the 'edge tones'. Figure 2c.2 is based on a Roman mosaic, but that is thought to be based in turn on a Greek wall-painting of two or three centuries earlier.

There are three important implications of this design. First, it is





Figure 2c.2 'Nude Youth Fluting'

impossible to play a pair of such instruments, and the technique therefore cannot have been the same as that of the aulos. Second, it is possible to employ as many as nine fingerholes, with or without a vent-hole, since both hands are used on the same pipe, and only one thumb need be used all the time to support the instrument. This makes possible an extended scale of ten notes, covering a range of more than an octave. To judge from later illustrations, some of these instruments were almost the same size as a modern orchestral flute, and must have had a lowest note in the region of middle c (256 Hz). The third implication of the design is this: the *plagiaulos*, though it was blocked above the embouchure hole, acted as an 'open' pipe, and sounded an octave higher than a 'stopped' *syrinx* pipe of the same length. It also produced the even-numbered harmonics as well as the odd, and would have had a tone not unlike that of a modern flute. For the same reason, it would have overblown the octave instead of the twelfth, and since it had an extended range anyway, there would have been no gap between the upper and lower registers, which between them might have covered at least two octaves, with all the notes available all the time. But the *plagiaulos* never ousted the aulos as the virtuoso woodwind instrument, and we must ask why. Presumably by the late fourth century BC the potential range of the 'complete' aulos had been extended to something like two octaves though, as we have seen (p. 36–7) only a limited part of the range of any aulos was accessible at any given time, owing to the design of the keywork. But despite this disadvantage, the characteristic sound quality of the aulos, which depended on both pipes sounding at once, seems to have been preferred.

## Bagpipes

Did the Greeks use bagpipes, or any similar instrument? This is a vexed and difficult question. There was a Greek word *askaules*, which literally means 'bag-piper', but it does not occur in a Greek context until long after the Classical period. It is almost entirely confined to Latin writers of the first century AD, when the instrument seems to have enjoyed some popularity in Rome. There is only one piece of Greek evidence which has been interpreted as referring to bagpipes, but there are grave doubts about its meaning. In the *Akharnians* of Aristophanes a salesman arrives from Boeotia (line 860) to barter with the hero. He says (to render the vulgarity in full) '... and you pipers, who have come with me all the way from Thebes, with your bone pipes blow up the dog's arse'. A few lines later the hero Dikaiopolis begs them to stop, calling them by a specially coined word *bombaulioi* – 'bumble-pipers'. This has led one scholar<sup>7</sup> to suppose that they were playing bagpipes which had bags made from dogs' hides, the blowpipe being inserted into the rear orifice. But this is most unlikely, unless the instruments were stage props specially made for the sake of this crude and very feeble joke. Of course, it is tempting for a translator to choose a Scots dialect to represent the Boeotian dialect in the original Greek; and given that he is a visitor from the North, accompanied by pipers, the rest springs readily to the English mind. But in fact, 'The Dog's Arse' was probably a song-title, or a parody of a song-title, and the pipers were probably playing quite ordinary auloi.

## Harps

The minor stringed instruments fall into two categories – the harp types and the lute types. Two types of harp appear regularly in vase-paintings from the fifth century BC onwards. One has a flat base which acts as a sounding-board resting on the player's thigh, and a curved vertical arm from which the strings run either vertically or at a slant to the base (Figure 2c.3).<sup>8</sup>

The number of strings varies between sixteen and twenty-two, so it is easy to see why it was referred to as a 'many-stringed' instrument (*polychordon*). It may well have been able to double a melody in octaves. The representations in the fifth and fourth centuries are fairly consistent, and show a plain curving arm; but in vase-paintings of the late fourth century from South Italy there appears a very ornate version, with moulding or carving on the outside edge, which is usually painted white on the vase, making it look a bit like an iced cake. Also, in a few cases, there is a 'prop' inserted between the end of the curving member and the soundboard (making, in effect, a third side to the frame) which may be quite plain, or may be elaborately carved in the shape of a large bird, probably meant to be a heron or a crane.<sup>9</sup>





Figure 2c.3 Type of harp (exact name uncertain)

The other type of harp always has three sides, roughly in the shape of a right-angled triangle, with the longest side sloping away from the player and the strings running from that side vertically down to the base, which likewise rests on the player's thigh and acts as a sounding-board. The number of strings is about the same. The most obvious difference apart from the shape is that on this instrument the shortest strings are furthest from the player, while on the curved type they are nearest (Figure 2c.4).

