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THE SALPINX IN GREEK ANTIQUITY

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THE SALPINX IN GREEK ANTIQUITY

BY NIKOS XANTHOULIS

This article was reviewed and approved for publication by the ITG Editorial Committee.

At the Exploring Trumpet Workshop in Kalavrita, Greece, in January of 2006, Nikos Xanthoulis gave a fascinating lecture on the ancient Greek instrument called the *salpinx*. This historically significant aerophone was a narrow-bored cylindrical tube (usually about 1.5m long) that flared out in a tulip shape to form its conical bell. It was a prominent instrument in both ancient Greek and Etruscan

cultures (the Etruscan culture predates the rise of Rome and originated in what is now the Tuscany region of Italy). At the conclusion of Xanthoulis's lecture, I asked him if he would submit his work for consideration in the *ITG Journal*. I am delighted that this important research is now available to the larger trumpet world. *GM*

"There was a salpinx player whose work was the gathering of the troops. After the enemies arrested him, he shouted, 'Don't kill me, this would be in vain and purposeless. I own nothing else but this copper.' However they thundered in response, 'That's why you have to die immediately, for even though you cannot fight, you rouse everybody to the battle.'" (Aesopus 289. The salpinx player Halm)

Among the wind instruments of Greek antiquity, the salpinx has assumed what can only be described as a masculine role, a role that at various times and in various ways was meant to instill an intense sense of urgency, fear, enforcement, and to a much lesser extent, the sense of music.

By investigating more than one thousand quotations in the Ancient Greek Literature on salpinx, one can draw conclusions concerning the quality of sound, the volume and strength of playing, the ethos or moral purpose of the music produced, information on the techniques the players of these instruments used, the monetary value of the instrument, its usage in medicine, the types of the salpinx, and some historical details.

By examining the historical record, we can deduce that the salpingtis (salpinx player) fulfilled the following roles:

- **Military:** *Salpingtis* of the army (the majority of the related quotations mention military applications)
- **Ceremonial:** *Keryx* (Herald) or associated with a *Keryx*, respectable person, with Hermes as God-protector
- **Entertainment:** *Komastes*, a type of street entertainer
- **Athletics:** The salpinx was actually included as an Olympic event

Salpinx players

As the contest of salpinx playing was part of the Olympic Events from 396 B.C., we wonder if it was a kind of athletic aspiration. Modern scholars suppose that the winner of the contest was the salpingtis who could play the loudest. However, I cannot imagine that the Ancient Greeks, distinguished by

their irrefutable sense of beauty, should choose this one and only criterion to elect the winner. It is probable that the power and the volume of the sound could be the main or the basic requisite element. Pollux the Historian quotes the name of Archias from Yvla in the context of the Olympic Games (Edward Tarr has cited the name Achias; he is probably referring to the same person), as an important and famous salpingtis during the fourth century who won Olympic contests three times. It was for him that an honorable column was erected. Pollux says this in *Onomastikon*, "The Race of the Heralds, made sacred by the God Hermes, proclaimed silence during the contests and in the rites, announced the libations, the truce, and declared the contestants." The salpinx contest was very honorable. In order to arbitrate, the judges had to pay attention: to the rhythmical patterns through which the contestants had to control the duration of breathing and the



Nikos Xanthoulis lecturing with a reconstructed salpinx made by Ghiorgos Paraschos at the Exploring Trumpet Workshop in Kalavrita.

expression of clarity, a prerequisite for the places of worship. In the older times the official heralds who served in the Olympic games were from the district of Olympia. Archias from Yvla was the first non-Olympian Greek who participated in the Olympic games and won in three continuing Olympiads. He won also in the Pythian games where an image of him stood and an epigram:

*“Accept this statue with certainty benevolent Phoebus,
The statue of Archias from Yvula son of Eucles,
Who proclaimed thrice the Olympic competition
Without any volume accessory attached to his salpinx”*

In this excerpt, many problems emerge in the translation. It is probable that “mekos pneumatós” could be translated “the distance that the sound could be audible.” Metaphorically, the phrase “eis mekos” could mean “exhaustively,” and the word “pneuma” could signify either the exhaling air stream or the inspiration. The claim of “clarity” that we’ll investigate further, implies a more sophisticated interpretation of the text.

