

## Some thoughts on Aigina's harbours

In my article "Does the temple at Kolona belong to Apollo?" published in the previous issue of *Αἰγιναία* I concluded that there was no good reason for the temple at Kolona to be known as the "Temple of Apollo", as it has been for the last thirty or forty years. Before that, it had been known for a long time as the "Temple of Aphrodite", following the well-known comment by Pausanias,

πλησίον δὲ τοῦ λιμένος ἐν ᾧ μάλιστα ὀρμίζονται ναὸς ἐστὶν Ἀφροδίτης.<sup>1</sup>

This comment focuses attention on Aigina's harbours. In particular it becomes important to know what they were like at the time Pausanias was writing, about 170 A.D., when Greece was part of the Roman Empire. It turns out that if we examine the physical and literary evidence that exist now carefully, we can look back in time and come to an interpretation of Pausanias's comment different from, and more convincing than, any that has been made before.

The harbours of Aigina are familiar to us, two of them at least. We come and go on the ferries and the flying dolphins, and see the caiques and yachts tied up at the quayside. That is the harbour, in common parlance. Then at *Αύρα* we see the remains of the wall of the harbour that Gabriel Welter identified as the ancient military harbour.<sup>2</sup>

But there is, or was, a third harbour, on the north side of Kolona. It was described in detail by Paul Knoblauch, who studied it in the years 1964-66. Knoblauch brought to light a huge breakwater or mole, more than 200m long, more than 20m wide and originally more than 4m high, which formed its northern wall (Figure 1).<sup>3</sup>

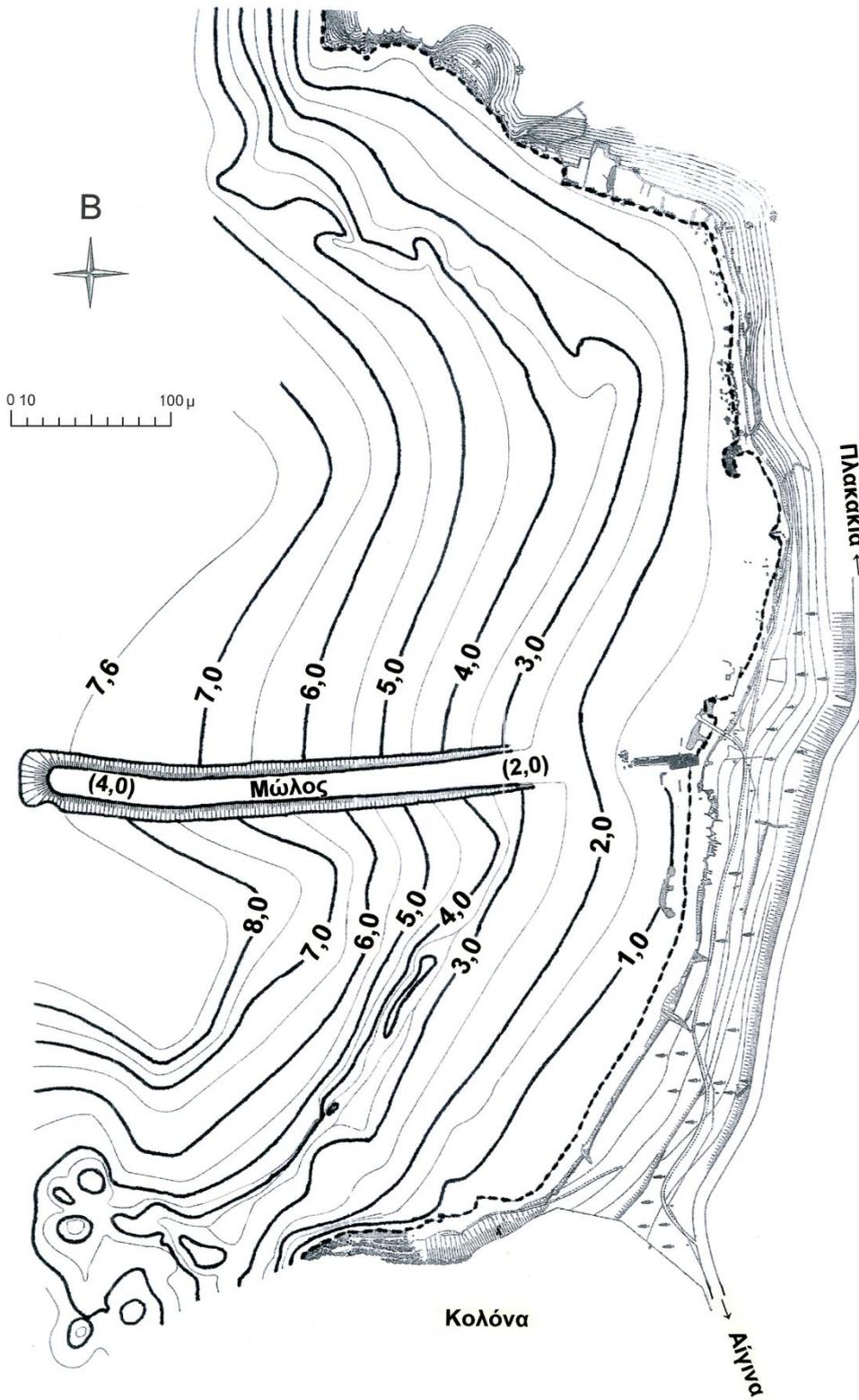
When you look down now on the peaceful bay north of Kolona you see nothing of this. The reason is that the mole starts more than 50m from the shore, where its upper part lies 2m below the surface of the sea, and its extremity, 200m further out, lies 4m below the surface. You could spend a summer swimming at Kolona and remain unaware of the enormous structure lying on the seabed below you. If you swim out, it is at first hard to make out,