There were a number of Greek words for instruments which were almost certainly of the harp type. Unfortunately it is difficult to assign these names to the various shapes, except that we may be fairly sure that *trigōnon* (meaning 'triangle') indicated the type shown in Figure 2c.4. There is also a generic term *psalterion* which seems to mean any stringed instrument played without a plectrum. Until recently it was thought that *magadis* was the name of the instrument shown in Figure 2c.3, but it has now been established that the word is a descriptive adjective, meaning 'able to double in octaves' and not the name of a specific instrument (compare the name *magadis aulos*, discussed on p. 45).<sup>10</sup>

About the *sambykē* (*sambuca* in Latin) we have a few hints. There was a form of siege-engine, carried on two ships fixed together to form a sort of catamaran, with a ladder which could be lowered forward over the bows on to fortifications on land, thus enabling an assault-party to scale them and get over. The description is in Polybius,<sup>11</sup> who tells us that the ship and ladder when seen as a whole resembled the musical instrument. As a result, it was called a *sambuca* in services' slang. It is difficult to find a



Figure 2c.4 Type of harp – *trigōnon*

design of harp which would fit the various requirements, though various types have been suggested.<sup>12</sup>

As we saw earlier (p. 70) the name *pēktis* was mistakenly applied to the *syrinx* or pan-pipe. It seems originally to have been the name of a kind of harp, but there is no instrument of that type with which it can be reliably identified. If its name has any etymological significance, it should mean a wooden construction which is 'pegged together'. This might suggest the 'horizontal angular harp' found in Near Eastern illustrations which resembles a long boat with a mast, from which the strings run down at an angle to the 'deck', which is the sounding-board (Figure 2c.5).

The problem is that there is, so far as I know, no illustration of this type of instrument in Greek art.

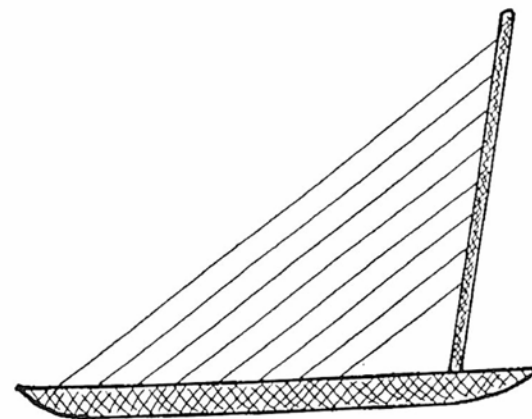


Figure 2c.5 Horizontal angular harp



Illustrations of the harp types from the fifth century BC have certain significant features in common. The players are, with very few exceptions, women. In many illustrations they appear to be perfectly respectable women – even the Muses on occasion play such instruments – and the most characteristic setting for the *trigōnon* is shown on a type of vase called a ‘wedding cauldron’ (*lebēs gamikos*), where the bride is shown playing a *trigōnon* rather nonchalantly while the preparations for the ceremony go on around her. Figure 2c.4 is taken from a scene of this kind. However, in literature of the fourth century BC and later the terms *psaltria* and *sambykistria* (female players of the psalterion and sambyke) come to mean ‘courtesan’, just as *auletris* (female aulos-player) had earlier.

One frustrating feature of the illustrations is that none of them clearly shows the nature of the tuning apparatus. The harp shown in Figure 2c.3 (mid-fifth century BC) shows a row of very small circles on the curving vertical arm, which correspond roughly, but not exactly, with the top ends of the strings. They may perhaps be tuning-pegs, but it is difficult to see how they could have been twisted around. Some pictures of the *trigōnon* have a number of knobs or studs on the slanting side, but there are far too many to allow us to suppose that they are tuning pegs.

There is one solitary illustration which shows another kind of harp, sometimes termed the ‘bow’ or ‘arched’ harp (Figure 2c.6).

