Silver Production in City/State of Ancient Athens

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Introduction.

Much of what follows was sourced from the internet, however I remain responsible for the conclusions. During earlier research into the origins of silver and gold smithing, I came across many references about the first known "owl" coins that were minted in Greece from silver, commencing c580 BCE. Although these were not the first coins, they rekindled an interest in the silver history of Greece, especially about the geology of the mines in south-eastern Greece. The first known coins were made by the Lydians c700BCE (modern day-Western Turkey) using naturally occurring Electrum.

Over 50 years ago I had sat through a lecture on the economic geology and processing of silver ores from the Laurion area of present day Greece, which is centered about 60km to the southeast of Athens. The Greeks appear to have the first real evidence of mining and processing on an intensive scale from their silver mines at Laurion which is an eastern sea port situated on a bay overlooking the island of Makronisos (in ancient times: Helena). The town is also known as Lavrio, Laureion or Laurium. Other small villages and towns of this area include Thoricus, Kamareza, Maronsa and Sounian.

History of the mines.

Although the start of silver mining in the Laurion area is not accurately known, it was probably commenced before the 3rd millennium BCE. This date has been ascertained because lead found in Egypt and dated to that time has been found to have the same isotope ratios, thus it originated from the Laurion area. The mines were later worked by the Phoenicians in the 2nd millennium BCE and were in places at that time up to 25 metres deep. The mines were also worked by the Mycenaeans and the Cretans from Crete. Production reached a peak in the 5th century BCE, when an estimated 20,000 slaves worked in the mines. Conditions in the mines were both harsh and dangerous; the slaves had a life expectancy of about 4 years. They were leg ironed, routinely starved, savagely beaten, seldom saw daylight and were worked to death. During the period of the 4th and 5th century BCE peak production of up to 1 million ounces of silver per annum is estimated.

Figure 1. Location of Laurion and the Mines (shown as darker areas).

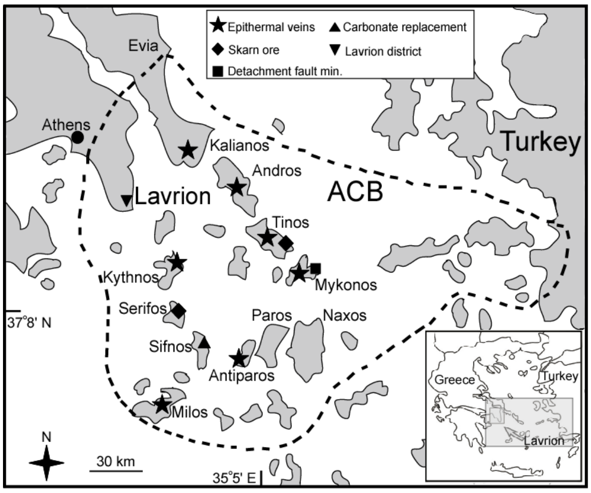


Figure 1. The location of the Attic-Cycladic Crystalline Belt (modified from Brocker and Pidgeon, 2007; Skarpelis, 2007). The following symbols show the locations of a given style of mineralization: stars – epithermal vein; diamonds – skarn; squares – detachment fault base metal mineralization; triangles – carbonate replacement; and inverted triangle – Lavrion.