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<sup>1</sup> Πausanίας, *Ἑλλάδος Περιήγησις*, II Κορινθιακά, 29,6.

<sup>2</sup> Welter, Gabriel, *Aigina* (Berlin, 1938): 50.

<sup>3</sup> Knoblauch, Paul, "Die Hafenanlagen der Stadt Ägina", *Αρχαιολογικόν Δελτίον*, 27A (1972), 50-85.



**Figure 1.** The harbour north of Kolona. Depths are in metres. This is a radically simplified version of Figure 4 in Knoblauch (1972).

but then it takes shape, a vast elongated pile of stones, quite free from weed, and falling away steeply on each side to the sea bed.

Clearly, a mole under the sea has no function; so we must surmise, as Knoblauch did, that when the mole was built the level of the sea was lower than it is today. Knoblauch estimated, on the basis of various considerations, that it must in fact have been some 3.5 – 4m lower.<sup>4</sup> We can make a somewhat smaller estimate simply by looking at Figure 1. The shore end of the mole lies in water that is now about 3m deep. Presumably, the mole originally connected to dry land, so the shoreline would have been round about where the 3m depth contour is now, or perhaps a bit lower. There would then still have been a very large harbour area of 2-3 hectares.

So what period are we talking about?

Sea levels in the Mediterranean are higher, indeed many tens of metres higher, today than they were at the end of the last ice age. The melting of the ice had a multiplicity of consequences affecting sea levels, which operated differently at different times and in different places. Everywhere the huge volume of water from the melting ice raised sea levels. In northern Europe the effect of this on shorelines was to a varying extent offset by the land rising once the weight of ice had been taken off it, but this was not a factor in the Mediterranean. Other, minor, factors were still present, so the resulting picture is complex.

