DECODING THE AULOS

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Abstract

In the eyes of the ancient world, the aulos was probably the most symbolically charged aerophone. Thus, it is known that the ancient Mediterranean and Near East inhabitants took it with them wherever they travelled. This shows the high value that this musical instrument had, especially as an object that served to express culture. While it was known as the aulos in ancient Greece, the Romans called it the tibia or fistula, which is decisive proof of its cultural diffusion in the ancient world. This aerophone consisted of two diverging cylindrical tubes with a single or double reed mouthpiece. Both its design and manufacture illustrate cultural values and musical practices. Apart from being used for entertainment, religious contexts, expeditions, and battles, the aulos was also an item of trade presented as a gift to rulers. By analysing archaeological, written, iconographic, and ethnographic sources, this contribution presents scenarios where the aulos played a role, highlighting its relevance for the societies as mentioned earlier.

Keywords

aulos, spiritual, gender, technology, trade

ORIGINS

The origins of the aulos remain somewhat mysterious[2]. However, a marble figurine discovered on the island of Keros in 1884 suggests that these are probably found in the Aegean region. The figurine representing a man playing the double pipes dates to the Early Bronze Age (2800–2300 BC), specifically to the Early Cycladic Period II (c.2500–2200 BC) (Figure 1). The artefact was found in Kavos Daskaleio, a site that was either a cemetery or a pan-Cycladic sanctuary.[3] Therefore, the figurine may be the image of a musician, whose body is buried in one of the graves or a pilgrim's votive offering deposited at the sanctuary in return for the deity's assistance.[4] It can be inferred that the figurine was primarily used for ceremonial practices. Apart from yielding this figurine, Kavos Daskaleio also produced a statuette of a harpist (Figure 2). Remarkably, both statuettes represent male figures, implying that music in Cycladic society was probably performed by its male members. This contrasts with Nuragic society, where a bronze statuette discovered in Ittiri, Sardinia, represents an androgynous being playing an aulos-type instrument (launeddas) (Figure 3). This suggests that this triple-pipe aerophone was either played by both sexes or by gender-defined minorities, such as homosexuals and bisexuals.

When contemplating the origins of the aulos, it is important to consider that the subject in question may have originated in mainland Greece. The Neolithic settlement of Dispilio in Thessaly, Kastoria, for instance, yielded three fragments of bone pipes which date to 6000 to 5000 BC, while the site of Avgi (*c*.5700–4500/4300 cal BC), also located near Kastoria, produced a bone pipe with one finger hole (Figure 4).[5] Despite this evidence, which predates the Aegean figurine, a possible origin of the aulos in mainland Greece cannot be substantiated, as there is no evidence indicating that these Neolithic pipes were played in pairs, as the Keros figurine shows.

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[2] Aulos (plural auloi). For the Romans, the aulos was the tibia (plural tibiae). The term auletes describes a male aulos player. The word auletrides stands for a female aulos player.

[3] The exact provenance of the figurine is unknown. It is thought to be part of the Keros hoard—a collection of over 350 figurines discovered in a deposit north of the settlement of Kavos. This site unfortunately was looted. Gets-Preziosi, 1982; Doumas, 1972 and 2000; Renfrew, 1984: 27-29.

[4] In antiquity, it was customary to deposit statuettes at the shrine to ask for favours or to thank the gods. In addition, worshippers or musicians also offered musical instruments in dedication to the gods.

[5] AncientPages.com, 2014; Avgi Kastoria, 2008.

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Figure 1: Figurine of a double-pipe player from Keros, Parian marble (Early Cycladic II period c.2500–2200 BC). National Archaeological Museum of Athens (3910).Photograph by the author and with courtesy of the Museum.

Figure 2*:* Marble statuette of a male figure playing a lyre or harp, Keros (Early Cycladic II period c.2500–2200 BC). National Archaeological Museum of Athens. Photo at the museum accessible via: Robur.q [CC BY-SA 3.0 DEED], , last accessed 13th May 2024. Photograph by the author and with courtesy of the Museum.

Figure 3*:* Profile view of the 'Ithyphallic launeddas (flutes or clarinets) player', a Nuragic bronze statuette (c.800–700 BC). National Archaeology Museum of Cagliari. Photographs by courtesy of the Museum and made by the author.

