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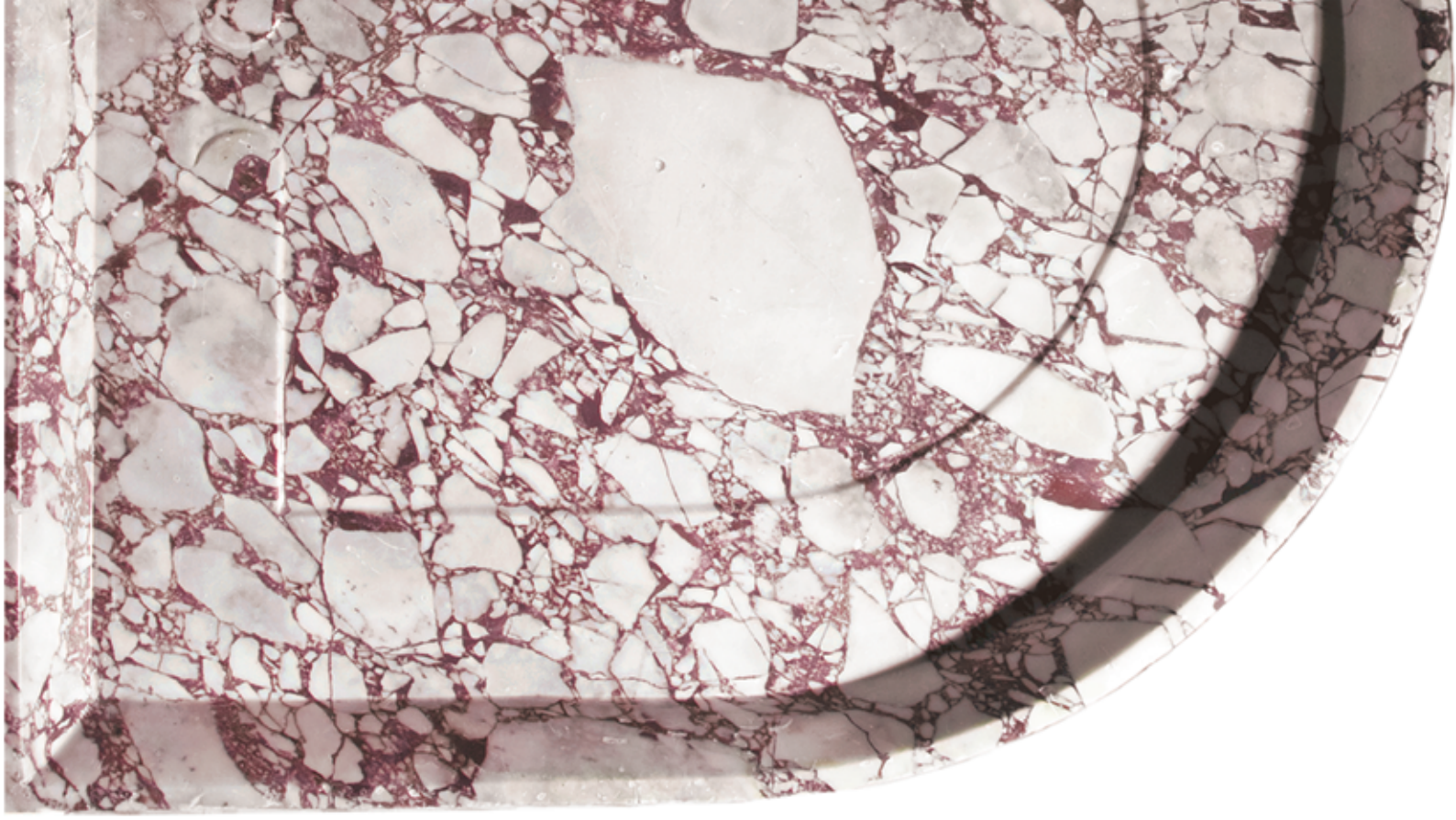

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CONTENT

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CALCITIC MARBLE FROM THASOS AND PROCONNESOS IN NEA ANCHIALOS (THESSALY) AND THESSALONIKI (MACEDONIA)

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Abstract
Late Roman and Early Byzantine architectural elements from northern Greece are analyzed isotopically and under optical cathodoluminescence microscopy to determine their quarry of origin. Thirteen pieces come from Nea Anchialos, two from Thessaloniki, and one from Philippi. Marble is assigned to the quarries of Proconnesos, Thasos, and Philippi. On the basis of their marble, typology and style, the sculptures are attributed to sculptors from northern Greece or from Constantinople. The sculptors may have exported their works fully finished or carved them at the building sites in northern Greece. Sculptors from Constantinople clearly established workshops in northern Greece and made use of Thasian marble.