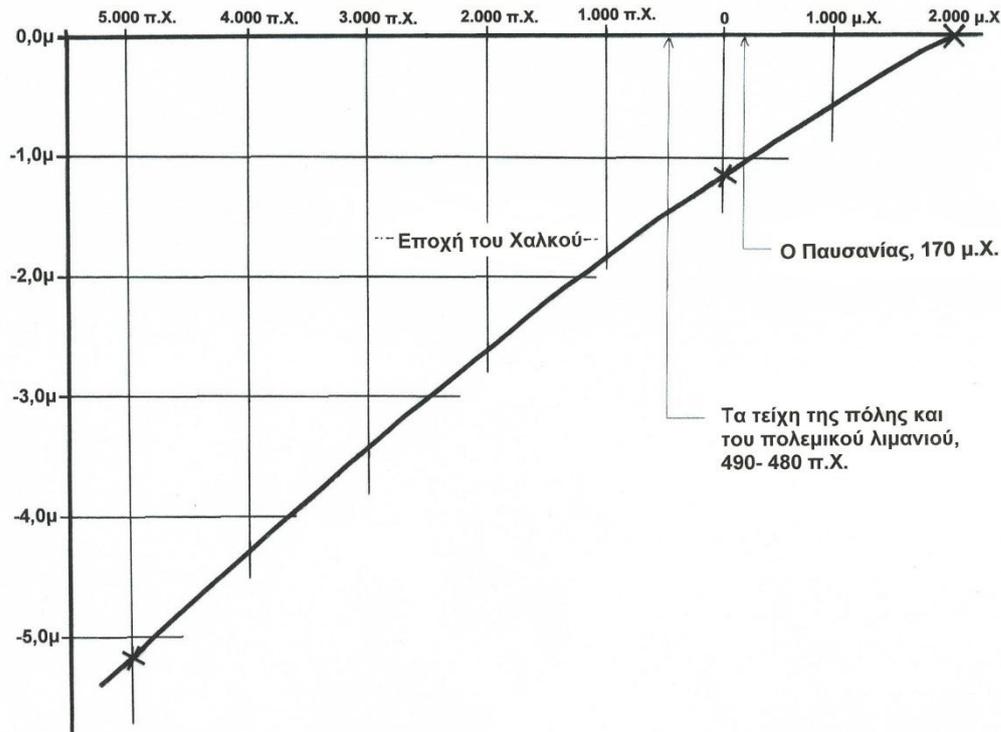
Immediately after the end of the ice age sea level rise was very rapid, but by 5,000 B.C. it had slowed considerably. It has been calculated that since then there has been a slow but fairly steady rise, in the range 0.5-1.0 mm per year.

I rely here on the work of Kurt Lambeck and, in particular, on his 1996 article "Sea-level change and shoreline evolution in Aegean Greece since Upper Palaeolithic time".<sup>5</sup> From information in that article I have constructed Figure 2, which suggests, at least approximately, how the sea level in Aegina has changed in the last few thousand years. We see from Figure 2 that a sea level 3m lower than today corresponds to around 2,500 B.C., towards the start of the Bronze Age and the period of the successive extraordinary towns at Kolona that have been thoroughly excavated in the last fifty years.

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<sup>4</sup> *Ibid.*: 60.

<sup>5</sup> Lambeck, Kurt, "Sea-level change and shoreline evolution in Aegean Greece since Upper Palaeolithic time", *Antiquity*, 70 (1996), 588-611.



**Figure 2.** Estimated sea level rise in Aigina. The positions of the two lower crosses were calculated from Figures 4c and 4d in Lambeck (1996). I have drawn the curve on the assumption that sea level rise has been relatively steady since 5,000 B.C.

With additional assumptions, for example as regards the extent to which the mole has been eroded by the waves, the year of its building would be brought forward a few hundred years, to a time nearer Kolona's zenith, when the town would certainly have had the necessary resources and manpower for the construction. In any event, it is attractive to associate the mole with that period when Kolona was the dominant power, certainly in the Saronic Gulf, and possibly further afield.

It is of great interest that the mole slopes down about two metres from the shore end to the outer end. In countries such as Britain that border great oceans piers normally slope down to take into account tidal rise and fall. But these are not significant in the Mediterranean. So why does the mole slope? An attractive possibility is that this represents a building sequence that lasted over many centuries starting in very early times and going on until well into the Middle Bronze Age. As the sea level rose, so the mole was extended eastwards at successively higher levels.