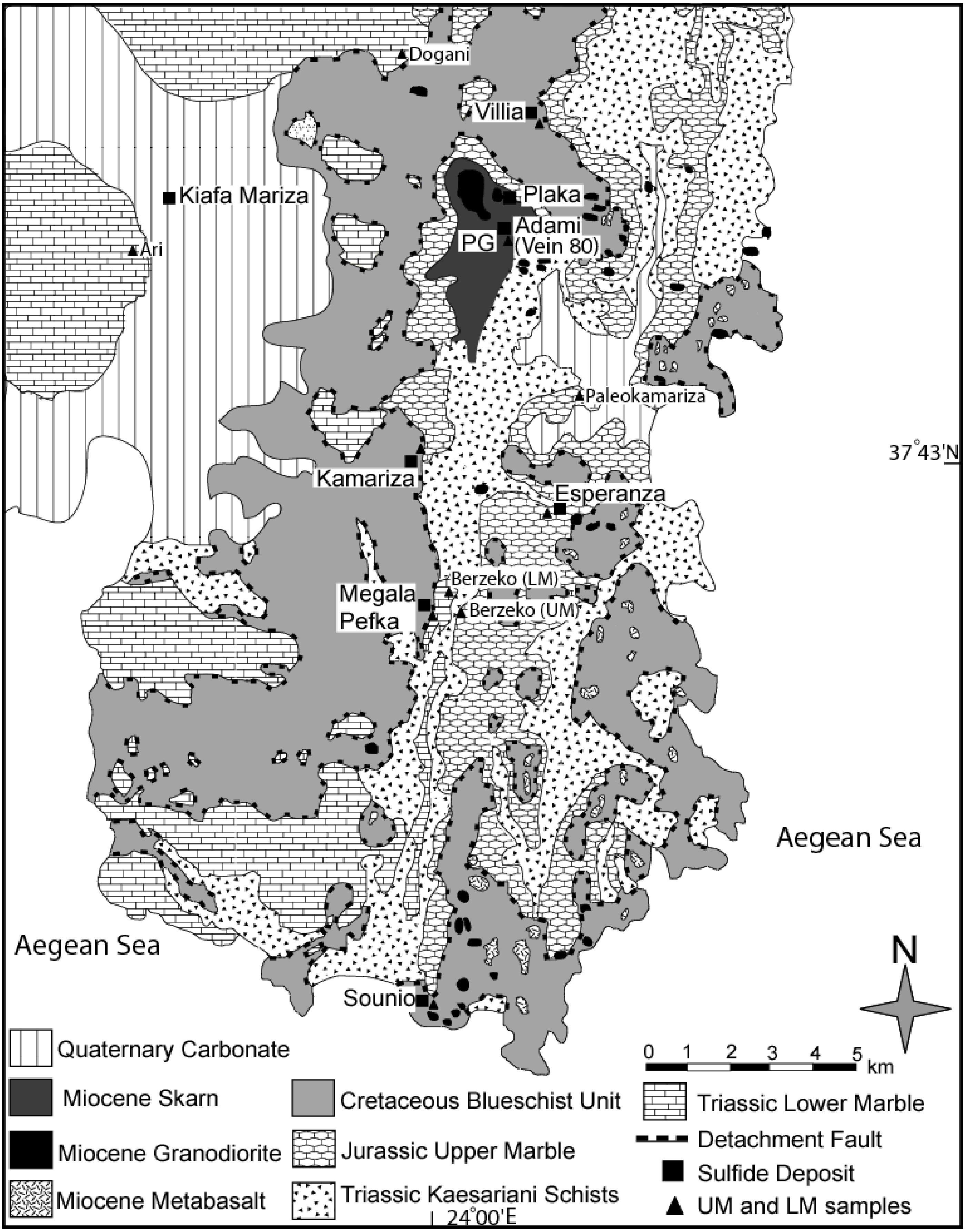


Figure 2. Geologic map of Lavrion. A dot shows the location of the mines sampled in this study while triangles represent the locations of samples obtained from the Lower (LM) and Upper marble (UM).

Mining

Mining probably began a few miles north of Laurion at a cone shaped hill named Velatouri near Thoricus, In later centuries the silver-lead veins were traced southward to Kamareza along the crest of a ridge overlooking Laurion, thence further south along a ridge to Maronsa and finally to Sounian on the coast. The zone of mineralisation then continues an unknown distance under the Aegean Sea. The mineralised zone has a general N-S to NNE-SSW trend, and is approximately 17 km long and at least 6 km wide. Another description suggests that the area of the old workings was twice the size (200 sq.km). The aspect of the workings immediately tells us that there were a very large number of narrow mineralised zones. The country is very hilly, with local relief up to 400m above sea level.

The miners were fortunate because the Laurion mines were high on ridges in a fairly dry region, and they were able to sink shafts vertically downward over 100 m before they struck ground water. Eventually thousands of shafts were sunk in the Laurion area: more than 2,000 old shafts (6’X4’) were still visible on the ground surface in 1884. More than 200 processing plants have been located, including cisterns, tables etc.

These mines were firstly worked from surface and shallow underground openings using stone tools, later iron tools including hammers, chisels, picks and shovels were used.

Once the ore had been mined, it was hoisted or carried in sacks up the shafts on wooden ladders to the surface to be treated on the hillsides. It was first crushed with hammers, then washed on sloping marble tables, topped with fine smooth cement and grooved. The grooves trapped the dense metal bearing grains, while the gangue (waste country rock) was washed away.

In this area where rain falls in winter months, massive cisterns up to 10 m (33 feet) across and lined with special waterproof mortar had been built into the rock to retain the rain water needed for concentrating the ore. The washing water was later collected in a settling basin, the unwanted sludge was removed, and the water was recycled back into the cisterns. Some original processing areas remain at the Ghost town of Maronsa where the crushed silver ores were concentrated.

The dense metal bearing concentrate was firstly fired in small furnaces to extract the lead and silver (and probably other metals such as copper and zinc). This mixture was then fired again in clay crucibles, in the process called cupellation. Some of the lead simply oxidized away into the air, and some was absorbed into the clay crucible to form a slag, leaving behind comparatively pure silver. In the end, Athenian silver was about 98% pure. Perhaps as much as one-third of the silver remained in the slag. Slag dumps occur on the nearby Islands of Thasos and Siphos in the Aegean Sea, suggesting that smelting occurred on these islands as early as the 4th century BCE.