Keywords
cathodoluminescence microscopy, Proconnesian marble, Thasian marble, Philippi marble, Late Roman, Early Byzantine, architectural decoration

Introduction

Northern Greece, centered on Thessaloniki, was the site of major campaigns of construction in Roman and Early Byzantine times and was richly endowed with marble quarries, located in the Vermio mountains of central Macedonia, in the mountains around Philippi, and on the island of Thasos. Nonetheless Constantinople and northwest Asia Minor, with its vast marble quarries on Proconnesos (Marmara Island), has long been recognized as the dominant artistic influence and a primary source of material for the architectural decoration of the northwestern shores of the Aegean (Fig 1). Art historical analysis and optical examination of architectural decoration have made the Asiatic role clear.[1] On the other hand, the northern Greek quarries were active enough to penetrate the international market; Thasos, for example, exported unfinished Ionic capitals to Italy and other parts of the Mediterranean.[2] Archaeometric studies have identified Thasian marble in Early Byzantine chancel screens of Contantinopolitan type at Delphi.[3] In recent years we have undertaken archaeometric studies that further confirm the use of Thasian and other local northern Greek marbles in northern Greece by workshops of a Proconnesian character.[4] These Asiatic-style pieces in northern Greek marble must have been carved by travelling sculptors from Proconnesos or Constantinople or else by their branch offices in northern Greece. Central and southern Greece also developed workshops that were influenced by Constantinople but had some

Fig. 1. Map of Aegean area with sites mentioned in text

1 SODINI 1977; VEMI 1989, 9, 211; MARANO, *forthcoming.*

2 HERRRMANN, SODINI 1977; HERRMANN 1988.

3 DÉROCHE *et al.* 1989, 409.

4 HERRMANN *et al.* 2002; MENTZOS *et al.* 2002.

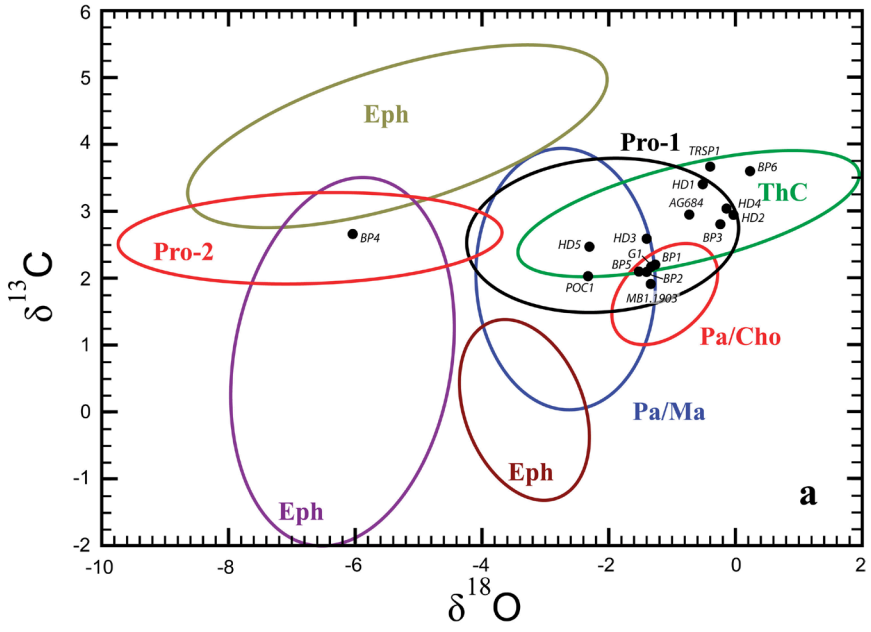


Fig. 2.
Isotopic ratios of carbon and oxygen for the architectural decoration sampled. Eph = Ephesos; Pa/Cho = Paros, Chorodaki; Pa/Ma = Paros, Marathi; Pro = Proconnesos; ThC = Thasos, calcitic. Isotopic diagram based on Attanasio, ASMOSIA IX, 348

distinctly local features[5] and usually made use of fine-grained local marble (macroscopic observation).