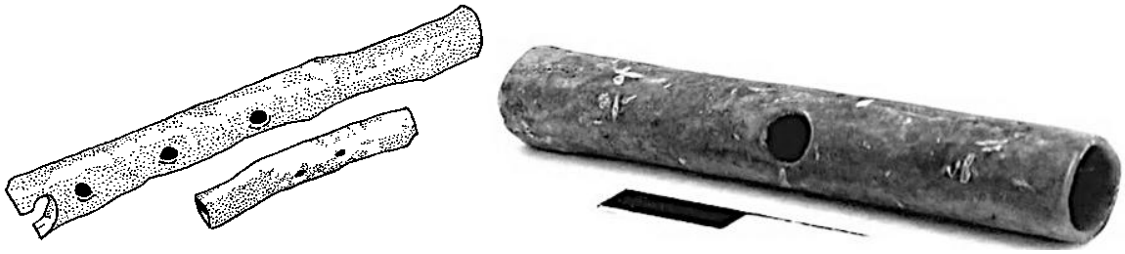

Figure 4*:* (left to right) Neolithic bone pipes from Dispilio, Kastoria, Greece (redrawn from a photo provided through http://www.ancientpages.com/2014/10/28/ancient-dispilio-disk-and-traditional-history-of-writing/dispilioflutes01/, last accessed 13th May 2024). Neolithic bone pipe from Avgi, Kastoria, Greece. Photo by courtesy of the exhibition: http://www.neolithicavgi.gr/?page_id=50, last accessed 13th May 2024, Dr Georgia Stratouli took these photos and send them to the author.

Artefact of Expressive Culture

The aulos was an important part of expressive culture and came to represent the cultural values of different societies in antiquity. The Cycladic society, for example, which emphasised maritime activities such as fishing, trade, and seafaring, unfortunately left no written records; however, its archaeological artefacts allow us to deduce that the instrument played a role in specific activities.[6] Moreover, they tell us that the aulos playing tradition was passed down from one generation to another since at least the Early Cycladic Period II (c.2500–2200 BC). There is evidence of aulos playing dating back to the Cypro-Archaic II Period (600–480 BC) (Figure 5).

Later literary works could offer insights into the significance of this instrument in Cycladic society. Herodotus, e.g. in his *Histories* (Book I.141), recounts how musicians utilised the aulos to lure fish, shedding light on its cultural importance:[7]

> The story of the fluteplayer [*auletes*] who saw some fish in the sea and played his flute [*aulos*] to them in the hope that they would come ashore. When they refused to do so, he took a net, netted a large catch, and hauled

[6] On Cycladic material culture Getz-Preziosi, 1987.

[7] Herodotus, *The Histories*. Revised with introduction and notes by John Marincola. Translated by Aubrey De Sélincourt. London: Penguin Books.

> in. Seeing the fish jumping about, he said to them: It is too late to dance now: you might have danced to my music—but you would not (Herodotus, 2003: 64).

This story may be partly fictitious and partly historical; thus, one can deduce that it was orally transmitted. However, Plutarch confirms that music accompanied various activities because people believed that it could control the minds of individuals and animals.[8]

This explains why the aulos was played during events such as hunts and the scourging of slaves, where the intent was to demonstrate power and control over the prey or the slaves.

Throughout antiquity, the aulos was used in various activities, including banquets, sacrifices, funerals, orgies, festivals, and both public and private religious ceremonies. The presence of auletes or auletrides in activities not typically associated with music, such as the pankration and other athletic events, suggests that Greeks and Romans believed music could influence and shape youthful minds.[9]

Figure 5*:* Figurine of a musician playing the aulos, Cypro-Archaic II (600-480 BC). Museum of Cycladic Art, Athens. Photograph by the author.

Connections with the Spiritual Realm

As suggested by ritual objects found in graves, Cycladic people shared a common concern vis-à-vis death.[10] They likely believed in supernatural forces or deities, and music possibly served as a means to contact them. The aulos has a distinctive voice, quite different from the Cycladic harp: its loud and enticing sound probably served to catch the gods' attention.

The aulos played a crucial role in the religious practices of the Greeks, Cretans, and Romans, particularly during sacrifices. The story of Ismenias, a renowned aulos player from Thebes, illustrates this:[11]

[8] Plutarch. 1967. *Moralia Volume XIV*. translated by Benedict Einarson and Phillip H. De Lacy, Loeb Classical Library Cambridge, London: Harvard University Press, 413.

[9] The pankration was a violent sport that blended boxing and wrestling with kicking, strangling, and joint manipulation.

[10] Gill and Chippindale, 1993.

[11] Plutarch. 1878. *Plutarch's Morals*, translated from the Greek by several hands corrected and revised by William Watson Goodwin (Boston: Little, Brown, and Company, III, 235.

