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THE HARBOUR OF TORONE AND ITS DISAPPEARANCE

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In 168 B.C., at Pydna, a Roman army defeated the Macedonian forces under King Perseus, spelling the end of Macedonian power in Greece. Rome did not, however, annex Macedonia as a province; it was instead divided into four separate republics with limited interchange between them and with no armed forces. Livy describes the assets of each of those four regions (by way of underlining their viability). Of the Chalkidike, he says that:

it possessed the celebrated cities Thessalonica and Cassandrea, as well as the fertile and fruitful land of Pallene, and the maritime opportunities offered by the ports of Torone, Mount Athos, Aenea and Acanthus, some facing conveniently Thessaly and the island of Euboea and others the Hellespont.

(45.30.4)

The registration of Torone's harbour (or harbours?) draws attention to one of the most important aspects of the site. Torone was a thriving seaport, with a profitable export trade in timber, wine and probably much else.¹ Timber was a particularly valuable commodity in classical antiquity.² The city was named, said Stephanus of Byzantium, after Torone, the daughter of Poseidon,

¹ A convenient brief history of Torone in the classical and postclassical period can now be found in A. Cambitoglou et al. (eds), *Torone I. The Excavations of 1975, 1976, and 1978* (Athens 2001). See Chapter One, 'Historical and Topographical Introduction' by A. Cambitoglou and J.K. Papadopoulos (pp. 37–88). See also the preceding article by Stavros Paspalas.

² For a general observation of the importance of timber to Athens, see P. Green, *Armada from Athens* (New York 1970) chapter 2 'Wheat, Timber, Gold', 11–35, see esp. 15, 18–19. For far more detail on the timber trade, see R. Meiggs, *Trees and Timber in the Ancient Mediterranean World* (Oxford 1982) 119, 122–124, 126–130 (for Athenian interest in Macedonian timbers); and 188–217 (for Athens' appetite for timber). From what period Athens was engaged in seeking timber from this region is open to debate (see Meiggs, 123–24), but certainly by the fourth century, Athens can be said to be relatively dependent upon Macedonian timber (Xenophon *Hellenica* 6.1.11—even if this item is offered at secondhand and in a rhetorical context).

the god of the sea, or perhaps Proteus, the prophetic ‘old man’ of the sea.³ The precise situation of its harbour was often taken for granted. The city enjoyed the proximity of one of northern Greece’s finest natural roadsteads: Porto Koufo, sheltered in all weathers, deep (up to depths of sixty metres in places) and capacious.⁴ But this fine harbour was three kilometres distant from the city proper and, more importantly, from the city’s fortifications. That very fact made it a logical place for the Athenian Cleon to anchor his fleet, when invading the territory with the object of retrieving Torone from Spartan hands in 422 B.C. Moreover, Thucydides tells us that Cleon dispatched ten of his thirty ships to sail from Porto Koufo to Torone’s harbour.⁵ This clearly distinguishes the latter from Koufo.



Figure 1. Promontory 1, Torone’s ‘Lecythus’

It was therefore usually assumed that the harbour of Torone lay in the customarily still waters directly to the north-east of the so-called Lecythus, the Australian Expedition’s Promontory 1 (fig. 1), since the small bay to the south-west of the Lecythus, although it has the advantage of lying totally within the classical walls, was exposed to destructive southerlies. (It was no safe anchorage.)

³ Steph. Byz. s.v. ‘Torone’: “Torone, *polis* in Thrace, (named) from Torone, (the daughter) of Proteus or Poseidon and Phoinike.” There were other traditions. Some made Torone the wife of Proteus; cf. Cambitoglou and Papadopoulos (n.1) 41, for references.

⁴ It can be seen in the preceding article (p. 56, fig. 2, towards the top left of the photograph).

⁵ Thuc. 5.2.2-3, following an emendation (now generally accepted) by Pyggers and Leake.