The city of Nea Anchialos (province of Magnesia) offers a fine opportunity to explore the relationship between craftsmanship in marble and sources of supply in the borderlands between central and northern Greece. Excavation has produced a series of five basilicas with columns, church furniture, and magnificent capitals,[6] some of which are obviously of Proconnesian marble and most of which are of types and styles known from Constantinople. Some Early Byzantine products of southern or central Greece have also reached the city.[7] Georges Soteriou, the excavator of many of the richly decorated churches in Nea Anchialos thought that the marble they used was local.[8] This study attempts to distinguish on a scientific basis the different sources for the marble and the workmanship of thirteen pieces from Nea Anchialos, two from Thessaloniki, and one from Philippi.

Methodology

Proconnesian marble is well known for its strongly marked dark gray bands, which were particularly appreciated in column shafts. Northern Greek marbles from Thasos and Philippi tend to have less emphatic banding and coarser grain. Conspicuously Proconnesian pieces were generally excluded from our sampling, but pieces that seemed to have relatively coarse grain, as well as some cases that seemed particularly interesting, were sampled for laboratory analysis. Multimethod testing based on optical cathodoluminescence microscopy (CL) and analysis of stable isotopes of carbon and oxygen (Fig. 2), conducted at the Université de Reims Champagne-Ardenne, has been the primary technique used to determine marble sources. Study of the quarries has shown that marble from Proconnesos has blue CL,[9] marble from Cape Vathy red CL, and marble from Aliki and Cape Fanari orange CL of varying strengths.[10] In practice, the distinctions in color are not always as sharp as this terminology might suggest, and in some of these cases optical determination of grain size has also been used. In some cases the analysis would have supported a provenance from Paros, but such a result has been excluded on archaeological grounds; research on Paros makes it very unlikely that the island exported marble in Early Byzantine times.[11] Some sculptures in our analyses had CL that appeared to be northern Greek but did not fit easily into the various quarries on Thasos. More research is required for quarries at Philippi, in the Vermio mountains near Veria, and at Sendoukia near Dion.

In approaching issues involving workshops, we have adopted the approach of Jean-Pierre Sodini in classifying architectural sculptures on the basis of motifs and decorative schemes.[12]

5 SODINI 1977.

6 ASIMAKOPOULOU-ATZAKA 1982, 132-145.

7 SODINI 1977.

8 SOTERIOU 1929, 52; SODINI 1977, 443.

9 BARBIN *et al.* 1992.

10 BARBIN *et al.* 1989, 863-65, fig 2.

11 HERRMANN *et al.* 2008, 732.

12 SODINI 1977.

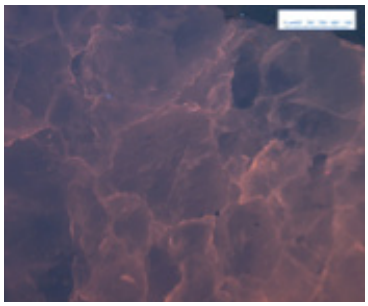


Fig. 3.
BP3, photo and CL: chancel barrier with peacock, crater and grapevine, Nea Anchialos, 6th century, Proconnesian marble

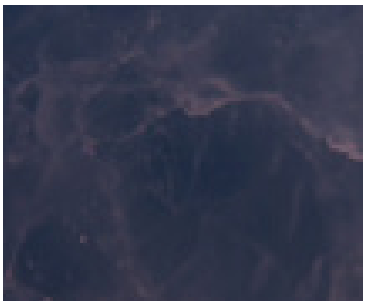


Fig. 4.
BP4, photo and CL: chancel barrier with lamb, cross, and vine, Nea Anchialos, 6th century, Proconnesian marble

Constantinopolitan workshops and Proconnesian marble: prefabricated imports or travelling workshops

Nea Anchialos presents a number of sixth-century chancel barriers with rich designs of a Constantinopolitan character, and several have proven to be made of Proconnesian marble. They could either have been sent in a finished state or been carved by workmen travelling from Proconnesos to Magnesia. A barrier in Basilica C features peacocks flanking vines growing out of a crater (BP3, Fig. 3); the lobed and dotted crater is closely related to similar craters of the church of Hagios Polyeuktos in Constantinople (524-527).[13] A panel with cross, vines, and peacock, BP4, is similar and likewise early Justinianic (Fig. 4). Another panel has interlocking rows of palmettes (BP2, Fig. 5). There are several examples of similar palmette panels in Greece, and it has been thought that the design may have originated there.[14] The analysis of the marble of BP2, however, indicates a Proconnesian origin for its marble and probably a Constantinopolitan origin for its design as well.

