Parian Marble in early Christian Times

The Problem

One of the more difficult problems in scientific marble studies is the separation of stone from the quarries of Proconnesus and Paros 2 (Lakkoi or Chordadaki). It is widely acknowledged that the isotopic fields for the two marbles overlap extensively, and their grain size, which is medium to coarse, may be almost the same.1 In principle, it should be possible to separate them on the basis of cathodoluminescence, since Proconnesus belongs to the blue family while Paros belongs to the orange.2 Solid samples for this method, however, are often difficult to obtain. Progress has been made with the technique of EPR, but ambiguity remains.4 At times, the markings of Proconnesian marble seem distinctive. Proconnesian marble frequently has long straight gray bands, which are exploited decoratively in column shafts and pavements, but not all Proconnesian artifacts display pronounced banding. Parian marble is generally thought to be pure white, but spotted and banded marble can also be found in the island's quarries.3 The problem of identifying Parian marble is compounded in Early Christian or Early Byzantine period, since it is uncertain if quarrying continued on the island during that period. There is, on the other hand, no doubt that the Proconnesus remained a marble source of primary importance from Roman through Early Byzantine times, and as a result there is a tendency to discount the Parian possibility in favor of Proconnesian.

Research on Paros

An important test case for quarrying on Paros in the Early Christian period is the church of the Katapoliani (also called the Hekatontapliani) on Paros itself. The core of this magnificent group of religious constructions, which is built almost entirely of marble blocks, dates from the time of Justinian in the sixth century.1 In spite of its impressiveness, this marble monument has led to a negative assessment of local quarrying activity. Gottfried Gruben has argued that almost all the marble in the church was taken from older structures on Paros, over 1000...
blocks in the church show signs of previous use. There is some newly-carved and newly-quarried marblework in the building, such as the ciborium columns and capitals (Fig. 1), but Gruben and other researchers believe that this new production comes from Constantinople and is made of Proconnesian marble. Gruben concludes that quarrying had stopped on Paros by the sixth century.

Some researchers have resisted Gruben’s thesis to varying degrees. Angeliki Mitsani accepts the extensive reuse of local marble in the building’s walls and the importation of Proconnesian columns and capitals for the ciborium. She also points out how the column shafts of the nave and transept are made of gray-striped marble that looks just like Proconnesian (Fig. 2). The broad, flat moldings at the top of the shafts are typical of Early Byzantine columns, and she seems prepared to accept that these too are newly quarried Proconnesian work. On the other hand, she points out that there is much architectural sculpture carved by local workshops in the Katapoliani and other churches on Paros. Vasiliki Vemi also considers the ionic impost capitals of the main colonnades, a local production. Mitsani finds that the sculptures in local styles are often made of a clearer, whiter, possibly local material. This extensive activity by local workshops makes it likely that marble was still quarried on Paros in the first half of the sixth century.

A radical reversal of Gruben’s position has been advanced by Yannis Maniatis, Kyriaki Polikreti, and Themis Vakoulis. In a stereoscopic investigation, they were able to attribute ten architectural members from the church to the quarries of Paros on the basis of crystalline texture, degree of metamorphism, and crystal transluence. Another eight samples in their study could not be conclusively assigned; they might have come either from the Proconnesus or Paros. The certain Parian pieces include two column shafts: one from the main colonnades of the church, which could be ascribed to open quarries near the cave quarry at Marathi (Paros 1) and one from the ciborium, which was ascribed to Lakko (Paros 2). Two other column shafts might have come from either the Proconnesus or the Agios Minas quarry on Paros (Paros 3). Thus in their view, the quarries of Paros continued to function in the sixth century.

Caution is needed in assessing these conclusions. The smaller architectural elements, such as bases, and capitals, could have been carved from reused blocks. The ciborium dome might be from post-Byzantine times. The column shafts, however, are large and have Early Byzantine moldings; they must have been newly quarried for the sixth-century church. It is, however, surprising to learn that their tests indicate that one of the ciborium columns certainly comes from the Lakko quarry on Paros (Fa-2). These columns have horizontal or oblique undulating gray and white veins, which suggest cloud formations (Fig. 1). This kind of column can be found in Constantinople (galleries of Hagia Sophia). Such shafts also appear around the Early Byzantine world, normally in the context of imported marble products from the Proconnesus. They occur in and near Ravenna in the Baptistery of the Orthodox, the chancel of S. Vitale (Fig. 3 - Pl. IV), and S. Apollinare in Classe. Some small «cloud-band columns» were excavated in the double basilica...
at Aliki, Thasos. Other columns appear in the Dome of the Rock, Jerusalem and the Great Mosque, Kairouan (Fig. 4). Such columns have always been thought to be Proconnesian marble, although this has not been demonstrated scientifically. The same marble with cloud-band veining was used for revetments in pavements in Ravenna and Thessaloniki. The marble for the architectural decoration of Ravenna is thought to have come almost entirely from Constantinople and the Proconnesus. Given the weight of informed archaeological and art-historical opinion, it will require more evidence to prove that the cloud-band columns of the Katholikon stem from Paros rather than the Proconnesus.