This instrument is much smaller, and must have had a much higher range of pitch. The details are difficult to discern, but it appears that the body is made of wood, with a hollow resonator under the sounding-board which makes it look rather like a lute. But it is not a lute, since the strings can be seen running directly from the ‘neck’ to the sounding-board, and they are graded in length, the one running from the end of the neck to the far end of the sounding-board being at least twice as long as the one nearest to the sounding-board. Incidentally, the lady player seems to be tuning its strings to those of an ‘Italiote’ kithara (see p. 168) which she is playing with her left hand. The dating of this picture also presents problems. It was found at Stabiae near Pompeii, where it was buried by the eruption of Vesuvius in AD 79, so the actual painting probably belongs

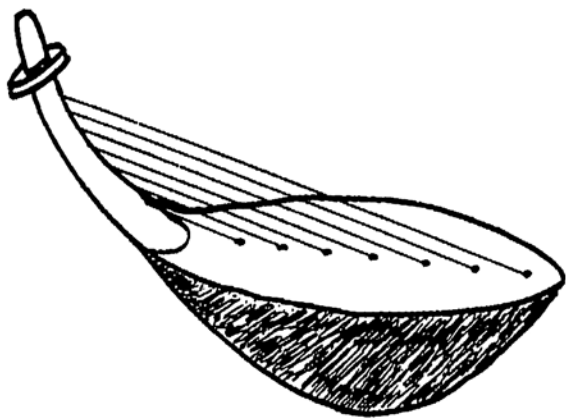


Figure 2c.6 ‘Arched’ or ‘bow’ harp

to the first century BC at the earliest; but many Pompeian wall-paintings are known to have been based on Greek originals of two or three centuries earlier.<sup>13</sup> So we cannot say with any certainty when the instrument first made its appearance in Greek music. It certainly does not seem to have been at all popular, and should not, in my opinion, be identified with the *sambykē*.

### The lute

This leads conveniently to the last category of stringed instruments – those of the lute type. These instruments differ in a number of important respects from the kithara types and the harp types. Like the kithara types, they have strings which are stretched over a bridge, and transmit their vibrations to a sounding-board by this means, whereas the strings of a harp are attached directly to the sounding-board. Also, the strings of a lute are all at the same distance from the sounding-board, in a plane parallel to it, whereas those of a harp are at various distances from it. But unlike the kithara, the simple lute has only three or four strings at the most, and it has a fingerboard which enables the player to shorten the string lengths by stopping with the fingers of the left hand, thus obtaining at least five notes from each string. Almost all the representations of this type of instrument in Greek art are in statuary or terracotta figures. This may be a coincidence, or it may be due to the fact that there is very little vase-painting evidence for the period to which they belong – the late fourth century BC. The evidence has been carefully assembled and analysed by R.A. Higgins and R.P. Winnington-Ingram.<sup>14</sup>



Figure 2c.7 ‘Square’ lute





Figure 2c.8 'Pear-shaped' lute

Two distinct types of lute can be distinguished. One has an oblong soundbox and straight-sided fingerboard (Figure 2c.7).

As this is a relief carving, it is possible to see that there was a longitudinal ridge down the back of the sounding-box, looking rather like a ship's keel; the same effect is shown on the back of a kithara nearby. The other type is more or less pear-shaped, with no clear demarcation between sounding-board and neck (Figure 2c.8).

It is not possible to discern the strings in any of the illustrations, or to say with confidence how many there were, but literary evidence suggests that there were three or four. Nor is there any clear indication of the tuning mechanism. Two names are listed by the ancient authorities which may be assigned to this type of instrument – *pandoura* and *skindapsos*, both probably non-Greek words.

### Brass instruments

In relation to Greek music, the term 'brass instrument' is loosely applied, and requires explanation. No instruments were actually made of brass (an alloy of copper and zinc, not extensively used until the first century BC) but some were made of bronze, and played in the same way as a modern trumpet or bugle. On the modern instruments the player's lips are squeezed into a cup-shaped mouthpiece, and act in much the same way as a double reed, setting up oscillations in a resonant tube. Though the Romans used a number of these instruments, made in various shapes and materials (see Chapter 8) there is only one commonly found in Greek illustrations and literature – the *salpinx*. It appears in vase-paintings from

the sixth century BC onwards, and is referred to frequently in all types of literature, usually in a military context, but sometimes as a 'public address' instrument, used to call for silence at a large gathering, or to give the signal for the start of a race. There are also one or two curious references to its use at drinking-parties, played *pianissimo* to suit the circumstances.<sup>15</sup> But, though there are a few allusions to more than one *salpinx* being played at a time, these are rare, and there are virtually none at all to the *salpinx* being played in combination with any other instrument. Incidentally, it is worth pointing out that the drum had no part whatever in martial music, being confined to religious cult.

The *salpinx* was unlike a modern trumpet or post-horn in several respects (Figure 2c.9).