Figure 3 is based on a fragment in the Aigina Museum of a pot from the early part of the second millennium B.C. It is one of two in the museum depicting a

ship with its crew, in this case of armed men. There is a wonderful vividness about the picture and an economy of style. Its creator, almost four thousand years ago, was truly an artist.

We can imagine this ship lying at anchor in the north harbour, sheltered by the great mole, ready to row off to enforce Aigina's will on some unfortunate neighbour.



**Figure 3.** Middle Bronze-Age pot fragment (Aigina Museum No. xxxx)

Knoblauch was the first person to describe the mole, but was by no means the first person to comment on a harbour north of Kolona. Almost 500 years ago, in the 1520s, the Ottoman sailor, fighter and cartographer Piri Reis wrote in his *Book of Navigation*,

On the southeastern side [i.e. from Salamis] there is an island called Agana. The castle of the island which is in good condition belongs to the Venetian. There is a natural harbour on its west and on the south cape of that harbour there is a tower. This being so, ships entering this harbour should do so from the tower side, as the [north] side is rocky. This rocky area/rock is called Andirya.<sup>6</sup>

The reference to a “south cape” must mean that the harbour north of Kolona is intended.

By the 1520s the mole was deep under water. It is quite likely that Piri was unaware of its existence, so he refers to the harbour as being “natural”, in Ottoman a “harbour created by God”.

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<sup>6</sup>Piri Reis, *Kitab-ı Bahriye* (Book of Navigation) ed. Bülent Ari (Ankara, 2002): 220. I am grateful to Christine Woodhead for her assistance with the translation of this passage.

This leads to a very important question. In Greek, as in English and other languages, the word “harbour” can mean either an enclosed man-made structure; or a harbour “created by God”, a place where there is deep enough water over a large enough area for ships to moor, with adequate shelter from the winds, a suitable sea bed, and a beach on which boats could be drawn up.

When we read about “harbours” in the past, then, we must start off being open minded as to whether natural or built harbours are meant.

There is no sign now of a medieval tower at Kolona, but it was noted by travellers after Piri. There is an account, from possibly as early as 1555 and certainly from before 1586, under the name of a Frenchman, André Thevet. He described Aigina in his “Grand Insulaire”, a work which, like Piri’s *Book of Navigation* exists in its original form only as a manuscript. There is a suspicion that Thevet didn’t visit all the places that he claimed to have visited and at times simply copied the work of others. But whether his account of Aigina is actually his, or was taken from somebody else, is unimportant. It remains a very early account of Aigina’s harbours. Helpfully, Thevet included a map (see Figure 4), which corresponds closely with his account.

He refers to three harbours, but these are not the same three in the vicinity of the modern town that I started this article with. Thevet’s first is clearly the north harbour, Piri Reis’s. The second, another natural harbour, seems on the basis of Thevet’s map and description to be the bay at Perdika or, possibly, at Aeginitissa. And Thevet’s third is either the ancient military harbour or whatever then existed of the modern harbour.

Thevet wrote,

... [Aigina] a trois beaux ports, l’un qui vise au Nord, capable de cent grands vaisseaux l’entrée en est bonne et la sonde aussi tellement qu’il s’y trouve douze et [treize] [ ] de parfonds. C’est en celui la, où les Atheniens [volontiers] lors qu’ils faisoient guerre contre les Rhodiens, Samiens, Lacedemoniens et autres tenoient la flotte de leur armée navale, [ ] les grandes navires, et à l’autre port, qui est de la part du Sud, à cause qu’il n’a si grande ouverture, et son entrée si large que l’autre, ils tenoient leurs vaisseaux à rames, comme galaires, galiottes, et autres. Il est dangereux quant le vent du midi se desborde, aquoi le pilote doit prendre garde et estre vigilante tant de jour que de nuit. Quant au troisieme port, qui est de la part de l’ouest, il est fort dangereux, aussi à cause de plusieurs rochets à fleur d’eau, qui se descouvrent quant la mer est calme. Qui est la cause, qu’il n’est point frequenté, pour le danger comme sont les autres, c’est que la sonde n’y est pas bonne et n’est que bon pour les pescheurs qui vont

avec leurs petites barques et disent, que la pescherie la meilleure d'autour de l'isle est en cest endroit, ...<sup>7</sup>