An Ionic impost capital in Hagios Demetrios, Nea Anchialos makes use of Proconnesian marble (HD3, Fig. 6),[15] and the cross-and-acanthus decoration on its impost block can be almost perfectly matched on an impost block in the garden of Istanbul Museum. In all probability the sculptor of HD3 came from Proconnesos or Constantinople.

A Corinthianizing pier capital in Hagios Demetrios with four acanthus leaves (HD5, Fig. 7) is a long-established type in the Asiatic/Proconnesian repertory, and, in spite of its very coarse grain, is made of Proconnesian marble; its isotopic ratios are suitable for the Cape Fanari quarry on Thasos, but the CL seems decisively Proconnesian. The nicely curved volutes indicate a date around the middle of the fifth century. A similar pier capital in Amphipolis is, in fact, made of marble from Cape Fanari, Thasos[16] and could have been made by the same Macedonian- or Thasian-based Constantinopolitan workshop.

13 HARRISON 1989, figs. 126-128.

14 SODINI 1977, 443, figs. 38-40.

15 VEMI 1989, cat.101.

16 HERRMANN *et al.* 2002, 336-337, fig. 18.

Fig. 5. BP2, photo and CL: chancel barrier with interconnected palmettes, Nea Anchialos, 6th century, Proconnesian marble

Fig. 6. HD3, photo and CL: Ionic impost capital from Nea Anchialos, late 5th or early 6th century, Proconnesian marble

Fig. 7. HD5, photo and CL: Corinthianizing capital from Nea Anchialos, mid-5th century, Proconnesian marble

Fig. 8. TRSP1, photo and CL: Cornice, Thessaloniki, Rotunda Museum, 3rd century, marble from Aliki, Thasos

Branch offices of Constantinopolitan-Proconnesian workshops in northern Greece: Proconnesian designs in Thasian marble

Eastern sculptors came to Macedonia and used local marble by the 3rd century at least. A cornice (a *cyma recta*) decorated with a row of palmettes in Thessaloniki is made of marble from the Aliki quarries on Thasos (TRSP1, Fig. 8). *Cymatia* like this with a row of palmettes mounted on scrolls linked by horizontal bars and with petals that curl alternately up and down are typical of Asiatic workshops from the second century onward.[17] Several similar cornices made of conspicuously banded Proconnesian marble are in Istanbul; one is in the garden around Hagia Sophia, and two are in the garden of the Archaeological Museum.[18] In TRSP1 and the piece at Hagia Sophia, the petals that curl downward are lobed and acanthus-like, a detail that is not easy to parallel elsewhere. Therefore except for its northern Greek material, TRSP1 is thoroughly Asiatic and the product of a transplanted workshop.

Among the sixth-century chancel barriers with rich designs of Constantinopolitan character at Nea Anchialos there is one made of Aliki marble (BP1, Fig. 9). It has interlacing squares and circles, and in spite of its Thasian marble, its design probably originated in Constantinople; a fine openwork chancel barrier with this basic pattern in Ravenna is made of Proconnesian marble[19], and it must have been sent there from the capital. The piece in Nea Anchialos was apparently made by a Constantinopolitan workshop established in northern Greece.

Two Ionic impost capitals in Nea Anchialos present Proconnesian designs executed in marble from Aliki, Thasos. One is from Hagios Demetrios (HD2, Fig. 10)[20]. The other is from Basilica C (BP6, Fig 11). The decoration on the impost block of BP6 virtually reproduces the ornament on an Ionic impost capital made of Proconnesian marble in the Lechaion Basilica of Corinth, even to the rare detail of pomegranates emerging from the acanthus.[21] The design was probably transmitted by a Proconnesian workshop in its travels through Greece.