First, it had a cylindrical bore of constant diameter throughout, unlike the bugle, which widens consistently from mouthpiece to bell, or the post-horn, which expands slightly along its length and flares suddenly at the bell. Second, there is no sign in the vase-paintings of a cup-shaped mouthpiece. The player seems to be using the end of the tube instead, which suggests that its inside diameter must have been about half an inch (1.3 cm) at the least. It must have been more difficult to get a satisfactory tone or a full range of notes by this method. An even more confusing feature in some illustrations is that the player wears a mouthband (*phorbeia*) similar to that worn by aulos-players (see p. 31). It cannot have been used by a trumpeter in the same way, or for the same purpose as it was by an aulos-player. Finally, instead of a flared bell the *salpinx* had a

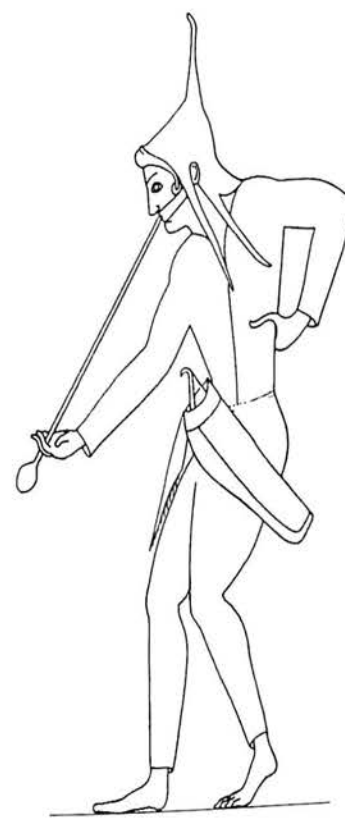


Figure 2c.9 Salpinx



bulbous lower end, similar to that of a modern cor anglais. This must have affected its tone, but it is difficult to say in what way.<sup>16</sup>

There is, however, one unchanging feature of all instruments of this type – they play a particular pattern of notes, known as the harmonic series. As the length of the *salpinx* shown in vase-paintings is normally about 3 feet (about 1 m) its fundamental note would have been somewhere around B flat, an octave and a tone below middle c. But the fundamental is not normally obtainable on this type of instrument, so the lowest note sounded would have been an octave higher, in the region of b flat (228 Hz). Above this the next two or three harmonics would have been playable, as shown in Figure 2c.10.

As a result, we can assume that the sounds made by a *salpinx*-player on an ancient Greek battlefield must have been very similar to our own bugle-calls. There is an interesting piece of evidence which possibly bears this out: one of the most unusual musical scores ever to come to light. It is also the oldest by a long way, dating from the sixth century BC. It is on a piece of pottery (an *epinētron*) which looks rather like half a thermos flask, and may have been placed on the knee to avoid injury while sewing. It has battle scenes painted on it, including an Amazon playing a *salpinx* with the letters TOTE TOTOTE on the background around her.<sup>17</sup> For many years (it was found at Eleusis in 1883) this was regarded as nonsense, but Annie Bélis spotted that it looked like a kind of sol-fa notation which is mentioned in Aristides Quintilianus and elsewhere.<sup>18</sup> The problem is that this system of notation was devised for singers, and the various vowels (TA, TE (short) TE (long), TO, and possibly some others) were assigned to notes in the tetrachords of the scale. It is not too difficult to see how they might have been allocated to the notes of the harmonic series, since only three or four would have been needed, but we have no evidence to show how they were assigned. There is, however, some evidence that there were traditionally accepted calls on the *salpinx* to indicate 'attack', 'retreat', etc.

We have some information on the date of the *salpinx*'s introduction to Greece. Ancient commentators on Homer observed that he does not