Indeed, there are at least three possible of interpretations of “mekos pneumatós:”

- The distance that the sound covers (projection).
- The strength of the breath to support the duration of the sound.
- The timbre or quality of the sound.

Of the three interpretations, I support the second one, considering the first rather crude and the third a bit aesthetic for Olympic competition. My reason for supporting strength and duration is based on careful consideration of the references to the salpinx in the whole of the ancient Greek literature.

According to the previous analysis I think it likely that in the Olympic contest of salpinx the strength of inhalation to accomplish long phrases and the clarity of that playing were primary factors in the judging of the competition. Besides Archias, Athenaeus from Naucratis mentions two more salpinx players: “There is a mention that Herodorus from Megara was a salpinx player, his height was three and a half peheis (c. 2m and 24cm) and he had strong lungs. It is said that he ate six hoinikes of bread (2268g) and twenty liters of any meat he could find (a huge amount), drunk two hoas, and could sound two trumpets at once. He also had the habit of sleeping on a bear skin.” The power of his sound was so strong that when Demetrius laid siege to the town of Argos, Herodorus played the leading role in the conquest of the city. The history of the siege states, “When Demetrius son of Antigonos besieged Argos and the soldiers could not carry the ram to the wall of the city because of its tremendous weight, Herodorus, playing simultaneously two trumpets, obliged the soldiers to carry the ram with good grace because of the volume of his sound.”

A female salpinx player is extremely rare in the literature, but at least one specific reference exists (there is no female grammatical indication of the word salpingtis): “There was also a salpinx woman player, Aglaisi Megakleous, who participated in the first great procession in Alexandria with a mask and a helmet on her head, as Poseidipus reveals in his epigrams. She also ate four hoinikes of bread and one hoas of wine.” The quotation to these salpinx players is cited after Lityersas—illegitimate son of Midas who was described as “wild, ferocious and greedy.” Pollux also mentions another salpinx player, named Molovros, who lived during the era of Philopator (he also had the ability to play two trumpets simultaneously).

It is likely that the salpinx came to Greece through the Etruscans, since it is often said that the Etruscans or Tyrrhenoi were the founders: “the Salpinxes and the horns were brainwaves of the Tyrrhenoi.” It is probable that the Etruscans, a culture with a talent for music, had developed a special technique of playing the salpinx and other similar instruments. In many literary references to the instrument, the salpinx is quot-

ed as Etruscan. For example Aeschylus in *Eumenides* says, “Athena O herald, make proclaim, bid all men come. Then let the shrill blast of the Tyrrhene trump, Fulfilled with Mortal breath, thro’ the wide air Peal a loud summons, bidding all men heed.”

The Lexicon “Suda” (an encyclopædic lexicon of ninth century A.D.) informs us, “Archondas, after he had entered into alliance with Heracleides brought the tyrrhene salpinx to the Greeks.” Pausanias describes a temple consecrated to Athena-salpinx. This myth says that Tyrsenos, son of Heracles and Lyde built the first salpinx. The son of Tyrsenos, Igheleos, taught the Dorians how to produce the sound. Igheleos was the founder of the Athena’s salpinx temple. From this story we can assume that the Etruscans taught the Greeks how to play the instrument in an aesthetic fashion, since the producing of a mere sound (like the elephant’s scream) would indicate that it was merely a crude signaling instrument and not worthy of advanced discussion.

Homer also quotes: “As when the voice of a trumpet cries out sharp and clear, when murderous enemies are surrounding a city, so then Achilleus’ voice carried clear and loud.”