In 1990, Drs Lea Beness and Tom Hillard from the Department of Ancient History at Macquarie University asked permission of the Expedition to visit that area to the north of the 'Lecythus', even today used as a calm anchorage in the lee of the old citadel (fig. 2). Within fifteen minutes in the water, a snorkelling inspection brought to light unexpected findings: ashlar masonry lying in situ approximately forty metres off shore. Hillard applied for a concession to explore more thoroughly this area through the Australian Archaeological Institute at Athens, and was invited by Professor Alexander Cambitoglou to pursue this work under the auspices of the Australian Expedition.



Figure 2. 'Area 1': the underwater area immediately to the north of Torone's 'Lecythus'



Figure 3. Drs Lea Beness and Tom Hillard at work in Torone's 'Area 1'

Archaeological fieldwork is frequently a collaborative venture. Such has been the search for Torone's harbour. In 1993, a synergasia was formed between a small Australian team—consisting of Hillard, Beness, Dr Tony Sprent (of the Department of Surveying and Spatial Information Science at the University of Tasmania), Cosmos Coroneos (now a contract archaeologist, with former experience at Torone),⁶ and Tim Smith (also with former experience at Torone, now an underwater archaeologist with the NSW Department of Heritage, and perhaps familiar to NSW teachers through his significant role in the search for the submarine AE2)⁷—and staff from the Greek Department of Underwater Antiquities under the leadership of Dr Chryssa Samiou and her husband Dr Nikos Lianos.



Figure 4.
Dr Tony Sprent at the 'Total Station', an electronic theodolite allowing a three-dimensional survey of 'Area 1'



Figure 5 (right).
Dr Nikos Lianos in the process of constructing a photomosaic of 'Area 1', using a camera suspended from a 5-metre pole and thus replicating, in a sense, aerial photography

The first season revealed quite clearly that the whole area to the north of the 'Lecythus' (fig. 2), once presumed to be that of the harbour, was in fact a submerged terrestrial site. The foundations of a number of walls, orientated at

⁶ Cosmos Coroneos is the Director of Cosmos Archaeology Pty Ltd, and is currently the Senior Vice President of the Australasian Institute for Maritime Archaeology.

⁷ Tim Smith is currently a Senior Heritage Officer and NSW State Maritime Archaeologist with the Heritage Office in the NSW Department of Planning. He will have been seen in news reports and the documentary concerning the search for the Australian submarine AE2 which sank in the Dardanelles on April 30th, 1915.

the same angle as buildings located elsewhere on the terrestrial site, were found in sufficient number to indicate that the area had once not only been above sea level but had been built up and occupied during the classical period.⁸ This suspicion was then confirmed by excavations along the current shoreline (in 1994) by our Greek colleagues, revealing what is tentatively regarded as a Roman patio, overlying a wall of the Greek classical era. This was further confirmed in 1997 when a large pithos (or storage jar) was uncovered close by and *in situ* (but also just below the current waterline). Such *pithoi* are found in use in this region at any time between the Archaic period and the fourth century BC.⁹

A particularly interesting revelation came from the investigation of two lines of rock outcrops which run along the site, one approximately twenty metres offshore, and the other approximately thirty-eight metres offshore. (These two lines can be clearly discerned in fig. 2.) They are forms of beachrock, lithified sands that form in certain conditions beneath a beach between the upper and lower tide limits. When a beach, for one reason or another, ceases to be a shoreline, the lithification becomes exposed, and offers the 'fossilized' record of an ancient waterline. What is preserved here is a map of two previous shorelines.¹⁰ The fact that there are two sharp lines of beachrock suggests that we have preserved here two episodic changes of sea level, that is to say, the offshore record does not reflect a gradually transgressive shoreline such as might have been expected from only the steady rise in global sea level. In turn, the observation of two 'events' suggests seismic activity. (The area is active in this regard.) These initial findings were confirmed during excavation seasons in 1994 and 1997.