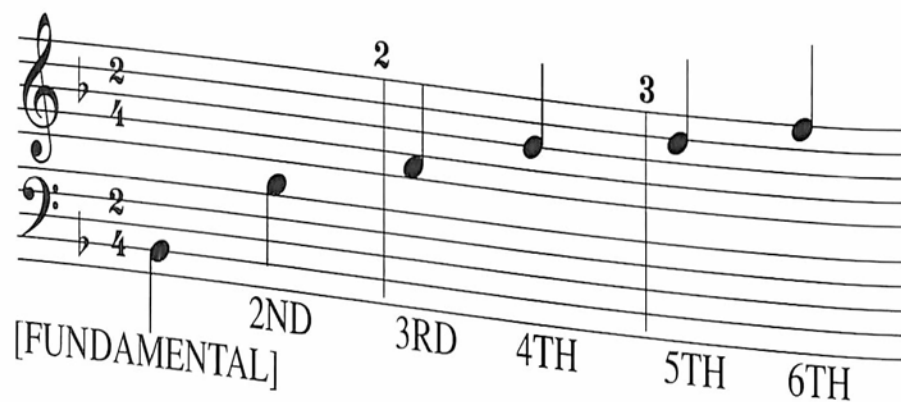


Figure 2c.10 Harmonic series of notes playable on a *salpinx*

describe the use of the instrument in the warfare at Troy, though he refers to it in a simile as being used to give warning of a pirate raid.<sup>19</sup> It was noticed that his similes, being drawn from the familiar sights and sounds of his own day, sometimes contained anachronisms, but that he had been careful (surprisingly so, for an epic poet) to avoid making his warriors use this instrument, which was generally thought to have been 'invented' some centuries later than the Trojan War – perhaps about the eighth century BC.

### Percussion instruments

The percussion instruments may be dealt with briefly, and last, which exactly reflects the unimportance of their role in Greek music. There could hardly have been a more wounding insult to the dead Euripides than the suggestion made by his rival in the *Frogs* of Aristophanes that a girl 'rattling bits of pottery together like castanets' could provide an adequate accompaniment for his songs.<sup>20</sup> The only function of a percussion instrument was to emphasize the rhythm which was already inherent in a melody, usually being played on an aulos or *barbitos*, or being sung or chanted; the percussion sounds did not form part of the music in their own right.

One of the most commonly illustrated percussion instruments is the hand-drum, called *tympanon* in Greek, which appears in many vase-paintings of scenes in which women worshippers ('maenads') are dancing in honour of the god Dionysos. Because such dancing was essentially a group activity, the sound most familiar to Greek ears was that of a large number of drums beating together, in a way which could on occasions excite frenzy and mass hysteria – a phenomenon not unknown in our own times. Its use was not confined to the Dionysiac cult. In the opening lines of Aristophanes' *Lysistrata* the heroine complains that none of the women have turned up to hear her plan; 'but if it had been a festival of Pan or Aphrodite, you wouldn't be able to push through between the *tympana*'.

The apparent size of the *tympanon* in illustrations varies between about 12 in. (30 cm) and 16 in. (40 cm) in diameter. It is usually held in the left hand and played with the fingers or palm of the right hand – no kind of drumstick is shown (Figure 2c.11).

In some other illustrations the player is shown striking the decorated back of the instrument instead of the head.<sup>21</sup> This may seem strange, but the action might well produce a low, muffled sound caused by the air pressure evenly applied all over the head (Figure 2c.12).

The literary sources tell us that the head was made of leather<sup>22</sup> but we do not know whether this was rawhide or cured. It was stretched over a bowl-shaped shell, about 6 in. (15 cm) deep at its centre; hence in some older translations it is called a 'kettledrum'. Many illustrations show





Figure 2c.11 Tympanon (played normally)

decorative ribbons attached to the outer rim, but there is no sign of the metal discs which characterize a tambourine, and the sound was a deep, booming drum-beat (the effect of the bowl resonator). It was not shaken like a tambourine, which does not appear until some time in the third century BC. It is repeatedly stressed in the literary sources (particularly in Euripides' tragedy, the *Bacchae*, which is much concerned with the cult of Dionysos), that the *tympanon* provided a rhythmic reinforcement for the ritual songs and cries and the aulos-music of the cult, rather than a sound which was interesting in itself.

Another commonly illustrated instrument was called *krotala* in Greek (a plural word, meaning 'clackers'). They were almost always played in pairs, particularly by female dancers. They consisted of pairs of wooden



Figure 2c.12 Tympanon (reversed)

bars with round recesses on their inner sides, joined by a hinge (presumably leather) which was under tension, and caused them to spring apart when released (Figure 2c.13).

The standard picture which appears in almost every book on Greek music shows a topless girl dancer dancing to the music of an aulos-player. This more unusual one shows a male musician on his way to an engagement, carrying his aulos and bringing a pair of *krotala* in case they might be needed.

The *krotala* were held between the thumb and middle fingers of each hand, and illustrations show that, like modern Spanish castanets, they were played with a lot of movement and flourish. But here again, the function of the percussion instrument was merely to reinforce the rhythm of the melody (another instrument is almost invariably being played in the picture) and, to a lesser extent, to give visual emphasis to the dancer's movements.