> And Ismenias piping at a sacrifice, when no good omens appeared, the man that hired him snatched the pipe [aulos] and played very ridiculously himself; and when all found fault, he said: To play satisfactorily is the gift of Heaven. And Ismenias with a smile replied: Whilst I played, the Gods were so well pleased that they were careless of the sacrifice; but to be rid of thy noise they presently received it (Plutarch 1878: 235).

Sacrifices consisted of several practices, most of which were accompanied by music played on the aulos. The aerophone was used to communicate with and please the gods. The sacrifice began with a procession leading an animal to the altar, accompanied by the aulos (Figure 6).[12] This instrument was also used during purification practices, where priests, attendants, and gods engaged in close communion.[13] Practices related to the sacrificial animal, such as its purification, were not accompanied by the aulos (Figure 7).[14] However, both petitions and prayers by the priest and attendants were set to music.

Sacrifices required validation from the gods, which was obtained by pleasing them. People believed that aulos' music pleased the gods' ears, and thus, the hiring of an aulos player for religious ceremonies was essential. The actual sacrifice and its validation involved offering certain parts of the animal to the gods and burning them on the altar. Typically, these parts included the thighbones, the tail, and the gall bladder. The priest anticipated the tail twisting upwards, indicating that the gods had accepted the sacrifice.[15]

Figure 6*:* Boeotian Lekane (No. 1879,1004.1), c.550 BC, The British Museum, London. A sacrificial procession in honour of the goddess Athena, where a group of people leads the sacrificial animal to the altar, accompanied by the music of the aulos (redrawn from photo accessible via https://www.bmimages.com/preview.asp?image=00051340001, last accessed 13th May 2024.

Figure 7*:* Stamnos by Eucharides Painter (C 10754), Louvre Museum, Paris. (L-R) A priest sprinkles some water over the sacrificial victim. The auletes observes the action but he does not accompany it with music (redrawn from Nordquist 1992: 127-128 by the author with courtesy by the museum).

[12] Kubatzki, 2016; 2018.

[13] Nordquist, 1992.

[14] Vergara, 2014.

[15] Ekroth, 2014.

Connections between Sexuality and Gender

Both males and females played the aulos. However, the instrument was mainly associated with women known as auletrides or hetairai. These female aulos-players, often of slave status, worked as entertainers in private gatherings or symposia, which flourished during the Hellenistic period (*c*.321–31 BC) and continued through the Byzantine times (Figure 8). Auletrides' performances aimed to provide pleasure and enjoyment for the guests. As slaves, they could be prostituted. These private gatherings or symposia were male-dominated contexts where no free women were allowed.[16]

Figure 8*:* Bell krater. Symposium scene. A woman plays the aulos at the centre. Source: Photo by the author 13th May 2024.. Dombrena painter, Thisbe. Late 5th-early 4th century BC. Picture is in the public domain.

The Greeks associated the aulos with sexual connotations. These denote the physical aspects of the body, focusing on the distinct biological characteristics associated with males and females. For example, the so-called wedding aulos was meant to represent the bride and the groom. The longest pipe represented the male, while the shortest represented the woman. This case echoes the condition of sexual dimorphism, where the male is taller than the female.[17]

For the Greeks, the sound of the aulos was orgiastic. The musical mode that was directly related to this instrument was the Phrygian. For Socrates, the Athenian Classical philosopher, the Phrygian mode is akin to the aulos because both have the same potential and are equally exciting and orgiastic.[18] The music played at bacchanals and orgies was based on the Phrygian mode and performed on the aulos. Bacchanals were Roman festivals dedicated to Bacchus (the Greek Dionysus). These were characterised by ecstatic music, dancing, drinking, and revelry. Orgies, on the contrary, were rites associated with various deities and included a sexual component. The rituals aimed to induce spiritual and emotional ecstasy, while sexual activities symbolised fertility, life force, and the breaking of social norms to connect with the divine.[19]

[16] Touliatos, 1993; Goldman, 2015.

[17] Wilson. 1999. Citing Pollux's Onomasticon, vol. 4, 80.

[18] Aristotle. 1908. Aristotle's Politics. translated by Benjamin Jowet. Oxford: Clarendon Press, 316.

[19] Roberts, 2005: 230-232.