Those findings significantly reduce the area available to ships seeking a calm anchorage in the lee of the peninsula (Promontory 1/the 'Lecythus'). When envisaging a bustling ancient port, it is not necessary to imagine elaborate

⁸ See Chr. Samiou et al., 'The Underwater Survey of Torone: A Preliminary Report of the 1993 Season', *Mediterranean Archaeology* 8 (1995) 89-100; cf. T.W. Hillard and J.L. Beness, 'Postclassical Effects on Classical Shoreline Sites: Straton's Tower/Caesarea Maritima, Israel and Torone, Chalkidike, Greece' in S. Swiny et al. (eds), *Res Maritimae. Cyprus and the Eastern Mediterranean from Prehistory to Late Antiquity. Proceedings of the Second International Symposium, Nicosia, Cyprus, Oct. 18-22, 1994* (Cyprus American Archaeological Research Institute Monograph Series 1; American Schools of Oriental Research Archaeological Reports 4, Atlanta, GA 1997) 135-151, 'The "Harbour" at Torone?', 142-149.

⁹ These finds will be published independently by our Greek colleagues.

¹⁰ Often exposed beachrock is found to be quite broad (reflecting a broad intertidal zone or a gradually moving beachline). On this site, the relatively narrow width of beachrock (thus preserving a nice line of the waterfront) is reflective of the minimal tidal variations affecting the shoreline.

harbour works and sophisticated docking facilities. Ships might ride at anchor close to shore and be serviced by lighters. They might even be beached, with their goods and passengers disembarked by means of planks. A fresco from Stabiae (now in the National Museum at Naples) shows exactly this.¹¹ Sometimes even planks were unnecessary.¹² But the finds of the underwater exploration indeed seem to indicate that there was a good deal of investment along one of the ancient shorelines (the outermost) in terms of a stone dock.¹³ That said, however, the 120-odd metres of waterfront in this area of the site remains a limited docking space for the harbour which Livy touted as one of the assets of the Chalkidike. To the north lies a sweeping sandy bay where vessels could indeed have beached (as they do today) but which is too exposed to provide a calm roadstead. And can it be assumed that the beach was there in antiquity?

Figure 6.
Tim Smith at work on the ashlar masonry found along the outermost of Torone's ancient shorelines. Note the one-metre square mobile grid which allowed highly precise drawings to be made of this feature.



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- ¹¹ A very clear black and white sketch of the picture can be found in C.V. Daremberg and E. Saglio (eds), *Dictionnaire des antiquités grecques et romaine* (Graz, Austria, 1969) cols 1024–25. A full-colour reproduction will be found in T.H. Feder, *Great Treasures of Pompeii and Herculaneum* (New York 1978), 79. The subject of harbours and harbour facilities (or lack thereof) is explored by G.W. Houston, 'Ports in Perspective: some Comparative Material on Roman Merchant Ships and Ports' *American Journal of Archaeology* 92 (1988) 553–64, which provides, amongst other things, the striking 19th-century photographic image of the smack 'Fairy Dell' beached and on its side on the pebbled beach of Arran Island, with its cargo being unloaded directly into a donkey-drawn cart. The tidal variation in Torone's part of the Mediterranean does not allow for quite so dramatic a scenario, but the image serves to remind us of the variety of ways in which waterfront activity could have been carried out in antiquity.
- ¹² A mosaic, dating to the Roman period (middle of the third century AD), found at Hadrumentum/Sousse in 1890 and now in the Bardo Museum (Tunis), shows goods, probably metals, simply being lowered over the side of a vessel and waded ashore: Mosaic 6 in the Catalogue du Musée Alaoui (1897); see Mongi Enneifer, 'Unloading of a ship', in H. M'H. Hassine Fantar (ed.), *Tunisia. Crossroads of civilisations* (Tunis 1992) 31; M. Yacoub, *Le Musée du Bardo* (Tunis 1996) 127 and 203, fig. 89.
- ¹³ This remains a speculative interpretation of the ashlar masonry found running along the outermost strip of beachrock (fig. 6).



