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*The Economic History of Byzantium:
From the Seventh through the Fifteenth Century*

Angeliki E. Laiou, Editor-in-Chief

Scholarly Committee

Charalambos Bouras

Cécile Morrisson

Nicolas Oikonomides[†]

Constantine Pitsakis

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Marble and Stoneworking in Byzantium, Seventh–Fifteenth Centuries

Jean-Pierre Sodini

The early Byzantine period was marked by a substantial exploitation of quarries, linked to a significant construction boom whose origins lay undoubtedly in the building of Constantinople and its stunning triumph as the capital of the Eastern Roman Empire. To be sure, the quarries of the Aegean and of Asia Minor had already been substantially worked during the Roman period; the new center of power only reactivated the quarrying of known sources,¹ whose production had been momentarily interrupted by the crisis in the second half of the third century.

The Prokonnesian quarries had already been worked under Hadrian, who made them dependent on the imperial treasury. Numerous pieces of sculpture found at the site are evidence of this development. Exports of architectural sculpture—in particular to new capitals such as Leptis Magna under the Severi—and the garland sarcophagi of the second half of the second century and the first half of the third were early testimony to the productive capacity of the island. Diocletian's transformation of Nikomedeia into a tetrarchic capital was a prelude of sorts to the ultimate mission of the Prokonnesian quarries: to cloak the new capital in marble so that the glory of Constantinople would blaze out to all reaches of the Mediterranean.²

N. Asgari's perseverance in surveying the Prokonnesian quarries³ has provided us

This chapter was translated by Charles Dibble.

¹ The basic text, despite certain lacunae regarding Byzantium, remains incontestably that of R. Gnoli, *Marmora romana*, 2d ed. (Rome, 1988). I was not able to consult G. Borghini, ed., *Marmi antichi* (Rome, 1992). The majority of Byzantine texts that discuss marble have been assembled, translated, and annotated by C. Mango in *The Art of the Byzantine Empire, 312–1453* (Englewood Cliffs, N.J., 1972), s.v. "marble."

² The studies of J. B. Ward-Perkins have been critical in understanding the importance of these quarries. Cf. *Marble in Antiquity: Collected Papers of J. B. Ward-Perkins*, ed. H. Dodge and B. Ward-Perkins (London, 1992).

³ N. Asgari, "Objets de marbre finis, semi-finis et inachevés de Proconnèse," in *Pierre éternelle du Nil au Rhin: Carrières et préfabrication*, ed. M. Waelkens (Brussels, 1990), 106–26; eadem, "The Prokonnesian Production of Architectural Elements in Late Antiquity, Based on Evidence from the Marble Quarries," in *Constantinople and Its Hinterland*, ed. C. Mango and G. Dagron (Aldershot, 1995), 263–88; eadem, "Prokonnesos, 1993: Çalışmaları," *XII Araştırma Sonuçları Toplantısı* (Ankara, 1994): 99–121.

with an extremely rich sampling of pieces in all phases of their production. The island made pieces to order, tied to the large-scale municipal building programs of Theodosios I and his family, notably elements for one of the triumphal arches of the Forum Tauri and the historiated column of the emperor himself. Prokonnesos also manufactured column shafts of standard size, together with column bases and capitals. With respect to the latter, the Corinthian capital represents a highly standardized product line, whose crafting process Asgari has reconstructed with great skill, showing the extent to which fifth-century capitals differ with respect to their stages of production from those of the second century.

These sculptures were widely exported and were copied, both imitatively and in a cruder style, in other varieties of marble. In addition to architectural elements that appear with some frequency (Corinthian capitals, basket capitals of one style or another, panels decorated with a central chrismon flanked by crosses), we also find a smaller number of other pieces, such as ciboria or ambos. These may reveal interesting local variations, as is the case, for example, of the fan-shaped ambos modeled undoubtedly after the Rotunda of St. George, which appear at Philippi and at Nea Anchialos; others are peculiar to Phrygia. Altar tables and round or horseshoe-shaped tables were produced in the Prokonnesian quarries as well as at Alikı; these were often made of more finely grained, warmer-colored marble from other quarries, even *breccia*.⁴