Thevet's map distorts the island in a way that would be natural for a visitor whose experience had centred on the area near Kolona. The size of the Kolona promontory is greatly exaggerated. But the placing of the anchorages, with the words "bonne sonde" and "bonne rade", and of the dangerous rocks, correspond exactly to the text and, relatively speaking, to the actual topography. And he places a "Forteresse" on Kolona, just where Piri had said it was.

Thevet makes clear that the north harbour is the only one suitable for larger vessels, on account of its size and of the depth of water. He also adds those most interesting observations on his third harbour, the one that may be the old military harbour or the predecessor of the modern one. It is shallow, only useful for small fishing boats; and, of prime significance, the approach to it is

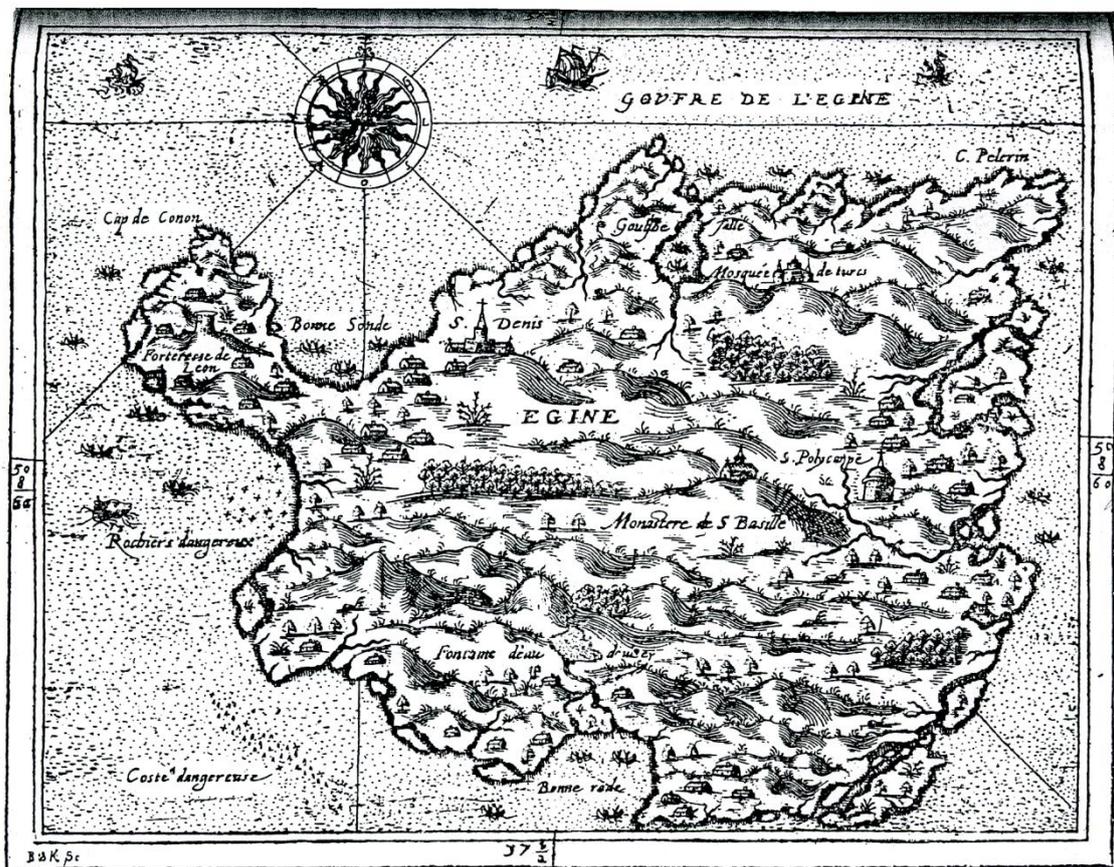


Figure 4. Map of Aigina from André Thevet's "Grand Insulaire".