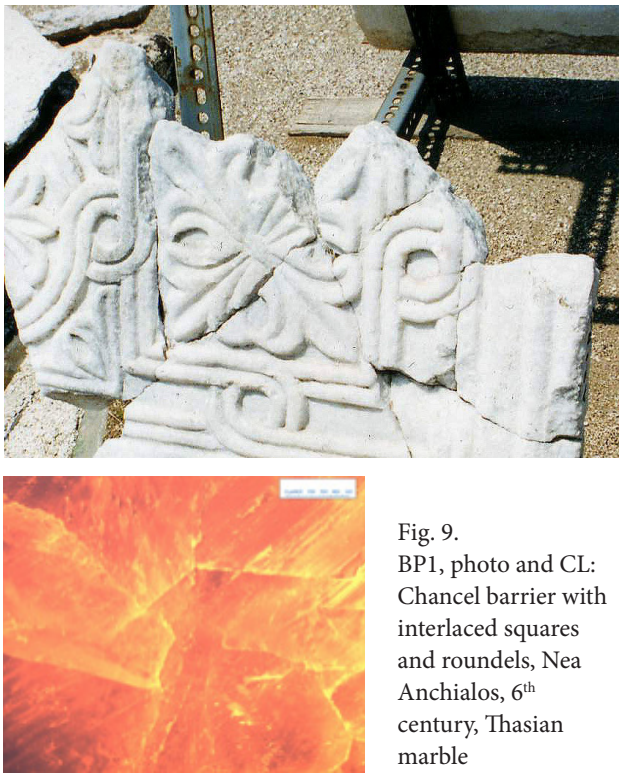


Fig. 9.
BP1, photo and CL: Chancel barrier with interlaced squares and roundels, Nea Anchialos, 6th century, Thasian marble

In general, these transplanted and mobile workshops based in northern Greece produced work that can scarcely be distinguished from that found in their area of origin in Proconnesos and Constantinople. The sculptures in marble from Thasos, however, may have

17 STRONG 1953, 144, fig. 6, pl. 33b.

18 MENDEL 1914, 433, from Cyzicus.

19 Arcidiocesi di Ravenna-Cervia: http://www.webdiocesi.chiesacattolica.it/pls/cci_dioc_new/v3_s2ew_consultazione.mostra_pagina?id_pagina=32667.

20 VEMI 1989, cat. 99.

21 VEMI 1989, cat. 52.

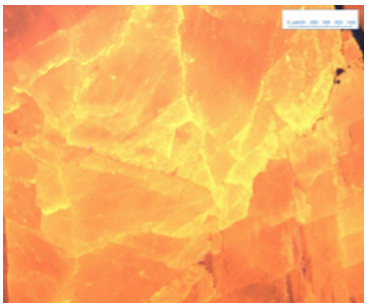


Fig. 10.
HD2, photo and CL: Ionic impost capital, Nea Anchialos, late 5th or early 6th century, marble from Aliki, Thasos

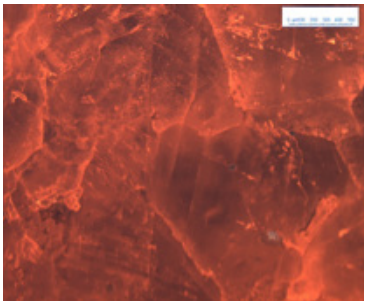


Fig. 11.
BP6, photo and CL: Ionic impost capital, Nea Anchialos, late 5th or early 6th century, marble from Aliki, Thasos

a slightly different flavor; they can seem a little looser, softer, and less deeply cut, which could in part be due to the coarser-grained material. In the case of the Ionic impost capital HD2, the movement of the vines seems a little more awkward, aggressive, and spontaneous than in pieces made of Proconnesian marble; the sculptor could have been availing himself of a bit of freedom in the provinces.

Local Greek workshops using Thasian marble

Jean-Pierre Sodini has described a distinct regional style of architectural decoration in marble of southern and central Greece, and this style reached northwards to Thessaly and Nea Anchialos.[22] Sodini's analysis is based on motifs rather than nuances of carving, and some of the characteristic motifs and compositions of southern Greece turn up among the pieces made of Thasian marble at Nea Anchialos.

A colonnette capital from Basilica C in marble from Cape Fanari is decorated with four very stylized acanthus leaves (BP5, Fig. 12). Since it lacks volutes, it could be considered an impost capital. Colonnette capitals with four leaves and without volutes appear at Delphi,[23] and leaves with veins that curve from one point to the next are very common in southern Greece.[24] The Nea Anchialos piece seems heavily influenced by the mainland Greek environment and is probably the product of a local (northern or central Greek) sculptor.