The *pavonazetto* quarries of Dokimeion had witnessed a very strong expansion until the middle of the third century, when, ca. 235–236, the marking of blocks by imperial agents was abruptly suspended.⁵ There also existed in these quarries a variety of white marble. These two kinds were greatly prized during the proto-Byzantine period, despite the difficulties of transportation that the distance of the quarries from the sea entailed. At Dokimeion, a specific group of quarries was worked during this period; numerous blocks, but few semifinished or finished pieces, remain in the quarry rubble. L. Robert and subsequently J. Röder have noted the crosses (and human figures) that adorn a number of quarry faces, specifically associated with the remains of the installation of a pendular saw. Quite recently, T. Drew-Bear discovered, etched on a quarry wall, the unabbreviated name of Justinian.⁶ To this evidence, we may add an abundant level of production throughout Phrygia, the quality of which is entirely comparable to the Prokonnesian product.⁷

A great number of other varieties of marble existed in Asia Minor,⁸ prized by both

⁴ M. Bonfioli, "Una mensa a sigma polilobata a Roma," *RendPontAcc* 50 (1977/78): 1–14.

⁵ C. Fant, *Cavum antrum Phrygiae: The Organization and Operations of the Roman Imperial Marble Quarries in Phrygia* (Oxford, 1989), together with M. Christol and T. Drew-Bear, "Les carrières de Dokimion à l'époque sévérienne," *Epigraphica* 53 (1991): 113–74.

⁶ L. Robert, "Les Kordakia de Nicée, le combustible de Nicée et les poissons-scie: Sur des lettres d'un métropolitain de Phrygie au Xe siècle. Philologie et réalités, II," *JSav* (1962): 3–74; J. Röder, "Marmor Phrygium: Die antiken Marmorbrüche von Ischisar in Westanatolien," *JDAI* 86 (1971): 253–312. The inscription found by T. Drew-Bear remains unpublished.

⁷ An outline and a bibliography of Phrygian sculpture are provided in K. Belke and N. Mersich, *Tabula Imperii Byzantini*, vol. 7, *Phrygien und Pisidien* (Vienna, 1990).

⁸ D. Monna and P. Pensabene, *Marmi dell'Asia Minore* (Rome, 1977), and M. Waelkens, P. De Paepe, and L. Moens, "Survey in the White Quarries of Anatolia," *IV Araştırma Sonuçları Toplantısı* (Ankara,

the Romans and the Byzantines: that of the Troad (a violet granite out of which the columns of the Troad portico in the twelfth region of Constantinople were carved); Sangarios, Laodikeia in Lykos, Aphrodisias, where a cross inscribed in a circle was discovered on a quarry face,⁹ adding evidence to the abundant early Byzantine marbles found on the site; Priene; Ephesos, Teos (“African” marble), Iasos (“Carian” marble or *cipollino rosso*, used in particular at the church of the Holy Apostles); Mylasa, Herakleia ad Latmum, Sardis, and Galatia.