<sup>7</sup> Thevet, André, "Le grand Insulaire et pilotage d'André Thevet, Angoumoisain, cosmographe du Roy, dans lequel sont contenus plusieurs plants d'isles habitées et deshabitées et description d'icelles." (1586, Bibliothèque nationale de France, ms. Français 15452-15453), ff.31-32. The French of course is very old, and the handwriting is difficult. Some words in the manuscript have wholly or partly defeated me.

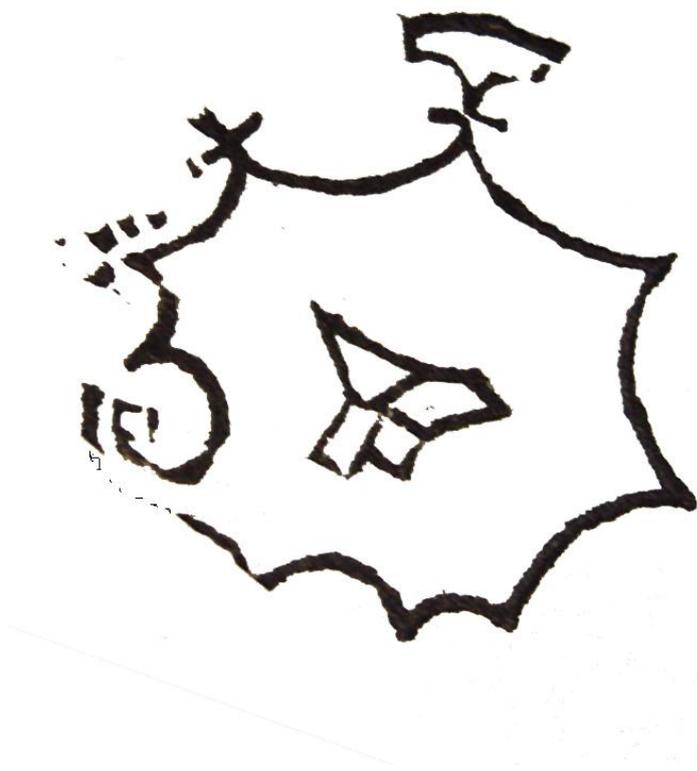
dangerous on account of the presence of rocks just below the surface, which you can see when the weather is calm, that is to say, as I understand it, only then can you see down through the water to the rocks below.

These rocks are something of a puzzle. Almost the first thing Pausanias said about Aigina in 170 A.D., after his historical introduction, was:

προσπλεῦσαι δὲ Αἰγινά ἐστι νήσων τῶν Ἑλληνίδων ἀπορωτάτη· πέτραι τε γὰρ ὑφαλοι περὶ πᾶσαν καὶ χοιράδες ἀνεστήκασι.

This is very precise. The rocks are under the sea or just above the surface.

They seem to be shown on Bartolommeo dalli Sonetti's small scale map of the island from 1485 (Figure 5).



**Figure 5.** Aigina, from the map of Negroponte in Bartolommeo dalli Sonetti's *Isolario* (1485). The orientation has been changed to bring north to the top. Rocks are indicated off the NW coast.

Thevet had the rocks just below the surface, but then at the beginning of the nineteenth century Edward Dodwell recorded,

The port is difficult of access, owing to the number of rocks which rise just above the water's edge ...<sup>8</sup>

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<sup>8</sup> Dodwell, Edward, *A classical and topographical tour through Greece* (London, 1819): 563.

Figure 2 suggested a rise in sea level between the second and nineteenth centuries A.D. of something less than a metre, and all the observations can more or less be made consistent with that although it is somewhat surprising that Dodwell should still have found the rocks above the surface.