It is estimated that a total of 43 Mt of massive sulphide ore was extracted from these mine working. The ancient Greeks mined from the 7th to the 1st century BCE about 13 Mt of ore with an average grade of 20% lead (Pb) and 400 g/t silver (Ag); the extracted metal was estimated to be about 1.4 Mt of lead and 3500 tonnes (112 M ounces) of silver. More recent exploitation by French and Greek companies, from 1865 to 1982 AD, mined about 30 Mt of ore with an average grade of 3% lead and 140 g/t silver; the extracted metal was approximately 0.9 Mt of lead and 4,200 tonnes (134 M ounces) of silver.

There was a mining revival in the middle of the fourth century starting around 338 BCE, and the Athenian administration of Lycurgus received large yields from these mining operations. This boom was used to finance the fight against Alexander the Great. Alexander had brought a lot of precious metal from the wreck of the Persian Empire into the Greek economy; this had the effect of devaluing the silver price. Most of the Laurion silver that could be reached by the mining methods of the time had been exhausted by the 3rd century BCE. This was because the shafts had reached water at a depth of more than 100 m below the level of the mine entrances. The decline of the Laurion mines was accelerated by the opening of new silver mines in Macedonia and Thrace, and the decline of Laurion also marked the end of the dominance of southern Greece in the ancient Mediterranean. The Laurion mines were still worked but with decreasing yields and they were essentially quiet after 103 BCE when a slave revolt caused the mines to close. Silver production up to that time exceeded an estimated 112 million ounces (3,500 tonnes), the actual figure will never be known.

In 1859 the Greek metallurgist Andreas Cordellas was sent by the Greek Government to Laurion to examine the possibility of reopening the mines. He detected the presence of extensive ancient mining residues which could produce large quantities of lead and zinc (zinc was an unknown metal in ancient world). Modern mining of the district was conducted by Greek Metal Works Company of Lavrio (1873-1917) and the Compagnie Françoise des Mines du Laurium until 1982. These two companies mined and processed about 30 million tonnes of ore at an average grade of 3% lead and 140g/t silver and produced approximately 900,000 tonnes of lead metal and 4200 tonnes of silver (134 Million ounces).

Both companies rejuvenated the previously abandoned city of Laurion, converting it to a great industrial city with thousands of workers. The extraction of lead, zinc, manganese, arsenic and cadmium, as well as of silver helped finance the newly formed country of Greece which was founded in 1830 after 4 centuries of Ottoman occupation and after 9 years of war against the Ottoman Empire.

The Laurion mines were finally abandoned after all the known ore deposits were exhausted in 1982. Total silver production from this area exceeded 245 million ounces.

Figure 10. The ore floatation plant of the Greek company at the beginning of 20th Century. With a 3350 m^2 surface area it was then one of the biggest in the world. Unfortunately, only a small part of it was saved. (Image from the book "Historical and technological equipment in Greece")

Figure 11. The French companies plant in 2000, well after production ceased.

Geology

The basement rocks are metamorphic rocks, of Triassic and Jurassic age made up of three marble units separated by layers of schists; all these are cut by later intrusive Miocene aged andesitic dykes. Ore values are concentrated in the lower 2 marbles units just below the schist capping. The replacement style Pb–Zn–Ag ± Au deposits are genetically related to the emplacement of the dykes. Veins as well as replacement deposits of massive sulphide (chimneys and mantos) are the major orebody styles, gradation between these styles of deposits is common. In the Kamariza area the deposits occurs nearby to the Plaka granodiorite intrusion, and this intrusive and its buried extensions may have been the source of the metals of the mineral deposits.

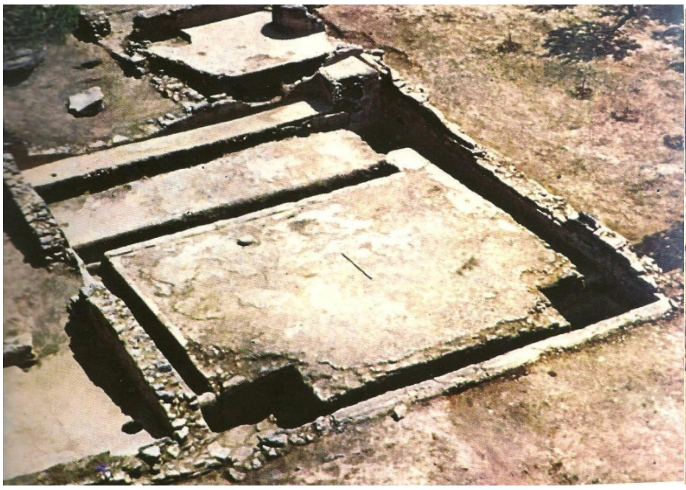
Complicating the geology has been later granite intrusions causing contact metamorphism of the schist to form hornfels. The metal deposits are mostly tabular or amorphous masses penetrating deep into the marble. Replacement type, of silver-lead-zinc ores with fluorite and minor barite in cavities in the marbles. The primary deposits consisted of sulphides with later weathering producing arsenates, carbonates, fluorides, and phosphates. There are two types of primary ores, the iron and manganese ores which were deposited first, these contained ankerite (calcium-magnesium-iron carbonate), rhodochrosite (manganese carbonate), fluorite (calcium fluoride), barite (barium sulphate) and quartz, some of which have been oxidised to limonite (iron oxide) and pyrolusite (manganese oxide). Later ores were of mixed sulphides, primarily of zinc, iron and lead, present as sphalerite (zinc sulphide), pyrite (iron sulphide) and argentiferous galena (silver rich lead sulphide) respectively. These sulphide ores were associated with a number of other metals including arsenic, bismuth, nickel and cobalt. The sphalerite contained not just zinc and iron but also manganese and cadmium, whilst the galena contained silver (180 g/t) and a little gold, (about 2 g/t).