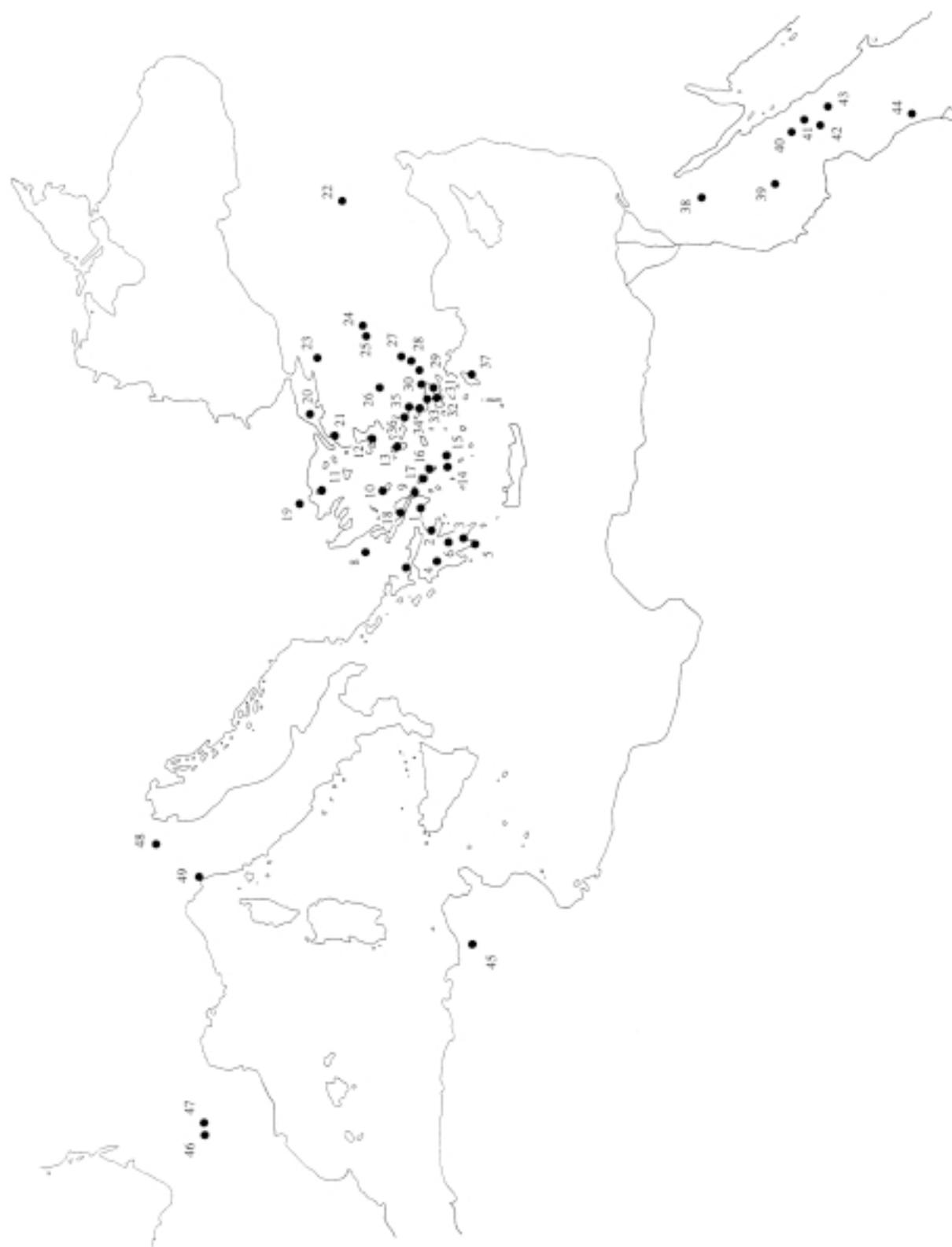
In the Aegean islands, Thasos (the quarries of Vathy and Alikí), Paros, Naxos, Skyros, and Chios (*portasanta*), provided highly prized marble, to which we must add the well-known quarries of Karystos (*cipollino*) and those of a *fior di pesco breccia* near Chalcis in the peninsula of Euboiea. At Karystos, a cross was marked on a quarry wall. Texts, moreover, mention the presence of this marble at Hagia Sophia in Constantinople and also in the cathedral church of St. Stephen of Gaza. The quarries of Alikí and of its immediate surroundings have provided an abundance of Christian marks: fifty-four crosses, human figures, animals, and financial accounts traced in minium that remain undeciphered to this day. This marble supplied not only Thessalonike as early as the Arch of Galerius (299–303), or Delphi in the sixth century (the basilica in the Gymnasium); beginning in the fourth century, it was also exported to Ostia,¹⁰ Rome, and Ephesos; from the sixth century forward, it was exported to Antioch, Cyrenaica, and Pelusium. The white marble of Thrace and of Philippi had a more localized market. The *breccia* of Larissa (called *verde antico*), the white marbles of Hymettos and of Pentelikon, the “serpentine” of Croceia near Sparta, and the red marble from Cape Taenaros, the *cipollino* of Karystos, and the green *breccia* of Thessaly were widely used.¹¹

1986): 113–23; cf. also for the quarries of Miletos and Herakleia ad Latmum; L. Robert, “Documents d’Asie Mineure, XIV: Monnaies et territoire d’Héraclée du Latmos,” *BCH* 102 (1978): 502–18, and A. Peschlow-Bindokat, “Die Steinbrüche von Milet und Herakleia am Latmos,” *JDAI* 96 (1981): 157–235: figures 19 and 20 may represent a 6th-century basket capital. It is possible that the quarry at Teos was no longer exploited after the Roman era: N. Türk et al., “The Geology, Quarrying Technology and Use of Beylerköy in Western Turkey,” in *Classical Marble: Geochemistry, Technology, Trade*, ed. N. Herz and M. Waelkens (Dordrecht, 1988), 85–89. On Turkish white marble, cf. the maps and bibliography in Y. Lintz, D. Decrouez, and J. Chamay, *Les marbres blancs dans l’Antiquité* (Geneva, 1991), 9–13. Regarding the Troad granites, two excellent pages and a very useful map concerning the dispersion of columns made of this stone, the quarrying of which reached its height toward the 4th and 5th centuries, have been published by L. Lazzarini, “Des pierres pour l’éternité: Les granits utilisés dans l’antiquité classique,” *Les dossiers de l’archéologie* 173 (1992): 66–67.