Chancel pillars from Basilica C are made of Aliki marble and are decorated with tall crosses with incised borders (HD4, Fig. 13). The border might be an imitation of Constantinopolitan crosses that are overlaid with a second cross in relief, as in BP4 (Fig. 4),[25] but the incised border could also be a local feature. Crosses in fifth century Asia Minor have a single central incision, while incised borders seem to be common in southern Greece from the early fifth century onward.[26] Therefore the Nea Anchialos piers were probably designed and carved by local Greek sculptors.

A richly ornamented section of trabeation in the Rotunda Museum in Thessaloniki stands somewhat by itself, with no strong links to either southern Greece or Asia Minor (TRM, Fig. 14). The trabeation (an Ionic

22 SODINI 1977.

23 SODINI 1977, fig. 6.

24 SODINI 1977, figs. 5, 8-9, 12-13, 15-16.

25 BARSANTI, GUIGLIA 2010, figs. 66-69.

26 SODINI 1977, figs. 4-5, 7, 12, 21, 26-27, 43-45. The Ionic impost capital at Skripou is even dated to the late fourth century: VEMI 1989, cat. 18.

Fig. 12.
BP5, photo and CL: Colonnette with impost capital, Nea Anchialos, mid to late 6th century, marble from Cape Fanari, Thasos

Fig. 13. HD4, photo and CL: Chancel pillars with crosses, Nea Anchialos, 2nd half 6th century, marble from Aliki, Thasos

entablature: i.e., without frieze) is made of Aliki marble, and its shallow cutting, its defective astragal, and its stylized cymation make it clear that it is Late Antique if not Early Byzantine (4th or 5th century). The braided astragal orients it toward the Asiatic tradition, but it is so individual that is almost certainly an independent product of a local Macedonian workshop.

A chancel slab made of a northern Greek marble, perhaps from Cape Fanari, Thasos, in the Martyrion Basilica, Nea Anchialos is decorated with a roundel of meanders (MB1, Fig. 15). The design is probably of Constantinopolitan origin. There is a richly worked out example in Veria, Macedonia (unpublished?) that has many mainland Greek details, but a splendid example also appears on a chancel barrier in Siponto, Apulia, (south Italy) and is apparently made of Proconnesian marble. The Siponto piece is therefore very likely to be an import from Constantinople,[27] and it is also likely that the design emanated from the capital city. In any case, the incised technique, the heavy frame, and the central pinwheel brand MB1 as an independent production by a local workshop not directly connected with the Proconnesos.

A chancel barrier is decorated with incised vines and a pair of peacocks flanking an amphora in a very sketchy style that belongs more to the Dark Ages than to Early Byzantine times (HD1, Fig. 16).[28] The piece is marble from the Aliki quarries and exhibits no evident signs of being reused. The composition, a crater with descending vines flanked by peacocks, is that used in the chancel barrier from Basilica C (BP3, Fig. 3a), but the stylization of forms and the shallow carving is clearly much later. The carving of HD1 seems to have more to do with the ambos on Paros[29] than with Constantinople. Even the ambos on Paros, as well as a sarcophagus of Aliki marble

27 BARSANTI 1999; MARANO, *forthcoming*, fig. 5.

28 ASIMAKOPOULOU-ATZAKA 1982, fig. 30.

29 In the Hekatontapyliani and Treis Ekkliseis: ALIPRANTIS 1993, 134-135, figs. 101-103 114, 115, 140.

Fig. 14. TRM, photo and CL: Chancel barrier entablature, Thessaloniki, 4th or 5th century, marble from Aliki, Thasos

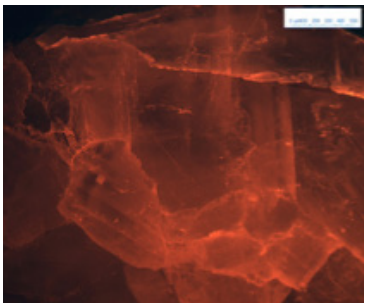
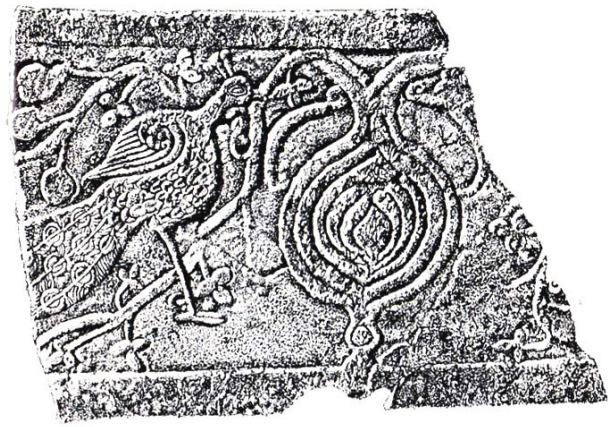