Caution about the cloud-band columns, however, does not invalidate the thesis of Maniatis, Polikreti and Vakoulis that the more normal nave columns of the Katholikon could be Parian. Although column shafts with long gray stripes appear to be rare on the island, deposits of marble with these markings can be found there. As noted above, the shafts in the Katholikon must have been made for the church, and they are too large and too uniform to have been made from reused material. If Parian, they alone are sufficient to prove the existence of quarrying on sixth century Paros.

Fig. 3 – Paros, Katholikon, north transept. Photo from J. Alparslan, 1973, fig. 105.

Fig. 4 – Kairouan, Great Mosque, prayer hall, group of (probable) Proconnesian columns.
Literary Testimony outside Paros

Early Byzantine or Early Christian finds outside the island may be helpful in supporting the view that significant quarrying—and with it exportation—went on in Early Christian Paros. Literary sources provide encouragement for the idea of Parian exportation. Around the year 400 there were two references to Parian marble in new church buildings in Italy. Bishop Paulinus of Nola speaks of Parian marble fountains in his constructions at the tomb of St. Felix near Mt. Vesuvius in Campania (Camm 28, ii. 276-8), and the poet Prudentius mentions Parian columns in his epigram on the church of St. Paul outside the walls of Rome (Peristephanum 12; Patrologia Latina, 20, 874c). Unfortunately the very fame of Parian marble makes it necessary to regard all references to it with caution. It has long been believed that in late antiquity the term ‘Parian marble’ usually if not invariably served as an emblem for fine white (or grayish white) marble rather than as an indicator of the real origin of the stone used in a specific building or artifact. There is even biblical precedent for this usage.

Paulinus of Nola’s “Parian water basins shaped like shells” (Pariae anachas) almost certainly were a poetic fiction. A marble canthus preserved at the site might be Parian since it is pure white and medium to coarse grain, but another fountain basin at the site is obviously not made of Parian marble. It has fine grain and a multitude of small gray spots and may well be Carrara marble. It is, moreover, early Roman Imperial in date and would have been reused in Paulinus’ constructions. Since Paulinus says that all his fountains were made from the same kind of marble, it seems clear he was calling them Parian in the liturgical, poetic sense.

Angeliki Mitsani has pointed out that the sixth century historian Procopius calls the columns of the Church of the Blackarches in Constantinople, built by Justinian, Parian (Procopius, On the Buildings of Justinian, I, iii. 3-4). This too is likely to be poetic usage. In his book on the buildings of Constantinople, Procopius only mentions one other stone by its geographic source: ‘Spartan stone’ (Procopius, On the Buildings of Justinian, 1,3,20). Lepis latinissimus (serpentis) was a spectacular dark green porphyry that is more intensely colorful than most. Since Procopius passed over the feast of colored marble in Hagia Sophia and other buildings, it is evident that he was generally not interested in the precise origin of stone, and he does not mention the omnipresent Proconnesian marble.

Isotopic Testing at S. Paolo fuori-le-mura, Rome

It is possible that the poet Prudentius was also using the term Parian poetically in his description of the columns of St. Paul’s, but since some of the columns survive, it is worth taking a closer look at them. The old church was largely torn down and rebuilt in neoclassic style in the mid 19th century, but twelve columns were taken from the old church’s side aisles and placed in a portico off the north transept (Fig. 5). One of the columns bears the dedicatory inscription of Pope Siricius in 390 (west column of inner row) (Figs. 5-6). This column originally stood at the east end of the north aisle colonade. The shafts in the portico were radically reworked when moved to this position. Losses to their lower parts were replaced with marble, and cavities for metal crosses were filled with marble plugs. The shafts were then turned on a lathe to make them as geometrically perfect and as ‘classical’ as possible. Some shafts have long straight bands, and look very much like Proconnesian marble (Fig. 7). Others have undulating grey markings that are not so easily identifiable.

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Table 1: Columns from inner colonade north transept portico, S. Paolo fuori-le-mura, Rome, analyzed by Robert H. Tykot. isotopic values.