⁹ Monna and Pensabene, *Marmi dell’Asia Minore*, 90, fig. 17; 94, fig. 30.

¹⁰ On imports of Thasos marble, but also Prokonnesian and other marble to Ostia and Porto, cf. P. Pensabene, *Le vie del marmo* (Rome, 1994), esp. 33–35.

¹¹ On Grecian white marble, cf. the bibliography and maps in Lintz, Decrouez, Chamay, *Les marbres blancs*, 9–13. On Alikí, see J.-P. Sodini, A. Lambraki, and T. Kozelj, *Alikí, I: Les carrières de marbre à l’époque paléochrétienne* (Paris, 1980), 79–137; on green marble, A. Lambraki, “Les Roches Vertes: Etude sur les marbres de la Grèce exploités aux époques romaine et paléochrétienne” (thèse de 3e cycle, Université de Paris I, 1978), 168–74; concerning saw working during the proto-Byzantine period, and on Karystos in particular, see eadem, “Le cipolin de la Karystie,” *RA* (1980): 31–62. See also A. Sampson, “Επισήμανση αρχαιολογικών θέσεων στην Εύβοια,” *Ανθρωπολογικά και Αρχαιολογικά Χρονικά* (Ευβοϊκή Αρχαιολογική Εταιρεία) 3 (1988/89): 163–81. On the quarries of Cape Taenaros and Taygetos, cf. F. A. Cooper, “The Quarries of Mount Taygetos in the Peloponnesos, Greece,” in *Classical Marble*, ed. Herz and Waelkens (as above, note 8), 65–76.



Sources of marble in the Roman world

(Map legend, with modifications, after E. Dolci, *Il marmo nella civiltà romana: La produzione e il commercio* [Carrara, 1989], inset map)

1. Attic marble (Pentelikon, Mount Hymettos)
2. Corinth marble
3. Lakedaimon marble (from Croceai, serpentine)
4. Saraki (or Olympia) stone
5. Cape Taenaros marble (rosso antico)
6. Tegea or Doliaria marble
7. Calydon marble
8. Thessaly breccia (verde antico)
9. Karystos marble (cipollino)
10. Skyros marble
11. Thasos marble
12. Lesbos marble
13. Chios marble (portasanta)
14. Paros marble (including lychmites)
15. Naxos marble
16. Tinos marble
17. Andros marble
18. Chalcis marble (fior di pesco)
19. Philippi marble
20. Prokonnesos marble
21. Troad marble (granites)
22. Alabaster
23. Sangarios marble
24. Dokimeion marble
25. Synnada marble (pavonazetto)
26. Sardis marble
27. Hierapolis marble
28. Laodikeia in Lykos marble
29. Aphrodisias marble
30. Alabanda marble
31. Mylasa marble
32. Iasos marble (cipollino rosso)
33. Herakleia ad Latnum marble
34. Priene marble
35. Ephesos marble
36. Teos marble (africano, luculleo)
37. Rhodes marble
38. Beni Suef alabaster
39. Hatnub alabaster
40. Green porphyry, red porphyry from Mons Porphyreticus
41. Granodiorite from Mons Claudianus (granito del foro)
42. Ophyte (diorite from Mons Aphites)
43. Basanite
44. Syene granite
45. Chemtou (gallo antico)
46. St. Beat white marble
47. Aquitaine marble (bianco e nero antico)
48. Verona marble
49. Luna (Carrara) marble

In Africa at Chemtou, where the Roman system of marking blocks ceased in 201, the arrival of the Vandals would have accentuated a decided slowdown in the quarries as of the year 280. A coin hoard of 1,647 pieces dating to the end of the reign of Honorius (395–423) constitutes the latest evidence found on the site. A single Christian inscription has been identified, dating possibly from the fourth century, in a quarry that used a pendular saw.¹² In Egypt a large number of granites (those from the Mons Claudianus being the most widely known), porphyries (from Mons Porphyreticus), and, in the Wadi Hamamath, basanite and *breccia* called *hekatontalithos* by Constantine of Rhodes, in his description of the church of the Holy Apostles in Constantinople, were no longer available at some point before the end of the sixth century.¹³ At Mons Porphyreticus, the latest pottery, very sparsely represented, dates to the end of the fifth century. These marbles nonetheless continued to be in demand, in particular the porphyry or “Roman marble”¹⁴ that adorned the *Porphyra*, the room of the palace in which dynastically legitimate emperors were born,¹⁵ and certain areas of the throne room.¹⁶