Some Aspects of Cultural Status Concerning the Aulos

In ancient Greece, most aulos players were foreigners of slave status. They hailed from diverse corners including Phrygia, Miletus, and Smyrna. Some of these players were professional performers who, apart from entertaining at private gatherings, played at public events and competitions. A recent discovery indicates that music on the aulos was played at Plato's deathbed.[20] The scroll, discovered at the villa of Papyri in Herculaneum, says that an auletride from Thrace played the music intended to soothe Plato's agony. The philosopher, however, did not appreciate the performance. Despite being gravely ill and feverish, Plato criticised the musician's poor sense of rhythm in the presence of a Chaldean guest from Mesopotamia (Ansa, 2024). Both auletes and auletrides were considered servants, and their status was lower than that of singers (Figure 9). Citing Athenaeus (1854), the ensuing passage exemplifies this point:

> But the Hilarodus, as he is called, is a more respectable kind of poet than these men are; for he is never effeminate or indecorous, but he wears a white manly robe, and he is crowned with a golden crown: and in former times he used to wear sandals, as Aristocles tells us; but at the present day he wears only slippers. And some man or woman sings an accompaniment to him, as to a person who sings to the flute [aulos]. And a crown is given to a Hilarodus, as well as to a person who sings to the flute [*aulos*]; but such honours are not allowed to a player on the harp or on the flute [aulos] (Athenaeus, 1854: 990).

Athenaeus indicates that music held a subordinate status in ancient Greece. Aulos players received payment either from their patrons or from their singers. Greek law, however, forbade payment of more than two drachmas to them (Aristotle, 1912).[21] Auletes and auletrides were often denied prizes at events due to their perceived low social status.

Figure 9: Music performance called auloidia. A bearded auletes together with a singer called aulodes on a podium. Attic black-figure pelike (530-520 BC), Metropolitan Museum of Art, New York. Photo by courtesy of The Met (2017) Museum. Accessible via: https://upload.wikimedia.org/wikipedia/commons/thumb/e/eb/

[20] Plato (428–347 BC) was a philosopher who wrote mostly in the form of dialogues. He wrote about music, education, and science.

[21] Aristotle. 1912. Athenian Constitution, translated by Frederic George Kenyon. London: G. Bell and Sons, 92.

Terracotta_neck-pelike_%28wine_jar%29_MET_DT255674.jpg CC0 1.0 Universal, Picture in the public domain.

According to Aristotle (1908), the aulos could not be used for educational purposes because it was an amoral instrument.[22] Consequently, the aerophone was reserved for performances that encouraged catharsis, serving as an outlet for emotion afforded by drama rather than learning. Aristotle's predecessors banned its study, specifically for young people and free men. Although the aulos was mainly associated with people of low social status and slaves, it was also popular among the upper classes.

Item of Technology

The aulos evolved from a simple piece of bone with holes to the Imperial tibia found at Pompeii (Figure 10 right). These instruments were made from reed, bone, ivory, wood, or metal. Immigrants, mainly from Crete and Greece, may have contributed to the development of the Cycladic aulos during the Early Bronze Age (2800–2300 BC). It is known that they brought their culture to the Cyclades, including their music. Archaeological evidence indicates that they shared their knowledge and skills in stoneworking and pottery making. [23] This raises the question of whether Cretans adopted the aulos from Cycladic people or vice versa. It is known, however, that Cretans developed a type of aulos with an upwards-curved horn attached to one of its pipes. This aulos may be contemporary or slightly later than the Cycladic. The horn attached to one of its pipes may have been purely ornamental or functioned as a bell, amplifying the sound. This distinctive feature is undoubtedly a technological development.

The Cretan aulos is depicted on a sarcophagus dating to c.1400 BC. This artefact was discovered at the archaeological site of Aghia Triadha (Figure 11). The Cretan aulos was undoubtedly created before that date, as it was incorporated into Cretan religious ceremonies. Its invention may even date back to Minoan times. The fact that the Minoan population resulted from the interbreeding of Cretan Neolithic people with immigrants from mainland Greece, Anatolia, and the Aegean leads us to assume that the invention of the Cretan aulos was brought to Crete in some way by those immigrants. The Phrygians (fl. c.800 BC), who inhabited central-western Anatolia, had a similar instrument that the Greeks called the Phrygian aulos. This instrument was an improved version of the Cretan aulos. The Romans also adopted the Phrygian aulos and called it the elymos (plural elymoi) (Figure 12).