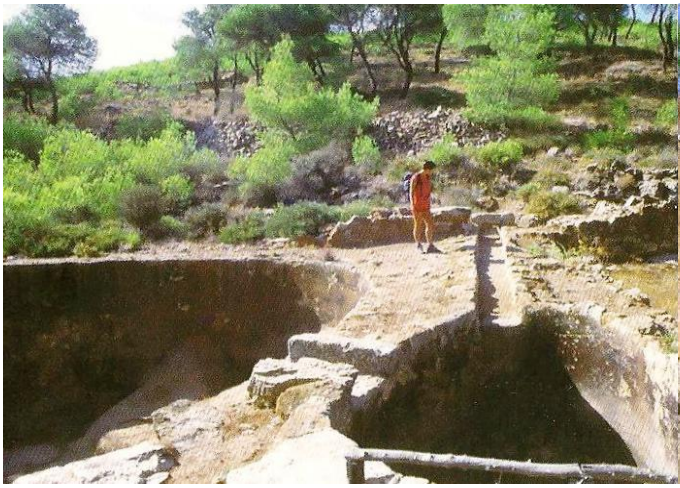
Weathering and oxidation of these primary sulphide minerals has produced a large range of secondary minerals, including cerussite (lead carbonate), anglesite (lead sulphate), adamite (zinc arsenate), smithsonite (zinc carbonate), malachite (green basic copper carbonate) and azurite (blue basic copper carbonate). Slag heaps from ancient processing was often dumped on beaches, resulting contact with sea-water has produced an unusual range of complex secondary minerals, many containing chlorides. The Laurion mining field is a mineralogist's paradise: more than 265 different minerals have been recorded there.

Environmental Issues

The environmental cost of the mining and processing was very high. The dumping alone was considerable: mine tailings, and the dross removed from the molten metals, and the litharge (lead oxide recovered during cupellation were all dumped. In addition, we must reckon with deforestation for wood for mine supports and smelter fuel, noxious fumes from the smelting, and smoke. In modern times, this region has not seen much farming, and there is little evidence that things were any better in antiquity. This wasn't great farmland anyway, but the results of silver production must have finished off any chance of farming or similar land use.

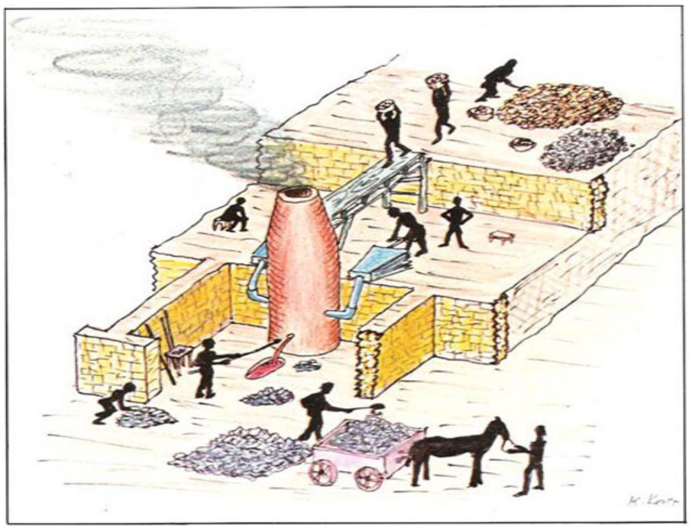
A surprising amount of original infrastructure has survived over 2500 years since peak production.




Figures 3 and 4. Examples of concentrating tables which have survived about 2500 years.

Figures 5 and 6 Examples of water storage cisterns that have also survived. Both tables and cisterns are cut from solid rock.




Figures 7 and 8. Sketches showing smelting of ores in reducing conditions to obtain lead, then retorting of the lead metal in oxidizing conditions to produce silver. A large amount of silver was not recovered by this process but remained in residues.

Refining had also occurred on some of the Greek Islands, probably because timber for fuel was available there and also because some mineralization was present on some of the islands. The Laurion slag heaps were being re-processed in Roman times because new ore was so difficult to mine and they were of lower silver grade and relatively unrewarding to smelt. The mines were abandoned in the 6th century CE. The area lay dormant for the next 1200+ years.