Tone Quality

Pollux uses the following descriptors when discussing the salpinx’s unique sound, “We could name the phoneme of the salpinx sound: buzz, noise and beat, aloud, sturdy, stout, imposing, modest, fierce, horrible, grandiose, cruel, violent, rough, terrible, riotous, war call, and fighter.” (Pollux. *Onomastikon* 4, 85, 1)

It has also been described in the following ways:

- Elephant’s voice, “The elephant with his trunk makes a sound similar to a rough trumpet.” (Aristotle’s *Animalia*, Bekker, p. 536b, line 33). The adjective “rough” alludes to the existence of the opposite, that is to say the possibility to be played with soft and beautiful sound.
- Whinnying of a horse “puffing and blowing the horses hurled themselves forward” (Aeschylus, *Fragmenta*, 394).
- Mooing of an ox, “all the trumpets at once with mooings.”
- Bellowing, “and with the bellow of the bull we play the victorious songs.” (Heliodorus, *Aithiopica*)

The adjectives and the verbs used to describe the salpinx give a sense of the sound that the listener perceived:

- “Sharp” (Aeschylus, *Eumenides*)
- “Rough” (Aristotle, *Animalia*).
- “Hot, fighting, and with a shrilling sound like the Olympic salpinx” (Flavius Philostratus, *Vitae sophistarum* 1, 542, 7).
- “Sonorous” (Nonnus, *Dionysiaca* 2, 369).
- “Bluster of the wind” (Achilles Tattius, *Leukippe and Cleitophon* 2, 22, 3, 2).
- “Arising the riot of the battle” (Nonnus, op.cit. 27, 170).
- “With thunderous dins of Zeus the salpinx moaned” (Nonnus, op. cit. 2, 558)
- “The salpinx shouted the paean of the battle” (*Historia Alexandri Magni*, Recensio a, 1, 19, 3, 7).
- “Singing well” (*Historia Alexandri Magni*, 2, 1, 23).
- “Sharp and penetrating sound of salpinx” (*Historia Alexandri Magni*, 6, 350, 1).

- “The powerful salpinx produces a piercing sound” (Lucian, *Gout in the feet* 39).
- “The salpinxes sonorously played the victorious paean on Mount Olympus,” “Roared the salpinx” (Nonnus, op. cit 2, 369)
- “Thunderous salpinx” (Nonnus, op.cit 36, 91)

As for the ethos or state of emotions, the sound of salpinx gave rise to fear and rousing enthusiasm in a way that was, no doubt, useful in battle:

- “When the sound of the salpinx is heard sharp and wailing, everybody goes mad” (Diodorus Siculus *Bibliotheca Historica*, books 38 – 39 5, 1, 7).
- Alexander the Great believed the sound of salpinx was useful to rouse his soldiers as seen in the following quotation: “Casting his terrifying glance, Alexander said ‘I think, my father, many of Homer’s epics must be sung with the accompaniment of the salpinx... not the salpinx which signals the retreat, but the calls which blare the attack and encourages and is sung not by a female or a maiden chorus but by a phalanx more dynamically than Tyrtaeus used to Laconians.’ Then Philip praised him because he spoke well.” (Dio Chrysostomus, *Orationes* 2, 29, 5)
- Plutarchus, with platonic mood, confirms the rousing character of the salpinx: “The salpinxes rouse and increase the courage and the fighting spirit” (*De virtute morali* 440d).
- Appianus said “The salpinxes excited them with urging trumpet-paeans.”

Playing technique

The techniques used to play the salpinx are not easily revealed through the ancient texts. Nevertheless, in Aristotle’s *Audilibus*, reference is made regarding how to use the lungs’ air stream in order to produce a softer sound. “If somebody increases strongly the lungs’ air, the sound becomes immediately harder because of the force, and, if the opposite occurs, the sound becomes softer. The same applies to the salpinx. That’s why the participants of a komos unbend the tension of the exhaling air in the salpinx, in order to make the sound smoother.” The word “komos” is significant, revealing that the salpinx was not just for military use. The salpinx was an important participant in street entertainment as well. “Komos” was the “feast of the street,” a celebration with music and dance. It often turned into a parade of the komastai (the participants) with wreathed heads, torchlight, songs, and bacchanal dances. The indication to use a relaxed air stream implies the need to control the air in order to create a more pleasing tone quality.