Fig. 15.
MB1, photo and CL: Chancel barrier, Nea Anchialos, 6th century?, marble from northern Greece, probably Cape Fanari, Thasos



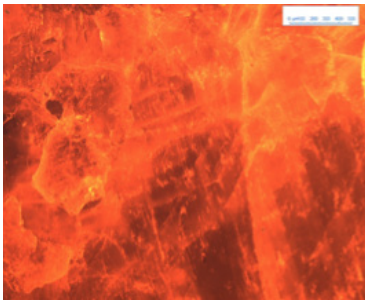


Fig. 16.
HD1, drawing and CL: Chancel barrier, Nea Anchialos, 7th century, marble from Aliki, Thasos. (drawing: ASIMAKOPOULOU-ATZAKA 1982, fig. 30)

in Siracusa, all probably datable around 600,[30] have more sculptural relief than HD1, which could be even later. Thasos is thought to have been "destroyed" in the Slavic invasions of ca. 620,[31] but this chancel barrier could be evidence for a return to activity after that date.

Conclusions

Using CL and stable isotopes of C and O, it has been possible to distinguish "imported" Proconnesian marble from northern Greek marble (mainly from Thasos) in architectural decoration in Nea Anchialos and Thessaloniki. Constantinopolitan workshops exported finished pieces in Proconnesian marble to northern Greece, but they also traveled there, as Constantinopolitan-type pieces in Thasian marble prove. Some Thasian marble pieces in Nea Anchialos also reveal motifs from southern Greece and are products of local northern Greek workshops. A block of marble in a church at Philippi proved to be from the city's own quarries.

30 ATTANASIO *et al.* in this volume.

31 GRANDJEAN, SALVIAT *et al.* 2000, 33.

#	Description	Marble source	workshop
Nea Anchialos, Basilica C : Church of Bishop Petros, ca. 460-500, restored ca. 540*			
BP1	Chancel barrier with interlaced squares and roundels L2185	T1 or T2?	migrant
BP2	Chancel barrier with interconnected palmettes L2096	Pr1	Migrant or Cpl
BP3	Chancel barrier with peacocks, crater, and grapevines L3880	Pr1	Constantino-ple
BP4	Chancel barrier L3932 with lamb, cross, and vine	Pr2	Constantino-ple
BP5	Colonnette with foliate impost capital L2092 or L2098,(6th centu-ry)	T 2	N. Greek
BP6	Ionic impost capital in room 16	T1	migrant
Nea Anchialos, guardhouse by Basilica A			
G1	Chancel barrier with acanthus and vines L50	Pr1	Constantino-ple
Nea Anchialos, Basilica A (Hagios Demetrios, ca. 470-500)*			
HD1	L48, Chancel (?) barrier with peacocks and kantharos, 7th century	T1	N. Greek
HD2	Ionic impost capital in atrium	T1?	migrant
HD3	Ionic impost capital from north gallery (matroneum)	Pr1	Migrant or Cpl
HD4	Colonnette of north wall	T1	N. Greek
HD5	Small Corinthianizing capital on NE threshold.	P1	Migrant
Nea Anchialos, Martyrion Basilica (431 CE)			
MB1	Chancel barrier with meander roundel L903	Pr1 or T2	N. Greek
Philippi, Octagonal Church			
POC1	North propylon pier (ca. 500 CE)	Philippi	N. Greek
Thessaloniki, Rotunda Museum			
TRM	Trabeation AG684 (4th-5th century)	T1	N. Greek
Thessaloniki, Rotunda, South Propylon			
TRSP1	geison slab in front of South propylon (ca. 3rd century)	T1	migrant
P = Paros, Ph = Philippi, Pr = Proconnesos; T1 = Thasos, Aliki; T2 = Thasos, Cape Fanari			
Migrant = workshop from Constantinople/Proconnesos established in Greece. Cpl = Constantinople			
* Dates based on Spiro 1978.			

Table 1. Samples: context, quarry, and workshop attribution

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