The area is a mineralogist and sample collectors dream, in excess of 250 different minerals species are known to occur there, some unique to the area where waste material and smelter products have been attacked by sea water to produce complex metal chlorides. The main gangue minerals are quartz, chlorite, sericite, hematite, magnetite, andradite, hornblende, epidote, plagioclase, scapolite, actinolite, fluorite, siderite, barite.

Native minerals include bismuth, gold and arsenic and an unnamed silver-copper alloy.

Sulphides and sulpho-salts include (Alphabetically) aikinite, arsenopyrite, bismuthinite, boulangerite, bournonite, chalcopyrite, cosalite, covellite, emplectite, enargite, galena, gersdorffite, lillianite, löllingite, marcasite, matildite, miargyrite, molybdenite, petrukite, pyrargyrite, pyrite, pyrrhotite, ramdohrite, semseyite, sphalerite, stannite, stephanite, stibnite, tennantite, tetradymite, tetrahedrite, wittichenite.

Genetic Model

The genetic model proposed here is cantered on the presence of the large N-S trending detachment fault in the Lavrion district that formed as result of Miocene back-arc extension. Such extension accommodated the intrusion of a granitoid batholith into the shallow crust, the surface expression of which is the Plaka granodiorite and various apophyses (acid to mafic dikes and sills), and the formation of smaller NE-SW-, NW-SE-, and N-S-trending fractures. The aeromagnetic data of Marinos and Makris (1975) and Tsokas et al. (1998) of the Lavrion district show the existence of a large batholith at depth in the Plaka area.

Low-grade porphyry molybdenite mineralization and attendant Fe-Cu skarn mineralization was related to an intrusion of the Plaka granodiorite. Breccia-style sulphide mineralization in the Plaka granodiorite was likely associated with the waning stages of crystallization during volatile escape. The high hydrostatic pressure allowed the granodiorite to be brecciated. Faults and fractures associated with extension and the intrusion of the batholith, including the large detachment fault, served as pathways for hydrothermal fluids and sites of deposition. Elsewhere, in the district hydrothermal fluids derived from either the Plaka granitoid, the acid to mafic dikes, or both, were also able to travel through the permeable carbonate rocks (primarily the Lower marble), cooling along its pathway. The fluids ponded beneath an impermeable mica schist stratigraphically between the Upper and Lower marbles. Manto-style mineralization was deposited mainly at the top of the Lower marble and as orebodies in the Kaeseriani schists, which occur within the Lower marble. The oreforming components including sulphur, the base, precious, and trace metals, along with the hydrothermal fluids were largely derived from a magmatic source (i.e., granitoids and mafic to acid dikes) but became diluted late in the paragenetic sequence of the carbonate replacement mineralization and Vein 80 due to an incursion of meteoric fluids. Although, the evidence is scant (a single sulphur isotope composition of 9.4‰ and negative Ce anomalies for fluorite and calcite intergrown with sulphides), there may have been a minor component of seawater into the hydrothermal system. Interaction of the hydrothermal fluid with the host marbles likely accounts for the elevated Ca content of the ore fluid, as evidenced by the low eutectic temperatures of fluid inclusions in sphalerite and gangue minerals.