In the same book it further states: “When the air stream is thick and its speed is slow we play the lower notes.” It is obvious that this phrase demonstrates control of range through the speed of the air column. Even now, we use almost the same terminology by asking the musicians to play the low register with a slow air stream while for the high notes we ask for an increase the speed of the air. “I anesis tou pneumatos” (the relaxing of the air) is also alluded to in the work of Theon of Smyrna *Mathematics Useful for Understanding Plato*. This knowledge of air stream control (through the acceleration and the relaxing of the air) shows a high technical level, something that allows us to imagine that the sound which came down to the ears of the ancient Greeks was of a high aesthetic quality. It is not by

chance that the language used to describe the quality of the tone shows respect for the inherent sound of the instrument.

Various skill sets were required to play the different styles required of the instrument (much in the same way as today). Unlike an Olympic competitor, salpinx player in the army did not need to use the whole range of the instrument. Two notes were enough for a military bugler to play a wide range of signals.

Xenophon states in *Cyrus’ anabasis* (book, 7, 3, 32, 4), “playing salpinx as a magadis,” he was referring to the fact that the lydian aulos magadis could play only two notes.

In the context of our investigation on technique we must refer to the epinetron (a ceramic vessel often given as gifts at weddings) in the collection of the museum at



Epinetron fragment from the Museum at Eleusina

Eleusina. This ceramic fragment depicts the image of an Amazon (female warrior) salpinx player and the written syllables “to, to, te, to, and ti.”

By attempting to understand this from the perspective of a trumpet player, I suggest a simple but functional interpretation of these syllables. The consonant *t* could show the position of the tongue as the note is sounded, as this is the advisable method of producing the attack even now. The vowels *o*, *e*, and *i* probably demonstrate the various positions of the tongue depending on the movement of the air inside the mouth, hence a variety of tones. It is a practice still in wide use in today’s pedagogy.

Varieties of salpinx

Investigation reveals that there are a number of different salpinxes. The 16th comment of Sophocles refers to Libyan, Egyptian, and Etruscan examples of the instrument. Hesychius alludes to a kind of salpinx named “fotinx,” but the other references on fotinx speak about a kind of monaulos so there is some confusion in this regard. Eustathius describes the following variety of salpinxes: “It is said that there are six sorts of salpinxes. First is the invention of Athena. For this she is honored by the Argians as Salpinx-Athena. The second example is the round salpinx of the Egyptians, which is an invention of the God Osiris and has the name ‘hnoue.’ They use this for the sacrifice by calling the people with the instrument. Third is the Galatian, cast bronze, not very big, having a bell shaped as a wild beast and a lead mouthpiece inside which the salpinx players blow. This horn is high-pitched and the Celts call it karnyx. Fourth, the Paflagonian, whose bell shape is an ox head, low-pitched; they blew it upwards and called it voznos. Fifth is the median with a reed mouthpiece, low-pitched bell, and a big sound. Sixth is the Etruscan-salpinx invented by the Tyrhennes, with a folded bell, very high-pitched. There is also a reference of this in the tragedy of Sophocles *The Whip Bearer*.” It is probable that the words “oxyphonos” and “varyphonos” mean “high and low pitched,” therefore there was the possibility of referring to high and low harmonics, hence more notes.

Military signals

We owe to Aristides Quintilianus our knowledge of military uses of the instrument. Aristides states, "What most people do not know is that in the perils of battle military leaders often avoid the use of verbal commands, since damage would be done if they were understood by those of the enemy who speak the same language. Instead they signal by musical means; using that martial and rousing instrument the salpinx, each command is assigned a specific call. Thus frontal attacks and flanking advances, for instance, have each been given their own particular melodies... another call sounds the retreat, and there are special calls for wheeling to the left or right. Thus they can go through all these battle movements, one after another, using signals, which are incomprehensible to the enemy, but are perfectly clear to their own side, and which are understood the moment they are given. The signals are not heard first by one section, then by the next, the whole army acts at a single sound." (Aristides Quintilianus: *De Musica* Book II Chapter 6, 62 translated by Andrew Barker).