The exact nature of these pipes remains uncertain. However, subsequent authors offer insights into their design and purpose. Varro (116–27 BC) observes that the right pipe of the Phrygian aulos has one hole, the left two, one of which produces a sharp sound, the other a dull one.[24] The left Phrygian pipe, being curved and longer, produces a lower tone compared to the straight, right one. Servius (Aeneid Book X. 615) notes that Phrygian pipes vary in length and possess bores of differing sizes.[25] Tibullus (259Elegiae Book II. 1.85) describes them as curved.[26] Pollux (1824) mentions that Phrygian pipes, or auloi elymoi, consist of two pipes, one longer than the other. According to Porphyry (AD 234–c.305), Phrygian pipes feature a narrow bore, resulting in deeper tones.[27] Hesychius of Alexandria (5th or 6th century AD) suggests that playing the Phrygian pipes correctly involves holding the curved pipe in the left hand.[28]

A 'typical' aulos had circular holes (Figure 10, left). It had four to six holes in each pipe, including a vent and a thumb hole. The vent hole was typically located near the bottom of the pipe and was not

[22] Aristotle. 1908. Aristotle's Politics. translated by Benjamin Jowet. Oxford: Clarendon Press, 312-313.

[23] Barber, 1987; Pedley, 2007.

[24] Bloemendal, 2010.

[25] Moore, 2012.

[26] Tibullus, Catullus. 1988. Pervigilium Veneris. Translated by Francis Warre Cornish, John Percival Postgate, and John William Mackail, Loeb Classical Library. Cambridge : Harvard University Press / London: William Heinemann,.

[27] Howard, 1893.

[28] Schmidt, Mauricius. 1864. Hesychii Alexandrini Lexicon. Jenae: Maukij, 459.

fingered. The thumb hole was situated between the index and middle fingers, and it was used to produce different tones.

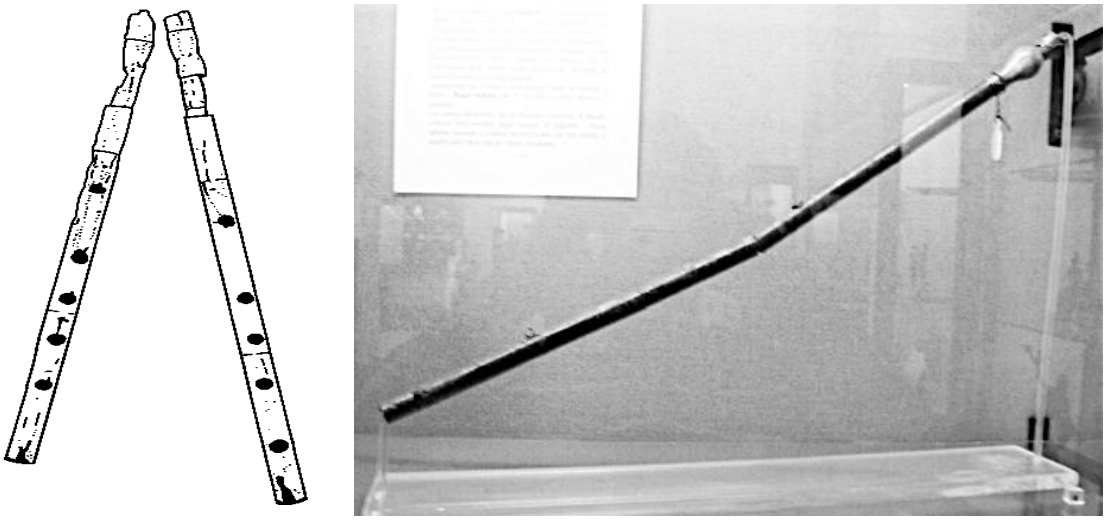

Figure 10: (left to right) The auloi of Pydna, reconstruction. Redrawn by the author from Psaroudakes 2008: 207, Figure 2). The Pompeii auloi or tibiae. Photograph by the author with courtesy of the respective museum.

Athenaeus (1854) tells us that Pronomus (c.400 BC) invented an aulos in which he could play the whole harmonia, namely, the Dorian, Phrygian, and Lydian musical scales.[29] Before this contribution, aulos players needed three types of aulos, one for each scale (Pausanias, 1935).[30] Pronomus increased the number of holes in the instrument, which is proportional to the length of the tube. He fitted the aulos with a system of rotatable collars that enabled holes to be opened and closed. Late specimens had collars, hook-shaped levers, and half collars which operated through rods with buttons. The instrument had up to 24 holes of different sizes and shapes (Figure 10, right).