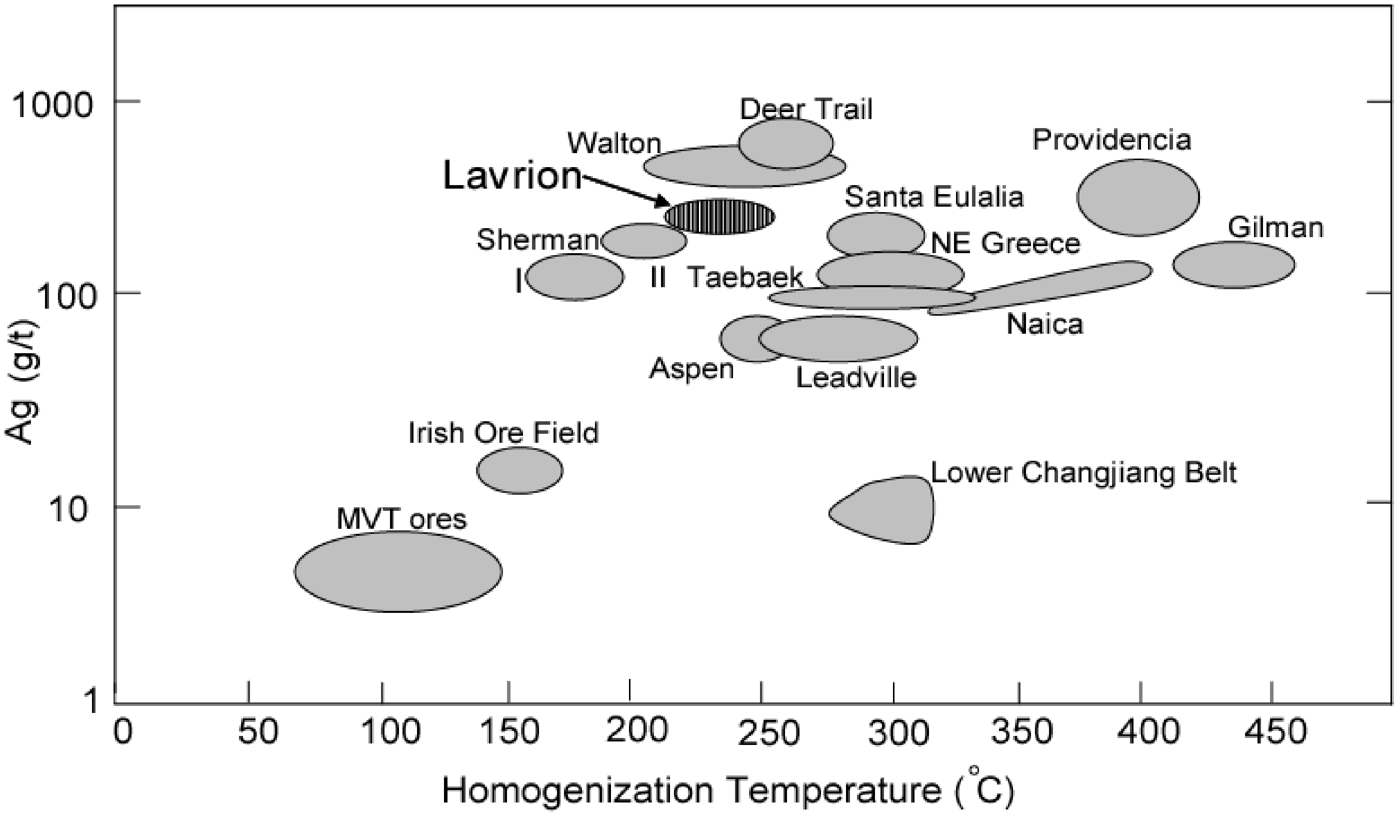


Figure 15. T_h vs. silver grade plot of carbonate replacement deposits world-wide including high temperature carbonate-replacement deposits, Mississippi Valley-type (MVT) and Irish ore field (modified after Titley, 1996). A shaded area for the Lavrion carbonate-hosted Pb-Zn-Ag deposits is indicated and shows that it has values of T_h and silver grade.

That's what the lecture was about; I now put the silver mines into historical Context.

Earlier silver production increased after the Minoan and Mycenaean civilizations died out (and disappeared around 1300 BCE due to the volcanic eruption of Santorini). Around this time the silver trade routes throughout Asia Minor and Africa had grown dramatically. The rise and fall of Athens is closely linked with that of Laurion: after 512 BCE when the Persians overran the silver mines in northern Greece, Athens was forced to rely entirely on the Laurion mines as a source of silver. Profits from the Laurion silver mines appear in the budget of Athens in 500 BCE. However in 482 BCE another large silver-lead deposit was discovered beneath the previous workings near Laurion and production of silver rapidly increased.

The mines belonged to the city of Athens, and they were rented out to various individuals for a fixed percentage of the production. The most difficult work including the extracting of underground ores was done by slaves, most of whom lost their lives in the process. By 483 BCE (according to Aristotle) mining had penetrated down to near 100 meters depth, miners were now using metal hammers and chisels.

Athens at the Time of Peak Production.

The great Athenian leader Themistocles persuaded the citizens of Athens to forgo their usual dividend from the mine so that they could use the money to enlarge its Greek naval fleet. He proposed that 100 talents of silver be used for this purpose (that equates to approx 3,300kg, 1 million ounces). Athens already processed 70 fighting ships, but they used the money from the Laurion mines to build another 130 Triremes, essentially tripling its sea-power. Greek warships of that period had oars as well as sails; the largest had three banks of oars and were called triremes. They were about 120 foot long and needed 170 men to row each one, one man to each oar (Figure 2). A Fleet of 200 triremes would have required 34,000 oarsmen, fully manned, these boats required 40,000 people.

At that time Athens relied heavily on sea commerce for its trade and for the importing of food. Themistocles had argued that the navy would help Athens in its long standing rivalry with the island of Aegina as well as the ongoing war with the Persian Empire. Aegina, one of the Saronic Islands was only 27km SW of Athens.

In 490 BCE Athens had defeated the invading Persians at the battle of Marathon; however it appeared inevitable that the Persians would return. When the Persians did return in 480 BCE, the newer Greek fleet was only several years old. The Persian army had marched southward across Greece under the personal command of King Xerxes. It defeated the smaller Greek army (mostly made up of Spartans) in the epic battle at Thermopylae; they then advanced relentlessly south and sacked and burned Athens. The Persians had planned to supply its huge army by sea. However the Athenian navy had remained intact, and with the aid of ships from allied states destroyed the larger Persian fleet at the battle of Salamis. This destroyed the Persian supplies and their proposed supply lines, forcing the surviving Persians to retreat, thus making Athens controller of the seas.