The word "meaning" (simasia) in the lexicon of Photius means: "make known by the salpinx," that is to say bugle-call. Pollux, in his "Onomasikon" gives the names of the signals, "A specific call becomes a special signal for the attack (exormetikon), others calls are commands for concrete acts during the battle (parakeleustikon), another indicates the retreat (anaklitikon), and another for the stand at ease (anapaustirion) (4, 86, 4)." Pollux also informs us about various other applications of the salpinx besides the usage for military purposes, "There is the parade signal for the processions and the ceremonial for the sacrifices in Egypt, Argos, Etruscany, and Rome." (4, 86, 6) From the abovementioned excerpt we see that apart from the Egyptians, Tyrhenes, and Romans, only the inhabitants of Argos in Greece used the salpinx for ceremonial processions.

Medicinal application

The ancient Greeks also used the salpinx for medical purposes. In Alexander's *Therapeutics* there is evidence that they played the instrument in front of an ear-tympanum, in order to diagnose problems with hearing. One can only imagine that it would be used primarily to diagnose complete deafness!

Fabrication

The salpinx was made of copper or/and iron (Pollux *Onomasikon* Bek. 85). The mouthpiece was called the "glotta" (tongue) and made of bone. The bell was called the "kodon." The *Scholia in Sophoclem scholion* states, "The flat of the salpinx is called kodon."

Value

Toward the end of the fifth century B.C., there is evidence that the salpinx was an expensive instrument. In the comedy *The Peace* by Aristophanes (1240) it states, "And now, what should I do with this salpinx that I bought for 60 drachmas?" This was a large sum of money during this historical period. There are also quotations that support the notion that salpinxes were highly prized as "spoils of war."

The instrument in the Museum of Fine Arts, Boston

At Boston's Museum of Fine Arts there is a trumpet that may well be an example of an ancient Greek salpinx. Darcy Kuro-nen, curator of musical instruments for the Museum, kindly

provided the following information:

The trumpet was purchased by the Museum in 1937 from Joseph Brummer in New York City, who reportedly acquired it from a dealer in Paris. The Parisian dealer acquired it from a man in Greece, who indicated that it had been "found" at Olympia. Regrettably, though, there is no concrete evidence of exactly when and where this instrument was actually discovered or excavated.

It is comprised of thirteen sections of tubing made from bone (probably cow or ox), the ends of which are formed as sockets and tenons to join them together. The sockets are reinforced by bronze ferrules of varying widths, and the sections of tubing likewise vary in length from 5.2 to 14.8cm. The external diameter of the tubing varies between about 17 and 18mm, and the bore diameter ranges from about 12.3 to 12.8mm. The instrument survives complete with a separate mouthpiece, which flares slightly to a rounded rim, but does not have a defined cup, throat, or backbore. Instead, its bore is similar in diameter to the other sections of tubing. The bell is made of cast bronze, 31.8cm in length and 7.8cm in diameter. When the instrument is assembled, it measures 155cm in total length.

Associated with this trumpet is a length of bronze chain with rings at each end (not pictured here). A marking midway along the bell suggests that something was once attached to it, and former Museum conservator Gary M. Stewart proposed that it was quite likely that the chain was affixed here. Stewart constructed a replica of this trumpet in 1991, and experiments with it show this hypothesis to be quite plausible. By pulling back and slightly upward on a chain attached to the bell, a player is able comfortably to support the instrument in a horizontal position while also drawing it toward the lips for a more secure playing position.

This unique instrument has been the subject of great curiosity since it arrived in Boston nearly seventy years ago. In the 1937 issue of the *American Journal of Archaeology*, then MFA curator of classical art L. D. Caskey stated the following:

"This is apparently the only Greek trumpet known. Its material and great length show that it is not a military salpinx. In times of peace trumpets were used in religious processions, and also at athletic festivals to announce the events. The games sometimes included contests in trumpet blowing. The representation of trumpets in the hands of warriors on Attic black-figured and early red-figured vases have 'bells' shaped like an actual bell. Because of its funnel-shaped opening our example is to be dated later than these. But it has a severe beauty which makes one wish to assign it to the second half of the fifth century B.C. rather than to a later period."