The remaining puzzle is as to what happened next, since today certainly there is nothing to be seen above the surface.

It is difficult to believe that Sonetti, Thevet and Dodwell were all simply following Pausanias. Thevet, for example, was more precise, locating the rocks only in front of the site of the classical town, and adding the detail that they could be seen when the weather was calm. Furthermore, the rocks did, and perhaps do, exist exactly where Thevet placed them.

An 1839 chart drawn by the Englishman Thomas Graves<sup>9</sup> shows the north harbour and the two south harbours and, in a string in front of the latter, what we can take to be the rocks described by Thevet and, before him, by Pausanias. Graves marks the rocks with numbers 8 and 9, that is to say eight or nine feet, or 2.5 – 3m, below the surface, where the surrounding sea is typically 5-10m deep. The Greek chart of Aigina published in 1930 and updated to 1962 shows much the same picture. Today you can see the ferries, as they leave for Piraeus, start with a sharp turn to the left, precisely to avoid the rocks in front of the old military harbour; and what I take to be one of the rocks, in front of the current harbour, is marked with a permanent buoy and light.

If the change in sea level in Figure 2 is to be relied on, then when Pausanias visited Aigina the rocks would have been a metre or so closer to the surface than in 1839. I have taken information on the draught of ships from *Το Ναυτικό στην Ιστορία των Ελλήνων* of Μ. Σίμψας. It seems that in Roman times the draught of those that had sails as well as oars could be as much as 1.5m. For these then the rocks outside the military harbour would have been dangerous indeed if you did not know their exact position, and your vessel rose and fell with the waves.

By the time of Piri Reis and Thevet, the galleys that comprised the fleets, for example, of the Venetians and of Haireddin Barbarossa, had a draught of more than 3m. It is thus not to be wondered at that Piri only mentioned the harbour north of Kolona,

But it still remains puzzling that the rocks as they have been recorded in modern times would not have been breaking the surface, except in very stormy weather, at any time in the last two millennia.

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<sup>9</sup> The chart is reproduced in Γ. Κουλικούρδη, *Αίγινα ...*

In any event, it is now possible to interpret an otherwise difficult to understand comment from the very end of the sixteenth century by the official Venetian historian Paolo Paruta. In a passage about the siege of Corfu and Barbarossa's subsequent attacks on Venetian-owned islands in the Aegean, Paruta says that Aigina had previously been known most for the amenity of its harbour, a comment repeated twenty years later in essence by Paruta's successor Andrea Morosini.<sup>10</sup>

On its own the comment seems odd. But in the light of the foregoing discussion it is clear that it refers to the north harbour and repeats in brief what Piri and Thevet had written.

The next significant description of the harbour that I am aware of is by the Ottoman traveller and diplomat Evliya Çelebi, who visited Aigina in 1667 and whose story is the same as those we have already seen, with the tower mentioned by Piri and illustrated by Thevet. Again Evliya makes no mention of any except the north harbour:

It is a large harbour created by God, which holds a hundred vessels and its mouth is turned towards the south-west. On the right hand side of the harbour of Aigina there is a ruined fortified tower. Kiliç Ali Pasha easily destroyed this. Vessels can also anchor in front of that tower.<sup>11</sup>

However, it seems that by this time the north harbour was in fact falling into disuse. In 1673, the French consul Jean Giraud visited. About the harbours he wrote:

Proprement dans l'isle il n'y a point de port pour vaisseaux. Mais entre l'isle d'Egiena, au lieu appellé Agio Vassili, et l'isle nommée Moni les vaisseaux y baillent fonde fort commodement, ainsi qu'entre les isles de Anghistri et Douroussa ...

Les ports d'Egiena pour fregattes et galleres sont:

Le port ordinaire, qui est fort bon et assuré à toute sorte de vents, seulement un peu travaillé du Ponent<sup>12</sup> et labeich<sup>13</sup> mais sans danger; à l'entré dudit port est une esglise dédiée à Saint Nicolas et au fond du port une autre à Sainte Vierge. ...