Cymbals (*kymbala* in Greek) were less commonly used by dancers. There are a few illustrations of them, and a few pairs of cymbals have survived.<sup>23</sup>

Modern cymbals are made by a sophisticated technical process which was not possible in the ancient world. The ancient ones were much smaller in diameter and much thicker, and their sound must have been more like that of a small bell. The translation 'tinkling cymbal' in the Authorized Version is entirely apt.<sup>24</sup>

Finally, there is a mysterious object shown in a number of vase-paintings which has been interpreted as a musical instrument. It appears regularly on Greek vases from Apulia in southern Italy, in the

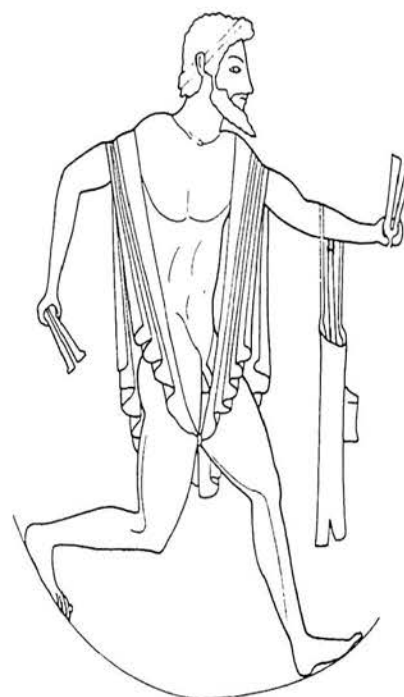


Figure 2c.13 Krotala



context of a group of women in the women's quarters of a house, sometimes against the background of an *aedicula* or small pillared porch. It looks like a small ladder, about 18 in. (45 cm) long, with 10 or more rungs (Figure 2c.14).

In the early part of this century this instrument was usually called an 'Apulian sistrum', on the assumption that it was some kind of rattle; but nobody succeeded in explaining what made the rattle rattle. The better-known design of rattle is the one used in the cult of Isis in Egypt, which had a horse-shoe shaped bar with two or three wires stretched across it, and small metal discs with holes in their centres which slid up and down along the wires when the rattle was shaken from side to side. The problem with the 'Apulian' version was that there did not seem to be any moving part which could make a noise. Max Wegner suggested<sup>25</sup> that it might have been some form of xylophone, but was unable to find any picture which showed the 'rungs' of the ladder being struck with a stick or hammer. There were, in any case, two objections to his interpretation. One is that we should expect the 'rungs' to be of various lengths. This is not a fatal objection, as a single note repeated very rapidly might give some sort of pleasure, but the other is more serious. The 'notes' of a xylophone (rectangular strips of wood in the modern instrument) produce their sound by vibrating longitudinally as shown in Figure 2c.15; this means that their ends must be free to vibrate, and cannot be 'anchored' in any way. They are supported on bars which are placed at the quarter- and three-quarter points, the 'nodes' where the vibration is almost zero.

So the mystery remained until the publication of West's book; he shows (Plate 33) a woman holding the instrument up with her left hand, and running the fingers of her right hand up and down the 'rungs'. He correctly interprets the entry in Pollux's dictionary (under the word

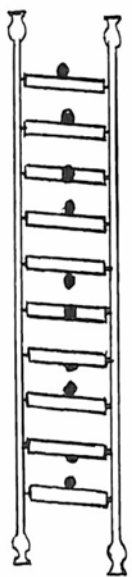


Figure 2c.14 *Psithyra* or 'Apulian sistrum'

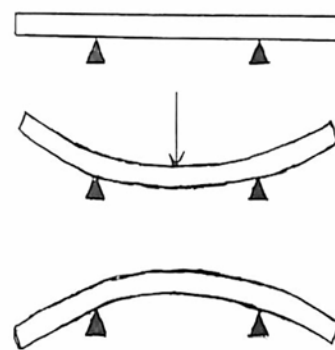


Figure 2c.15 Mode of vibration of xylophone element (movement greatly exaggerated)

*psithyra*, meaning 'rustle' or 'whisper') as suggesting that this instrument had 'a frame with bobbins drawn through it' – that is, that the 'rungs' had holes through their centres, and could rotate around wires which ran across the frame. This movement created a characteristic sound, aptly described (and imitated) by the word *psithyra*. West does not go on to add that the 'blobby excrescences' (p. 127), if they were weighted and mounted off-centre, may also have served to make the 'rungs' rotate; the instrument could have been shaken with a rotary motion. So now we know the truth about this mysterious instrument.