The black-and-white marble of the Pyrennees was the sole west European marble known in Constantinople. It is found at Saraçhane and is mentioned by Paul Silentiarios in connection with Hagia Sophia and by Constantine of Rhodes in connection with the church of the Holy Apostles.¹⁷

The “marble style” (to apply to 5th- and 6th-century marble production the felicitous expression of J. B. Ward-Perkins regarding the homogeneous decorative style that the development of trade in marble facilitated in the 2d century¹⁸) spread far beyond Constantinople and brought into play quarries other than those of Prokonnesos. The Byzantine taste for polychrome marbles is notable. Independent of their use for wall revetment, colored marbles like the Phrygian *pavonazetto* also supplied the material for columns, notably at the church of Sts. Sergios and Bakchos, and, according to Constantine of Rhodes, at the church of the Holy Apostles. So too with respect to *breccia* from Thessaly (St. John the Studite, Hagia Sophia, Sts. Sergios and Bakchos), which

¹² F. Rakob, *Simitthus*, vol. 1 (Mainz, 1993).

¹³ E. Legrand, “Description des oeuvres d’art et de l’église des Saints-Apôtres de Constantinople,” *REG* 9 (1896): 57, line 692; regarding this marble, see Gnoli, *Marmora romana*, 88–97; D. Peacock and V. Maxfield, *The Roman Imperial Quarries: Gebel Dokhan, Egypt* (London, 1994).

¹⁴ This alternative term for porphyry may originate in the stone’s symbolic value as the quintessence of Roman power. J. Deer, *The Dynastic Porphyry Tombs of the Norman Period in Sicily* (Cambridge, 1959), 117–69, believes that the reason is rather that Rome was the principal source of this stone, “the principal repository of porphyry ever since the early Middle Ages” (117).

¹⁵ *Anne Comnène, Alexiade*, ed. B. Leib, 3 vols. (Paris, 1937–45), 2:90 (chap. 7, § 4).

¹⁶ *Le livre des cérémonies*, ed. A. Vogt, 2 vols. (Paris, 1967), 1:152 (39.11–14).

¹⁷ Saraçhane: R. M. Harrison, *A Temple for Byzantium* (London, 1989), 77–78, figs. 80–81; Hagia Sophia: Mango, *Art*, 86 (Celtic: Gnoli, *Marmora romana*, 35, 39, 168–70); Holy Apostles: Legrand, “Saints-Apôtres,” line 600.

¹⁸ A. Boëthius and J. B. Ward-Perkins, *Etruscan and Roman Architecture* (Harmondsworth, 1970), 494, cited by C. Fant, without specific reference, in “The Roman Emperors in the Marble Business: Capitalists, Middlemen or Philanthropists,” in *Classical Marble*, ed. Herz and Waelkens (as above, note 8), 152.

also provided the material for chancel enclosures (Basilica B of Philippi, St. John of Ephesos, the cruciform basilica at Thasos), and for ambos (Hagia Sophia of Thessalonike, the Marzamemi cargo). Other white-marble quarries produced, for their own part, imitative pieces, some of which are indistinguishable from the Prokonnesian panels. These various types of marble were assembled within single structures, either through combined orders or through a single order placed with large entrepôts that gathered different varieties of marble. The Marzamemi cargo, whose ultimate terminus remains unknown, is a good example of these composite exports: the bases, shafts, and capitals are made of Prokonnesian marble, the ambo is *breccia* from Thessaly, and the altar table is of a finer marble (Mount Pentelikon, Asia Minor?). Was it loaded in a single location? Did the cargo ship stop at three different yards? The first seems the most plausible answer.¹⁹ In many other cases, we find job lots, including in the church of Poreč, whose builder, the archbishop Euphrasios, is often described (erroneously) as having acquired his marble from Constantinople. It seems more plausible that he purchased the marble in a Ravennate entrepôt where the available supply did not permit a homogeneity as pronounced as that of the church of the Acheiropoietos in Thessalonike, Sant'Apollinare in Classe, or San Vitale, where the column elements (bases, shafts, and capitals), ordered specifically from Constantinople, were uniform within each site.²⁰