We were able to take small powder samples from two shafts, and the samples were tested on a mass spectrometer at the University of South Florida (Table 1, Fig. 8 - PI. IV.1). The banded shaft that looked the most Proconnesian (the second column from the west of the inner row) (USF 6486, Figs. 5, 7, 8), had an isotopic signature that confirms a Proconnesian and excludes a Parian origin. The Siricius shaft, however, has isotopic ratios on or just beyond the outer margin of Gorgoni et al’s expanded field for Proconnesian but well centered on the Paros 2 field (USF 6447, Figs. 5, 6, 8). In terms of isotopic probabilities, the shaft is far more likely to come from Paros than Proconnesus. Since the neck of this shaft bears the inscription of Pope Siricius of 390, we can be completely certain that this column came from the old church. The inscription reads Siricius episcopus (monogrammatic claw) teta mene drosi. The area of the inscription was not touched when the shaft was repolished, and it is evident how liposced the column was. Much material had to be removed to make these shafts regular and of standard size. The irregularity of the shaft in its original state confirms that it was quartered in the fourth century. This column has gray streaks, but it does not have the thick straight bands that are most characteristic of Proconnesian.
If the isotopic results can be believed, we have a situation in which marble from two separate sources were used in the side aisles of St. Paul's in the late fourth century. This is not unparalleled. Isotopic testing has shown that a large deposit of architectural marbles in Ostia has columns that come from both the Proconnesus and Thasos. The 46 nearly-stacked and very similar columns in the deposit seem to be a single shipment rather than an accumulation built up over time. The fifth century basilica of Santa Maria Maggiore at Rome has colonnades that were originally made up of 34 Thasian marble and 6 cipollino shafts, all monolithic. In the 18th century the cipollino shafts were removed and replaced with Luna marble columns built up of sections. In old descriptions, the aisle colonnades of St. Paul's are said to be quite irregular. Before the fire of 823, Nicolò Maria Nicolai described the columns “as white marble and on the whole of different sizes”. Not only does this correspond to the general irregularity of Late Roman mass produced marblework, but it may also reflect shafts coming from different quarries.
Prudentius' reference to Parian marble columns could thus be an exact description of the provenance of some of the shafts. At best, however, the poet simplified the situation, omitting any reference to the Proconnesian columns. The reason he named the Parian shafts must have been the traditional literary reason; Parian had the reputation of being the purest and whitest. In spite of its importance for Late Antiquity in general and for the church of S. Paolo in particular, Proconnesian marble did not have the same poetic cachet and could be ignored without detracting from the luster of the building.

The evidence provided so far by scientific research is encouraging but inconclusive to establish the continuation of quarrying on Paros in late Antique/Early Byzantine times. The attribution of the cloud-band columns of the Katapoliani to the Lakkoí quarries on Paros (Paros 3) is too momentous to be supported only by the evidence provided so far.

The clues provided by literary sources offer very little basis to affirm that marble was extracted from the quarries of Paros in Late Antiquity. In all cases investigated so far, a review of the text or of surviving physical remains at the sites described indicates that the term "Parian marble" was used to indicate fine white or light gray marble in general, not a specific geographic origin. The most promising literary citation of Parian marble—that by the early-fifth-century poet Prudentius—proves to be, at least in part, poetic. Isotopic testing has shown that at least one of the columns of S. Paolo fuori-le-mura, Rome, which were quarried shortly before 300, is Proconnesian. On the other hand, one of the shafts is probably from Paros according to its isotopic signature. There may thus be some factual, geographic basis for the poet's use of the term 'Parian'. Further testing will be necessary to confirm that this or other shafts at S. Paolo truly came from Paros and prove that quarrying continued there throughout the fourth century.

Postscript—Donato Attanasio has recently completed an extensive but as-yet unpublished study of the marble from Old St. Paul's making use of the techniques of isotopic analysis and EPR. The two columns studied here were resampled and another shaft in the north portico was newly analyzed. In Attanasio's view, a provenance from Paros is unlikely for any of them, and all are most likely to be from Proconnesus. St. Paul's and the poem of Prudentius therefore offers little support for quarrying on Paros in the late fourth century.
Abstract

The case for and against quarrying on Paros in Late Antiquity has been made on the basis of the art historical and scientific study of the Katapoliani, the most important Early Byzantine church on the island. While most stone in the building is reused, EPR spectroscopy has indicated that some elements, including column shafts were newly quarried. The various positions on the issue are reviewed, and some column shafts of 350 A.D. from the church of S. Paolo fuori-le-mura, Rome, which are said by Prudentius to be Parian, are studied with stable isotopes of carbon and oxygen.

Résumé

Le débat sur l’exploitation des carrières de Paros pendant l’Antiquité tardive s’est basé sur l’étude artistique, historique et scientifique du Katapoliani, la plus importante église datée du début de l’époque byzantine sur l’île. Alors que la majorité des pierres de l’édifice sont des remplois, les analyses EPR ont indiqué que quelques éléments, comme les fûts de colonne, étaient sculptés dans des matériaux nouvellement extraits. Les positions tenues jusqu’alors sont remises en cause, et quelques fûts de colonne datés de 350 ap. J.-C. de l’église de Saint-Paul-hors-les-murs à Rome, que Prudence décrit comme étant fait en marbre de Paros, sont étudiés avec les isotopes stables de carbone et d’oxygène.

Keywords – Paros, Katapoliani, marble, quarrying, isotopic testing, S. Paolo fuori-le-mura, Rome, columns, Proconnesus, Prudentius, Paulinus of Nola

Mots clefs – Paros, Katapoliani, marbre, analyses isotopiques, Saint-Paul-Hors-Les-Murs, Rome, colonne, Proconnessé, Prudence, Paulin de Nola
Bibliography

Aliprantis T., 1993, H EKATON TAIAIANN THI RAPOI, Paris - En tant que gardiens (English translation by J.P. Mc George; German translation by T. Aliprantis), Thessaloniki, Municipality of Paros.

Sodini J.-P., Kolokontas K., 1984, Aliki II: La basilique double, Athènes, École française d’Athènes (Ecole francaise d Athennes, X).