Figure 7. Dr Rick Dunn conducting his geological survey of Torone's floodplain by way of hand-augering.

In 1997, the Australian team invited the geologist Dr Rick Dunn, then based at the American School of Classical Studies in Athens, now a member of the Department of Geology and Environmental Science at Norwich University in Vermont, to investigate the large floodplain that currently exists behind the barrier beach. His initial judgment was that the area may have been an embayment in the past. In the winter of 1998/99, funded by a Macquarie University Research Grant, Dunn returned to the site to undertake a systematic geomorphological and geological survey of this low-lying area. By a system of hand-augering (seen in fig. 7), he was able to extract seven 'cores', from each of which a sedimentary stratigraphy could be derived. These cores prove that the area was in classical antiquity a shallow marine basin. (These results will be published in full in a forthcoming volume of *Mediterranean Archaeology. The Australian and New Zealand Journal for the Archaeology of the Mediterranean World*.) They demonstrated both the original marine environment and a succession of depositional environments. Three organic samples, which were sent for radio-carbon 14 analysis provided a degree of chronological control. They offer a picture of gradual progradation of a coastline that was once 200 to 250 metres landward of the present beach, the progradation being the result of stream alluviation, possibly accelerated by erosion from the surrounding hillslopes, and by the deposition of sand carried southward by the prevailing longshore drift from the north of Torone. This bay, prior to the infilling described above, would

have provided an excellent (and sheltered) area for shipping at anchor (fig. 8).



Figure 8. The floodplain behind Torone's current barrier beach. This was a shallow marine basin in classical antiquity. The hill at top left (Torone's classical acropolis), the knoll from which this photograph was taken, and the hills off-camera to the left, will have delimited this basin.

Given the current concern with landscape degradation, it would be easy to suggest that this silting of the harbour was simply the result of deforestation (itself the result of the local timber industry).¹⁴ It is, however, important not to allow any single modern hypothesis to impose itself upon the evidence.¹⁵ The Torone coastline is, as mentioned above, dominated by a prevailing south-flowing longshore transport of sand parallel to the shoreline that would also have existed in antiquity. That is to say, that from the north of Torone, sea currents were carrying a sand supply eroded from exposed bedrock. This southward flow of sand apparently met with an alluvial outflow, moving seaward into what was probably Torone's main harbour. The former ensured that, as the latter gradually filled the marine basin it was consolidated by a sandy beach frontage. Indeed, the newly-forming barrier beach(es) may have

¹⁴ See the dramatic observations of J.V. Thirgood, *Man and the Mediterranean Forest* (London 1981) partic. 1-2: "environmental ruin was the price paid for the glory that was Greece."

¹⁵ See, for instance, the caveats of P. Horden and N. Purcell, *The Corrupting Sea. A Study of Mediterranean History* (Oxford 2000) 333. Horden and Purcell suggest caution in the face of "the near-complete triumph of the catastrophe theory of deforestation in Mediterranean historiography" (337-338).

dominated the system, closing off the embayment, with alluviation then filling in the body of water behind. At first, this process may have made the anchorage even more attractive. It provided even more shelter. Gradually, however, the harbour was filled.

We can see, then, that two processes seem to have been at work here; both were natural, but one might have been hastened by anthropogenic factors. It could be speculated that Torone's profitable export industry in the supply of timber played a role in the destruction of its own harbour, accelerating the natural 'silting in' behind the sandy barrier. This is a matter for ongoing investigation and interpretation. Whether the degradation of Torone's harbour was unnaturally quickened by the exploitation of its natural resources in response to imperialist Athens' demand for tall timbers must remain for the moment an open question. We are attracted to this as an hypothesis, but we must wait for it to be confirmed by the evidence.

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