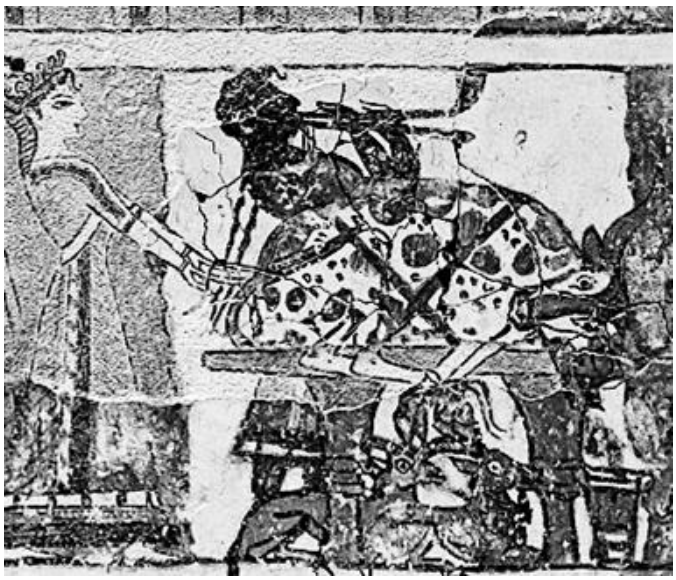

Figure 11: Cretan aulos depicted at the Aghia Triadha's Sarcophagus (c.1400 BC), Iraklion Museum, Crete (Photo: ArchaiOptix (2019) accessible via https://en.wikipedia.org/wiki/File:Painting_on_limestone_sarcophagus_of_religious_rituals_from_Hagia_Triada_-_Heraklion_AM_-_06_(cropped).jpg [CC BY-SA 4.0], picture in its current shape is in the public domain.

Archaeological evidence indicates that they shared their knowledge and skills in stoneworking and pottery making. This aulos may be contemporary or slightly later than the Cycladic. The horn attached

[29] Athenaeus. 1854. Deipnosophistae, [English The Deipnosophists or, Banquet of the Learned, of Athenaeus]. Translated by Charles Duke Yonge, 3 vols. London: Henry G. Bohn, vol. 3, 1008.

[30] Pausanias.1935. Description of Greece. trans. by William Henry Samuel Jones, 5 vols. Loeb Classical Library London: William Heinemann Ltd.; Cambridge: Harvard University Press, vol. 4, 225.

to one of its pipes may have been purely ornamental or functioned as a bell, amplifying the sound. This distinctive feature is undoubtedly a technological development.

Figure 12: The Phrygian aulos or elymos. The photo is by Anna-Katharina Rieger (2009) and accessible via https://commons.wikimedia.org/wiki/File:Relief_of_Archigallus.jpg, last accessed 13th May 2024. This picture is cropped by the author and in the public domain.

Item of Trade

Trade plays a crucial role in facilitating musical exchanges. The case of the silver pipes discovered at the royal cemetery of Ur in Mesopotamia may be an illustrative example (Figure 13).[31] The pipes come from a burial context, namely, a tomb that probably belonged to a court musician. The fact that the artefact was deposited as a grave good suggests it was an object of prestige. These objects are commonly brought from distant places and are valuable – first, aesthetically, and second, as a commodity. It is known that Mesopotamia imported metals and stones from Anatolia. Silver mining in Anatolia began around the fourth millennium BC, with notable activity at the Nahklah mines.[32] In light of this information, the pipes from Ur were possibly made there or brought as raw materials to Mesopotamia. The idea that the pipes were included among the luxury goods brought in trade is appealing.

The commercial exchanges between Anatolia, Mesopotamia, and Syria greatly contributed to the different aspects of the aulos, for instance, in using special materials for their construction.[33] The choice of materials depended mainly on the wealth of the culture. Instead of bone and ivory, precious materials such as silver were also used. These materials were undoubtedly imported and expensive, a reason why certain hierarchies, such as the one of Ur in Mesopotamia, used them as a symbol of their economic power.

[31] Woolley, 1934: 258-259.

[32] Muhly, 2011: 859.

[33] Postgate, 1992: 211-216.

Figure 13: (left to right) Fragments from silver pipes, Ur, Early Dynastic III (c.2500 BC), The University of Pennsylvania Museum of Archaeology and Anthropology (Photo: © Copyright Penn Museum). Silver pipes from Ur, reconstruction. Redrawn by the author from Rimmer, 1969: 39, Figure 9.

Conclusion

While the origins of the aulos remain a mystery, archaeological evidence suggests possible scenarios regarding its uses and cultural significance. The marble figurine represents Aegean traditions during the early Bronze Age. While implying ceremonial and religious contexts, it suggests gender-specific roles within Cycladic society. The question of whether the aulos originated in mainland Greece remains open. The evidence from Neolithic settlements cannot be substantiated, as it is unknown whether these pipes were played simultaneously. Further research and archaeological findings may corroborate this hypothesis.

The aulos was important to various ancient societies. Its popularity ensured its survival through generations. Music played on the aulos intertwined with ancient rituals, enhancing their spiritual atmosphere. Rituals in which sacrifices were offered to the gods needed validation. The melodies of the aulos not only communicated with the gods but also pleased them, thereby validating the sacrifice.