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<sup>10</sup> Paruta, Paolo, *Historia vinitiana* (Venice, 1599): 437; Maurocenus, Andreas (Andrea Morosini), *Historia Veneta* (Venice, 1623): 182.

<sup>11</sup> Μπίρις, Κόστας, *Τα Αττικά του Εβλία Τσελεμπί: αι Αθήναι και τα περίχωρα των κατά τον 17<sup>ον</sup> Αιώνα* (Athens, 1959): 69.

<sup>12</sup> West wind.

<sup>13</sup> South-west wind.

L'autre port est un ancien port qu'on appelle Santo Molo ou il y a une grande église fort belle et ancienne, dédiée à Saint Nicolas.<sup>14</sup> Ledit port est aprésent gasté et quasy remply et ny entre que des petites barques.<sup>15</sup>

The passage is interesting, showing that a little church of St Nicholas existed as early as that. Giraud distinguished between “vaisseaux”, for which there was no proper harbour, and the smaller “fregattes” and “galleres” which could use the precursor of the modern harbour. We don't know what Giraud meant by these terms, but the vessels cannot have been very big, since the Englishman, John Montague, visiting in 1738, was unimpressed:

The port, composed of two artificial moles, is still entire, and seems, by its smallness, to intimate that the ships of the ancients were not so large as is generally imagined, it being, both on account of the depth and the circumference, not capable of containing other than a few small barks.<sup>16</sup>

Let us go back to the ancients, then. The answer to Montague's puzzle was not as he suggested that their ships were very small, but that they did not in fact use the harbour Montague looked at for their larger ships. The reasons that Thevet gave in the mid-sixteenth century, that there was insufficient depth of water and there were dangerous rocks below the surface, were greatly more compelling when the sea level was around a metre and a half lower than it was in Thevet's time. The north harbour was large and deep. Its mole was not essential. And so for another two thousand years “Aigina's harbour” meant the harbour north of Kolona.

And so to And again, Pausanias:

πλησίον δὲ τοῦ λιμένος ἐν ᾧ μάλιστα ὀρμίζονται ναὸς ἐστὶν Ἀφροδίτης.

He does not refer to ships tying up or docking. The harbour is where they most often “moor” or, in other words “lie at anchor”. The derivation of “ὀρμίζονται”, from “ὄρμος”, a bay, makes it seem almost perverse to take any other interpretation.

I suggest therefore as follows.

Since at least the time in the Bronze Age when the great mole was built, the north harbour was “Aigina's harbour”. This remained the case as sea levels rose. In the archaic period, when the island had become wealthy again, and the level

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<sup>14</sup> Giraud was writing a year after his visit – I think he may have got confused in this sentence.

<sup>15</sup> Collignon, M., *Le consul Jean Giraud et sa relation de l'Attique au XVIIIe siècle* (Paris, 1913): 19-20.

<sup>16</sup> Montague, John, 4<sup>th</sup> earl of Sandwich, *A voyage performed by the late Earl of Sandwich round the Mediterranean in the years 1738 and 1739* (London, 1799): 44. Clearly Montague believed that what he was looking at was much older than it actually was.

of the sea had risen considerably, it became possible to construct a military harbour, that is to say a dockyard, at Αύρα. But on account of the still insufficient depth of water and the presence of rocks at or near the surface there, the main place for mooring ships of any size remained north of Kolona, into Roman times and until at least the 17<sup>th</sup> century. And that is the harbour to which Pausanias was referring.

In my last article I expressed surprise that he had failed to note the temple at Kolona, which was much larger than that of Αφάια, and dominated the headland that you passed close to in sailing to the island. But now we have a better story. His ship moors where the ships usually moor, north of Kolona. The first thing he sees is the temple towering above him. So it is the first thing he mentions in his account. Then he goes ashore in a small boat and looks at the rest of the town.

And the temple becomes the Temple of Aphrodite again.

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