The Laurion mines thus had a direct and major effect on the creation of the subsequent Athenian empire, and on the celebration of a century of the Golden Age of Athenian democracy that followed.

Figure 3. A Trireme.

The rebuilding of Athens to its position as the leading city-state of Greece was financed with silver from Laurion which was absolutely critical to Athens: the playwright Aeschylus called it the "treasure house of the country". At the height of production the in the 4^{th} and 5^{th} century BCE the silver mines of Laurion were producing up to one million ounces of annually, making them the largest silver mines in the world at that time and for centuries to come.

During the Peloponnesian war in 413 BCE, the Spartans ravaged the province of Attica as far south as the silver mines, setting up camp at Dekalea, only 22 km north of Athens. Apparently the slaves deserted the mines in their thousands and fled for freedom and safety with the Spartans. That same figure of 20,000 slaves is often mentioned in articles about this desertion. Given the normal Spartan treatment of slaves they were probably very disappointed; however the Laurion mines were certainly crippled. Almost immediately Thucydides begins to chronicle events in which the chronic shortage of money led to Athenian disasters. Athens suffered a long and agonizing defeat. Although Athens lost the war and its rank as the leading Greek city-state, Hellenic civilization and culture continued to prosper for some time.

Some of the Legacies of the ancient Greece.

1. Buildings.

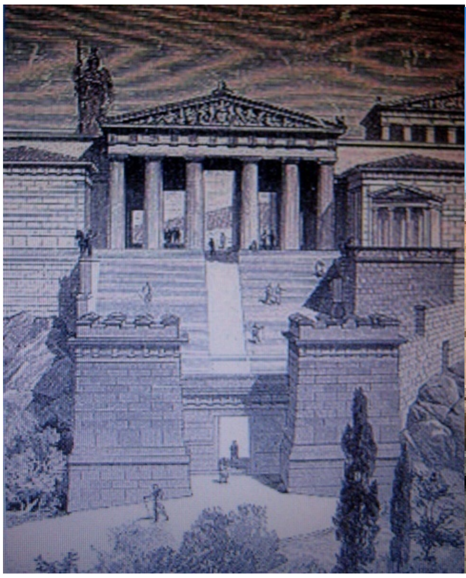
The "Classic period" of Greece is considered to be between 500 BCE to 323 BCE, the year Alexander the Great died in Babylon. The silver mined at Laurion from the 6th to the 2nd century BCE enabled the ancient Greeks to prosper enormously and to build an advanced society with such magnificent structures as the Acropolis. Pericles (495–429 BCE) co-ordinated the construction of the site's most important buildings of the Acropolis. The four main buildings that replace older buildings are:

1. The Parthenon built between 447-432 BCE. It was the Temple of Athena Parthenos "Athena the Virgin". That was without doubt the central attraction (see below). Approximately 22,000 tonnes Pentelic marble from the nearby Mt. Pentelicus were used in the acropolis construction. The Parthenon and the other buildings were seriously damaged during the 1687 siege by the Venetians in the Morean War against Turkey when gunpowder being stored in the Parthenon was hit by a cannonball and exploded.


Figures 11 and 12. Views of the Parthenon at the top of the Acropolis.


Figure 13 and 14. The Erechtheion (a Temple to both Athena and Poseidon) built between 421-406 BCE in Pentelic marble transported from Mt. Pentelicus, a distance of approximately 16km.


Figurs 15 and 16. The Temple of Athena Nike built between 427 and 420 BCE.

Figures 17 and 18. The Propylaea (The Entrance) was built between 437 BCE-431 BCE, although never finished due to the Peloponnesian war. An artist impression of original structure is on the left side.

There were originally another 17 buildings in the immediate area of the Parthenon.
They were: Old Temple of Athena, Statue of Athena Promachos, Eleusion, Sanctuary of Artemis Brauronia or Brauroneion, Chalkotheke, Pandroseion, Arrephorion, Alter of Athena, Sanctuary of Zeus Polieus, Sanctuary of Pandion, Odean of Herodes Atticus, Stoa of Eumenes, Sanctuary of Ascelepius, Theatre of Dionysus Eleuthereus, Odeon of Pericles, Temenos of Dionysus Eleuthereus and the Agluareion.

2. Democracy.
Democracy was introduced in Athens c508 BCE by Cleisthenes. Only men could vote, not women, slaves or foreigners. In Athens there was a council made up of 500 men, held every 10 days. They proposed new laws which were debated in an assembly and in which all men could attend. The Athenians also had a method of removing politicians they disliked. At an assembly each year men wrote the name of an unpopular politician on pieces of broken pottery. If 600 men voted against him he was banished for 10 years.