The aulos carried significant social implications. It was primarily associated with women, who often held slave status. These women, known as auletrides or hetairai in ancient Greece, entertained guests in private gatherings, where they ran the risk of sexual exploitation due to their social status. The sexual connotations of the aulos show the intricate connection between music, gender, and politics in ancient Greek society.

The evolution of the aulos shows the relationship between technology, culture, and trade throughout history. Both the material choices and manufacturing techniques reflect the economic prosperity of various cultures. For instance, the silver pipes from Mesopotamia exemplify that culture's economic affluence and trade influence. The Imperial *tibiae* from Pompeii exhibit technological advancements, economic dominance, and the link between music, material culture, and social dynamics.

References and Recommended Readings

AncientPages. 2017. Ancient Dispilio Disk and Traditional History of Writing. https://www.ancientpages.com/2014/10/28/ancient-dispilio-disk-and-traditional-history-of-writing/, last accessed 13th May 2024.

Ansa. 2024. Herculaneum Papyri Reveal Plato's Burial Place and Shed Light on Last Hours of Greek Philosopher's Life. Accessible via https://www.ansa.it/english/newswire/english_service/2024/04/23/ansaherculaneum-papyri-reveal-platos-burial-place_31291e5e-a5d3-4e31-b9dc-8bc6736f0786.html, last accessed 15th May 2024.

Aristotle. 1908. Aristotle's Politics. Translated by Benjamin Jowet. Oxford: Clarendon Press.

Athenaeus. 1854. *Athenaeus Deipnosophistae* [English: The Deipnosophists or, Banquet of the Learned of Athenaeus]. 3 vols. Translated by Charles Duke Yonge. London: Henry G. Bohn.

Athenaeus. 1912. *Athenian Constitution*. Translated by Frederic George Kenyon. London: G. Bell and Sons.

Avgi Kastoria. 2008. Avgi Kastoria. Accessible via https://www.neolithicavgi.gr, last accessed 13th May 2024.

Barber, Robin L. 1987. *The Cyclades in the Bronze Age.* London: Duckworth.

Barker, Andrew. 1984. *Greek Musical Writings, Volume 1. The Musician and his Art.* Cambridge: Cambridge University Press.

Bellia, Angela and Danilo Paolo Pavone. 2021. Computed Tomography and Handcrafting Processes of an Ancient Musical Instrument: The Aulos from Poseidonia. *Archeologia e Calcolatori, 32* (1): 375-401.

Bloemendal, Jan. 2010. *Gerardus Joannes Vossius*. Leiden: Brill.

Castleden, Rodney. 1993. *Minoans: Life in Bronze Age Crete*. London: Routledge.

Tibullus, Catullus. 1988. *Pervigilium Veneris*. Translated by Francis Warri Cornish, John P. Postgate, and John W. Mackail. Loeb Classical Library. Cambridge: Harvard University Press; London: William Heinemann.

Correa Caceres, Juan Sebastian. 2023. The Aulos in Classical and Late Antiquity: Acculturation, Diffusion, and Syncretism in Socio-Musical Processes of the Mediterranean. Berlin: Logos.

Decker, Wolfgang. 2004. Pankration. Edited by Hubert Cancik and Helmut Schneider. Brill's Encyclopedia of the Ancient World New Pauly 10. Leiden and Boston, 447-448.

Doumas, Christos G. 1972. Notes on Cycladic architecture. *Archäologischer Anzeiger, 87*: 151-170.

Doumas, Christos G. 2000. *Early Cycladic Culture: The N.P. Goulandris Collection*. Athens: N.P. Goulandris Foundation, Museum of Cycladic Art.

Ekroth, Gunnel. 2014. Animal Sacrifice in Antiquity. Edited by Gordon Lindsay Campbell. *The Oxford Handbook of Ancient Animals in Classical Thought and Life*. Oxford: Oxford University Press, 324-354.

Getz-Preziosi, Pat. 1982. "The Keros Hoard": Introduction to an Early Cycladic Enigma. Edited by Dieter Metzler and Brima Otto. *Antidoron: Festschrifst für Jürgen Thimme*. Karlsruhe: C. F. Müller, 37-44.

Gill, David W. J., and Christopher Chippindale. 1993. Material and Intellectual Consequences of Esteem for Cycladic Figures. *American Journal of Archaeology 97*: 601-659.

Goldman, Max L. 2015. Associating the Aulêtris: Flute Girls and Prostitutes in the Classical Greek Symposium. *Helios 42* (1): 29-60.