No coherent, state-controlled system of quarrying can be reconstructed from the legislative texts that have come down to us, even if these texts reaffirm in several instances the state's annexation of specific named quarries. To be sure, there were quarries that in the third century formed part of the imperial domain and remained so in cases where its political sovereignty so permitted. Undoubtedly, Diocletian's Price Edict (*edictum de pretiis*) lists a certain number of quarries that belonged to the state; it remains uncertain, however, whether *all* of them did so, and whether all that the state did control are listed therein. Related to the issue of state control, the quarries would have had a workforce of slaves and convicts (*damnati ad metalla*), as did the mines. To be sure, the *Passio Quattuor Coronatorum*,²¹ a hagiographic text that must be treated with a certain degree of caution, mentions even as late as the period of Diocletian a Christian bishop condemned *ad metalla* in the porphyry quarries of Fruska-Gora, while the fate of the future martyrs and that of their *artifices* companions is passed over in silence (there is no mention of their possible status as slaves). The *Acta Sancti Clementis* mention several *damnati ad metalla* in the quarries of Inkermann.²² It is plausible, however, that the workforce evolved concomitantly with the organization of quarries, the exploitation of which was increasingly delegated to private enterprise.²³

¹⁹ G. Kapitän, "Elementi architettonici per una basilica dal relitto navale del VI secolo di Marzamemi (Siracusa)," *CorsiRav* 27 (1980): 71–136.

²⁰ Cf. A. Terry, "The Sculpture at the Cathedral of Euphrasius in Poreč," *DOP* 42 (1988): 13–64; E. Russo, *Sculture del complesso eufrasiano di Parenzo* (Naples, 1991).

²¹ *AASS*, Nov. 3:765–79 (auctore Porphyrio).

²² Example cited by Fant, "The Roman Emperors in the Marble Business," 153.

²³ Traces of a military presence surrounding marble quarries after the 3d century do not appear to be common. I am skeptical of the military function attributed to the structures in the region of

The marks of stonemasons, which appear sporadically toward the end of the fourth century and proliferate in the course of the sixth, shed little light on this system. Most are engraved on bases, shafts, capitals, panels, and chancel piers, most often in Prokonnesian marble. The marks, which seem not to have been inscribed on all pieces (unless one assumes that they would have been painted, but not incised, on most of the worked pieces and that they thus would easily have disappeared), cannot be interpreted as indicative of a hallmark, in the way that seals were imprinted on silver during the same period by imperial officers. Most often, it is a matter of a few letters—rarely more than three—sometimes grouped into a monogram (there are, however, no cruciform monograms), which might be interpreted as the abbreviated name of the artisan (working alone or as part of a team). The presence of invocations would tend to confirm this interpretation.²⁴

This mass production, with marked aspects of line work, a product of both imperial and private quarries, was certainly not entirely at the disposition of the emperors. To be sure, the great imperial projects (the construction of the *fora*, as well as Justinian's building of Hagia Sophia) were managed directly by the emperor. The same would have been true for the emperor's gift-giving, such as the thirty-two columns from Karystos that Empress Eudoxia sent for the construction of the cathedral at Gaza, or the Ionic capitals with the monograms of Justinian and Theodora, shipped together with their bases and shafts to St. John of Ephesos. In addition to imperial largesse, however, there was a market: St. John Chrysostom recounts the story of the monk from Thasos who was sent to Constantinople to purchase slabs of Prokonnesian marble and squandered the funds.²⁵ At the beginning of the seventh century, the *Miracula Demetrii* show the bishop of Thenai in Byzacena buying an ambo and a ciborium from a ship's captain.²⁶ It is therefore a plausible assumption that marble was obtainable on the open market. One can postulate with some certainty that there would have been marketplaces, modeled on the Marmorata in Rome. (No text, however, mentions the existence

Aliki by T. Koželj and M. Wurch-Koželj, "The Military Protection of the Quarries of the Aliki Area during the Byzantine Period," in *Ancient Stones: Quarrying, Trade and Provenance*, ed. M. Waelkens, N. Herz, and L. Moens (Leuven, 1992), 43–57. There is nothing military about these installations, and the interpretation is quite labored; rather, they appear to be scattered dwellings, occupied by the quarry workers themselves or by agricultural workers. The importance of slavery is far from being proven, at least as regards agricultural production: R. MacMullen, "Late Roman Slavery," *Historia* 36 (1987): 359–82. We have no recent studies regarding quarries.