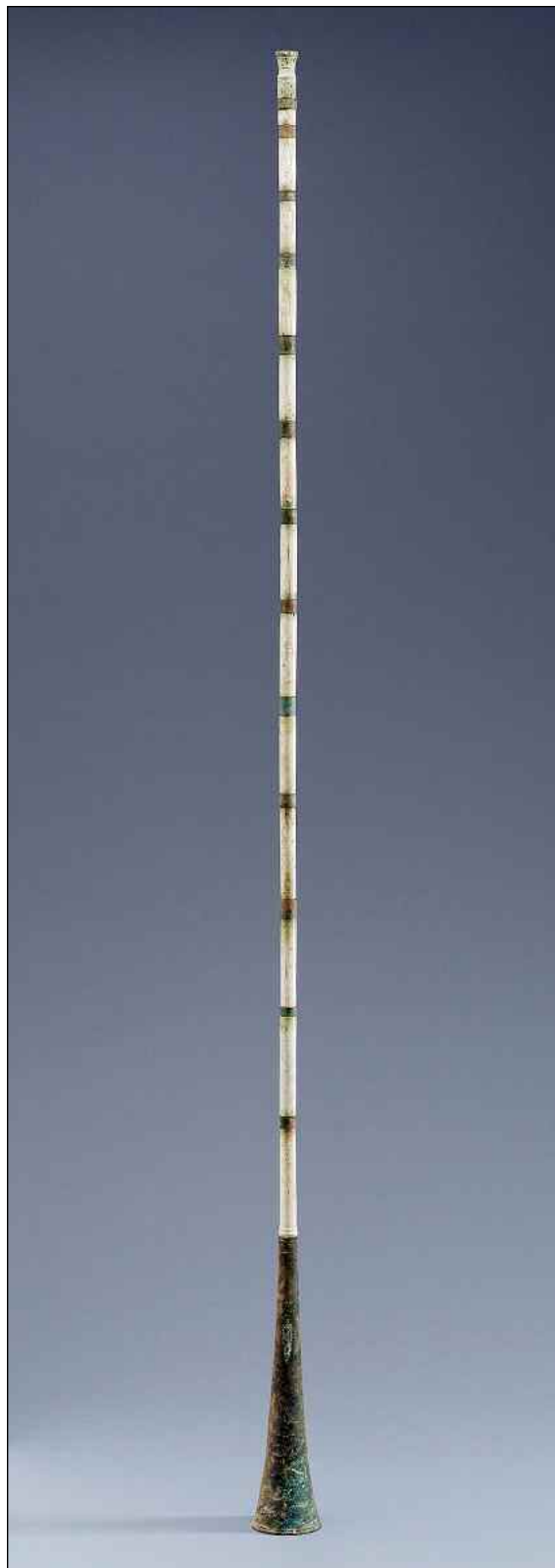
In 1978 instrument maker Mary Kirkpatrick carefully measured the instrument, and R. K. Lee pro-

duced a full-scale drawing based on her examination (a copy of this drawing can be purchased by writing to Mr. Lee at 353 School Street, Watertown, Massachusetts, 02172). Donald Smithers examined the instrument briefly in 1986, and expressed his few thoughts about it in his article “A New Look at the Evolution of Lip-blown Instruments from Classical Antiquity until the End of the Middle Ages,” published in *Historic Brass Society Journal*, Vol. 1 (1989), pp. 10 and 16 – 17. In summary, Smithers believes that although some or all of the components of the instrument are possibly very old, that they do not necessarily belong together nor were intended to constitute a trumpet. He contends that the instrument might well have been created by the Florentine forger Leopoldo Franciolini in the late nineteenth century.

I must, however, concur with Mr. Stewart’s opinion that this object was, indeed, conceived as a trumpet and that it dates from ancient times. The workmanship is in no way similar to the crude, pseudo-Renaissance artifacts that Franciolini and his shop often concocted, and its appearance of age (including leaching of greenish color from the bronze ferrules into the bone) would be quite complicated to fake. The fundamental question remains, though, as to just how old this trumpet is.

Its approximate age (perhaps within about 500 years) could be determined if a sample of the bone tubing were subjected to a carbon dating test. But according to MFA research scientist Richard Newman, current methods of analysis would require that a rather large sample of bone tubing be removed (and destroyed during testing) in order to obtain a reasonably accurate result. The Museum has therefore decided to not proceed with this proposal for the time being, in the hope that testing procedures will someday become further refined and require a smaller sample.