Herodotus. 2003. *The Histories*. Revised with introduction and notes by John Marincola. Translated by Aubrey De Sélincourt. London: Penguin Books.

Howard, Albert A. 1893. The Aulos or Tibia. *Harvard Studies in Classical Philology 4*: 1-60.

Kubatzki, Jana. 2016. Music in Rites. Some Thoughts about the Function of Music in Ancient Greek Cults. *Journal of Ancient Studies 5*: 1-17.

Kubatzki, Jana. 2018. Processions and Pilgrimage in Ancient Greece: Some Iconographical Considerations. Edited by Ute Luig. *Approaching the Sacred Pilgrimage in Historical and Intercultural Perspective*. Berlin: Edition Topoi, 129-157.

McKinnon, James W., and Robert Anderson. 2001. "Tibia". Edited by Stanley Sadie and John Tyrrell. *The New Grove Dictionary of Music and Musicians 25*, 2nd edn. London: Macmillan, 461-462.

Moore, Timothy J. 2016. *Music in Roman Comedy*. Cambridge: Cambridge University Press.

Muhly, James D. 2011. 'Metals and Metallurgy'. Edited by Sharon R. Steadman and Gregory McMahon. *Ancient Anatolia 10,000-323 B.C.E*. New York: Oxford University Press, 858-876.

Nordquist, Gullög C. 1992. Instrumental Music in Representations of Greek Cult. Edited by Robin Hägg. *The Iconography of Greek Cult in the Archaic and Classical Periods: Proceedings of the First International Seminar on Ancient Greek Cult, organised by the Swedish Institute at Athens and the European Cultural Centre of Delphi (Delphi, 16-18 Novembre 1990)* Liége: Presses universitaires de Liège, 118-140.

Pausanias. 1935. *Pausanias Description of Greece in 5 vols*. Translated by William Henry Samuel Jones. Loeb Classical Library. London: William Heinemann; Cambridge: Harvard University Press.

Pedley, John. 2007. *Greek Art and Archaeology*. Fourth edition. London: Laurence King Publishing.

Plutarch. 1878. *Plutarch's Morals, 3*. Translated by William Watson Goodwin. Boston: Little, Brown, and Company, 235.

Plutarch. 1967. *Moralia Vol. 14*. Translated by Benedict Einarson and Philip H. De Lacy. Loeb Classical Library. Cambridge, London: Harvard University Press.

Pollux. 1824. *Pollux Julius Onomasticon in 5 vols*. Edited by Guilielmus Dindorfius (Karl Wilhem Dindorf). Leipzig: Libraria Kuehniana.

Postgate, J. Nicholas. 1992. *Early Mesopotamia: Society and Economy at The Dawn of History.* London and New York: Routledge.

Renfrew, Andrew Colin. 1984. Speculations on the Use of Early Cycladic Sculpture. Edited by J. Lesley Fitton and Nikos Goulandrēs. Cycladica: *Studies in Memory Of N.P. Goulandris. Proceedings of the Seventh British Museum Classical Colloquium, June 1983*. London: Published for the Trustees of the British Museum by British Museum Publications, 24-30.

Roberts, John, ed. 2005. *The Oxford Dictionary of The Classical World*. Oxford / New York: Oxford University Press.

Rouget, Gilbert. 1985. *Music and Trance: A Theory of the Relations between Music and Possesion*. Chicago and London: The University of Chicago Press.

Schmidt, Mauricius, ed. 1863. *Hesychii Alexandrini Lexicon*. Jenae: Sumptibus F. Maukii.

Touliatos, Diane. 1993. The Traditional Role of Greek Women in Music from Antiquity to the End of the Byzantine Empire. Edited by Kimberly Marshall. *Rediscovering the Muses: Women's Musical Traditions.* Boston: Northeastern University Press, 111-123.

Vergara Cerqueira, Fabio. 2014. The Presence of Music in Greek Worship: An Iconographical Approach. *Chaos e Kosmos, 15*: 1-40.

Wade, Bonnie C. 2009. *Thinking Musically*. New York and Oxford: Oxford University Press.

Wilson, Peter. 1999. *The Aulos in Athens*. Edited by Simon Godhill and Robin Osborne. Performance culture and Athenian democracy. Cambridge: Cambridge University Press, 58-95.

Woolley, Leonard. 1934. *Ur Excavations, Volume 2: The Royal Cemetery. A Report on the Predynastic and Sargonid Graves Excavated between 1926 and 1931*. London and Philadelphia: British Museum and Museum of the University of Pennsylvania. New York: Carnegie Corporation.