3. Philosophy.
The Greeks are also famous for their philosophers (philosopher means lover of wisdom). Among the greatest philosophers were Socrates (469-399 BC), Plato (428-348 BC) and Aristotle (384-322 BC).
One of the most influential philosophers was Empedocles (494-434). He taught that the world is made of four elements, earth, fire, water and air. This incorrect view dominated Western thought until the 17th century. In 380 BCE Plato founds the Academy. Socrates is considered to be the father of Western
Philosophy; he taught Plato who taught Aristotle who tutored Alexander the Great.

4. Medicine. The roots of modern medicine are in ancient Greece. The most famous Ancient Greek doctor is Hippocrates (460-377 BC). Hippocrates stressed that doctors should carefully observe the patients symptoms and take note of them. He also rejected all magic and believed in herbal remedies. Aristotle (384-322 BC) put forward a theory of disease. He believed the body was made up of four humors or liquids, phlegm, blood, yellow bile and black bile. Sickness occurred when they got out of balance.

5. Mathematics.
A brilliant mathematician named Pythagoras (580-500 BC) made many important discoveries. Another mathematician named Euclid (365-300 BCE) wrote 13 books on geometry called “The Elements”.
It was a standard textbook on geometry for over 2,000 years,

6. Science/Engineering.
Democritus (460-370 BCE) said that all things are made of tiny pieces of matter he called atoms.
However it was not until the 19th century that he was proved correct. Archimedes (287-212 BCE) was a mathematician, physicist, engineer, inventor and astronomer. He anticipated modern calculus and analysis by applying concepts of infinitesimals and the method of exhaustion to derive and rigorously prove a range of geometrical theorems, including the area of a circle, the surface area and volume of a sphere, and the area under a parabola.

7. History.
Herodotus (484-424 BCE) was a great historian, known as the Father of History. The outbreak of the Peloponnesian War prompted Thucydides (460-400 BCE) to write a history of its course.

8. Astronomy. Anaxagoras (500-428 BCE) realized that the moon does not shine with its own light, but reflects light from the sun. Aristarchus (310-230 BCE) realized that the sun spins on its axis. He also realized that the earth moves around the sun not the other way round.

9. Literature/Dramatists.
Menander (342-291 BCE) was a famous comic playwright of his time. Pindar (522-443 BCE) was a Lyric Poet. Aeschylus (525-456 BCE) was the first of the great Athenian dramatists. Sophocles (496-406 BCE) was the premier playwright of the second generation, and in 468 BCE Sophocles wrote his first tragedy. Euripides (480-406 BCE) was the last of the three great Greek tragic dramatists; in 441 BCE Euripides wrote his first tragedy.

10. Comedy.
Aristophanes (448-380 BCE) was an ardent lover of the city and a ruthless critic of cranks and quacks. He lampooned eminent generals showing that the Greeks of the classical age not only perfected the art of drama, but also that of comedy.

11. Sculpture. Among the great sculptors were Phidias (490-430 BC), Praxiteles (370-330 BCE) and Lysippus (370-300 BCE). Many of the great marble statues of the classic period were made by these three.

12. Architecture.

The Greek style of architecture has survived the test of time. Apart from the buildings of the Acropolis many other great buildings were constructed in the classic "Greek Style". Some examples follow.

Figure 19. The Temple of Hephaestus with it Doric columns is in the Agora of Athens and was built c450 BCE.

Figures 20 and 21. The Temple of Poseidon at Cape Sounian, the southern end of the silver rich mineral field. First built c480 BCE and rebuilt 40 years later because the Persians had wrecked it!

Conclusion.

The legacy of Ancient Greece would not have been possible in a poor society. The rebuilding of Athens after it was sacked in 480 BCE by the Persians must have cost a fortune. So where did the money come from.

When I entered the following "source of wealth in Ancient Greece" into Google, I got only 2 results.
The second one (American by the spelling) included the following statement:

“The ancient Greek economy is somewhat of an enigma. Given the remoteness of the ancient Greek civilization, the evidence is minimal and difficulties of interpretation abound. The Ancient Greek civilization flourished from 776 to 30 B.C. in what are called the Archaic (776-480), Classical (480-323), and Hellenistic (323-30) periods”.

However, I also found the following statement whilst researching this topic.

“Let us bring crashing down another of those myths: the ancient Greeks were nice folk. Seems they got most of the money to support their poetry, philosophy, development of “democracy,” and sundry other habits from mining. It appears that ancient Greece was a society founded on mining, and the money from mining supported a small upper class that had time (and slaves) to sit around thinking, talking, writing, and leaving a legacy to impress future generations. Certainly, I like many others, was taught of the glories of the Greeks in literature, theatre, and learning. Nobody ever told me this was made possible by large-scale mining”.

It seems obvious to the author that during this very period mentioned in the two quotes above, vast amounts of silver were being produced and a fair portion of it was used to mint coins which were sought by most other cultures. That was surely a very major factor in wealth generation. The rebuilding of Athens after the Why has it been overlooked by those who write the history books?

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