We can, however, begin to place the instrument in an approximate time frame by comparing it with iconographic representations. Although many of the trumpets depicted in ancient Greek and Roman art appear to be relatively long, the majority of them also terminate with a cup-shaped bell, and do not appear to have tubing made in separate sections. But long trumpets with flared bells can also be seen occasionally, such as the one shown in a terracotta statue belonging to the Musée du Louvre in Paris (see illustration on page 44), which dates to the first century B.C. and depicts players of both a trumpet and an organ (*hydraulis*). A similarly proportioned trumpet is also included in a stone relief on Rome’s Arch of Titus, dating to after A.D. 81. And yet another long trumpet with flared bell is shown in a Roman mosaic dating from the third to fourth century A.D., located at the Villa Romana del Casale in Sicily. Of further interest in this mosaic depiction is a thin structure (a chain, perhaps?), running along the upper side of the tubing and attached to upright “posts” near each end, which perhaps was used to cinch together multiple pieces of tubing for sturdiness.



Trumpet (salpinx)

Greek, Hellenistic or Roman Imperial Period,
about third century B.C. to third century A.D.

Bone with bronze ferrules and bell.

Height x diameter: 155 x 7.8 cm (61 x 3¹/₁₆ in.)

Museum of Fine Arts, Boston,
Frederick Brown Fund, 37.301.

Photograph ©2006 Museum of Fine Arts, Boston.

Used with permission.

More intriguing still are portions of another actual instrument that have recently come to light. In Greece's Archaeological Museum of Lamia (located in Thessaly) there is a fragmentary bronze bell, a small section of bone tubing, and an associated chain, all of which are similar to the components of the MFA trumpet. Fortunately, this other "salpinx" has been dated with relative accuracy to about 350 – 140 B.C., based on objects found with it during excavation. Mr. Xanthoulis was in contact with Dr. Fanouria Dakoronia regarding this instrument, who reported that it was found in an archaeological gravesite in Lamia, being held by a skeleton, who presumably was a trumpet player.

Mr. Xanthoulis found an important reference to the notion that a salpinx is constructed from multiple pieces of tubing. In *De Materia Medica* of Dioscorides Pedanius (4, 5, 1, 3) there is reference to "a small one-ply bush, with successive knees which merge between each other, exactly like the salpinx." The aim of the author is to describe a plant, but his allusion is clear. Regarding the materials to be used for such instruments, Artemidorus' *Oneirokritikon* (book I, ch. 56) states, "The salpinx consisted of bones and copper," which certainly accords well with the MFA instrument.



Reconstruction of the MFA instrument

The reconstruction of this instrument in the MFA, Boston, by Ghiorgos Paraschos allowed me to gain a clearer understanding of the sound and playing characteristics of this type of salpinx. When I play this reconstructed instrument, the fundamental note G is sounded. The fundamental series produced from this configuration is represented in the above table. The white notes are the harmonics, played in the same fashion as those on a natural trumpet without any difficulty, while the black notes are possible by bending the pitch using the lips and air stream.

Conclusion

Our knowledge of the ancient Greek salpinx is very incomplete and fragmentary. There can be no doubt that the salpinx is an important forerunner of the modern trumpet. Its sounds echo to us from the depths of the centuries. Archeologists hope that the future will bring new artifacts to



Museum of Louvres
Musicians with Hydraulis
(organum) and salpinx
Material: Terra Cotta
1st century B.C.
Anonymous
Collection: Gréau (1891)

the light of day. Until then, we will have to be satisfied with these limited but valuable pieces of information.

About the author: Nikos Xanthoulis is principal trumpet of the National Greek Opera, professor of the Athens Conservatory, and tutor of the Greek State Open University. His compositions (operas, concertos, sonatas, incidental music, and others) have been played in Greece, Bulgaria, Turkey, Sweden, China, Russia, and the United States. His book on ancient Greek music theory has been recently published by one of the most famous Greek publishers, Daedalus-Zacharopoulos.

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