²⁴ F. W. Deichmann, *Ravenna, Hauptstadt des spätantiken Abendlands*, vol. 2, *Kommentar*, pt. 2 (Wiesbaden, 1976), 206–30; J.-P. Sodini, "Marques de tâcheron inédites à Istanbul et en Grèce," in *Artistes, artisans et production artistique au Moyen Âge*, ed. X. Barral y Altet, (Paris, 1987), 2:503–10; C. Barsanti, A. Guiglia Guidobaldi, and J.-P. Sodini, "La sculpture architecturale en marbre au VIe s. à Constantinople et dans les régions sous influence constantinopolitaine," *Acta XIII Congressus internationalis archaeologiae christianae, Split-Poreč, 1994*, ed. N. Cambi and E. Marin (Split, 1998), 301–76. At Aliki, A. Conze has noted a panel inscription, which I would interpret as the offering, by a team of Thasian quarrymen, of the panel to a church: J.-P. Sodini and K. Kolokotsas (with the assistance of L. Buchet), *Aliki, II: La basilique double* (Paris, 1984), 10, fig. 10a.

²⁵ Gregory of Nazianzos, *Poema de se ipso*, lines 875ff., PG 37:1089.

²⁶ P. Lemerle, *Les plus anciens recueils de miracles de saint Démétrius et la pénétration des Slaves dans les Balkans*, 2 vols. (Paris, 1979), 1: no. 6, chap. 313, p. 239 (trans., p. 235), and 2: pp. 166–69.

of this in Constantinople.) One would assume that the same would also have held true at Ravenna, Carthage, Antioch, Caesarea in Palestine, and Alexandria.

Besides the large resources of Aegean marble and those of less well known quarries, which permitted a church in Negev to obtain a few panels, piers for a screen, an altar, and a marble reliquary, there was the more localized market for marble substitutes. Finally, as a last resort, there were always fieldstone quarries that provided foundation and wall material. In Constantinople, the fieldstone was a type of soft limestone, and the building of the city's walls required its extensive exploitation. The stone was not suitable for load-bearing architectural sculpture, since it would not have withstood compression. On the other hand, at the end of the fourth century and at the beginning of the fifth, the quarry furnished stone for sarcophagus fronts carved in low relief in a somewhat labored style, but clearly directed to a quite affluent clientele. There were other limestone quarries close by Constantinople, such as that of Catalça in Thrace.²⁷ In other regions, there may have existed polishable stone that would have been used as a substitute for *breccia* (the rose-colored limestone of northern Syria), or for white marbles (bituminous schist from Nebi Musa in central Jordan, widely used in the 7th century, perhaps by virtue of the scarcity of Aegean marble), and which as a result were traded within specific regions, somewhat like marbles of lower quality. In addition, there was local stone carved on site, which sometimes favored the development of large regional schools of sculpture in Lycia, Egypt, northern Syria, and, to a lesser degree, Cilicia. In Jordan, near Qasr al-Hallabat—an extremely rare instance—several inscriptions dating from between the fifth and seventh centuries mention three individuals—Theodore, Sergios, and Zenon—commissioned to quarry blocks for a church dedicated to St. John, situated in a nearby town, either Bosra or Philadelphia. The most prominent—the deacon Theodore—seems to have been responsible for construction at the church and to have occupied the function of quaestor for the town.²⁸

As we can see, the early Byzantine period heralded the return to a sophisticated, hierarchical system of stoneworking, the heritage of Rome, the impetus for which came from Constantinople. Far from a crushing monopoly, the marble industry of Prokonnesos engaged other Aegean quarries—even the lowliest—in the production of material for churches. The “marble style” was, moreover, diversified, and the development of outlying regions favored the persistence of local styles, which found expression in materials other than marble.

With the seventh century, the Aegean witnessed a crisis of great magnitude that considerably slowed the imperial and ecclesiastical building programs. It is even possible that the impediments to maritime traffic imposed by the Slavs, Avars, and Persians had suspended regular contacts between the island of Prokonnesos and Constantinople, depriving the capital of its main source of marble and causing an at least tempo-

²⁷ F. Dirimtekin, “An Antique Altar at the Vicinity of Subasi Village, 10 Km North of Catalça,” *Ayasofya Müzesi Yılı* 8 (1969): 53–56; 84, fig. 1; 85, figs. 4–5; 86, figs. 6–7. This is, in fact, the face of a quarry, not a sanctuary.

²⁸ P.-L. Gatier, “Inscriptions grecques des carrières de Hallabat,” *Studies in the History and Archaeology of Jordan* 5 (Amman, 1995): 399–402.

rary cessation of quarry work, which surveys of the island should be able to corroborate. The quarries of Alikı ceased functioning permanently around 615–620; whether the cessation of activity in this part of the island was the result of an attack by the Slavs or an earthquake, it was not followed by any recovery. The Phrygian quarries also fell into decline, if one takes the production of marble pieces as evidence, before their undoubted recovery (albeit on a reduced scale) in the tenth and eleventh centuries.

Some rare, early evidence demonstrates an interesting evolution. The Baths of Yalova under Justin II provided impeccably crafted basket capitals.²⁹ The same holds true of a capital with the monogram of Phokas in the museum of Afyon.³⁰ Both evidence an evolution toward an elegant simplicity: the surfaces are outlined by a simple beaded molding and a central motif in the form of a monogram. A capital dating from somewhat later—the reign of Herakleios—is a reuse: a mask has been transformed into a cartouche to accommodate an inscription honoring the emperor.³¹ Chancel screens disclose the same simplification and flattening of the relief: in the first instance toward the end of the seventh century or beginning of the eighth at the church of the Dormition in Nicaea on panels inscribed with crosses, and on one with the monogram of its founder Hyakinthos (a monogram also inscribed on the recently discovered lintel);³² so, too, subsequently at the church of St. Irene, on panels monogrammed with the insignia of Constantine V, corresponding to its reconstruction by the emperor.³³ If A. Berger's hypothesis concerning St. Euphemia holds true,³⁴ the transfer of her relics ca. 680 from Chalcedon to the palace of Antiochos was accompanied by a complete reutilization of the architectural sculpture of the sanctuary's enclosure and of the solea of a sixth-century church. This provides marked evidence of the absence of newly quarried marble: for the first time in Constantinople, the arrival of eminent relics was not accompanied by a new installation, but rather by resort to reused materials.

At the same time, there was continuity in how marbles were used by the emperors. The clearest evidence is undoubtedly the niggling precision with which the stone of the imperial tombs is described until the tenth century. According to tradition, the emperor chose the stone of his sarcophagus on the day of his coronation.³⁵ One thus

²⁹ J. Kramer, "Kämpferkapitelle mit den Monogrammen Kaiser Justinus II. und seiner Gemahlin, der Kaiserin Sophia in Yalova Kaplıcaları (Termal)," in *Festschrift für Klaus Wessel zum 70. Geburtstag*, ed. M. Restle (Munich, 1988), 175–90.

³⁰ Barsanti, Guiglia Guidobaldi, and Sodini, "La sculpture architecturale en marbre au VIe s."

³¹ N. Firatlı, *La sculpture byzantine figurée au musée archéologique d'Istanbul* (Paris, 1990), no. 226.

³² U. Peschlow, "Neue Beobachtungen zur Koimesiskirche in Iznik," *IstMitt* 22 (1972): 145–87, esp. 166–82, pls. 43–44; C. Mango, "Notes d'épigraphie et d'archéologie: Constantinople, Nicée," *TM* 12 (1994): 353: "marbres qui n'ont pas l'air d'avoir été réutilisés."

³³ T. Ulbert, "Untersuchungen zu den byzantinischen Reliefplatten des 6. bis 8. Jahrhunderts," *IstMitt* 19/20 (1969–70): 339–57, esp. 345–46, pl. 72, 1–3.

³⁴ A. Berger, "Die Reliquien der Heiligen Euphemia und ihre erste Translation nach Konstantinopel," *Hellenika* 39 (1988): 311–22.

³⁵ Leontios of Neapolis, *Vie de Jean de Chypre*, ed. A. J. Festugière, with L. Rydén (Paris, 1974), chap. 17 (text, p. 365; trans., p. 467), cited by Gnoli, *Marmora romana*, 66–67, and P. Karlin-Hayter, "L'adieu à l'empereur," in A. Dierkens and J.-M. Sansterre, "Le souverain à Byzance et en Occident du VIIe au Xe s.," *Byzantion* 61 (1991): 123.

finds in the list of the imperial sarcophagi at the church of the Holy Apostles all the marble used in these instances. Indeed, the use of porphyry by the early emperors ceases with Marcian (450–457); his successor, Leo I, is still entitled to green Egyptian porphyry, and Anastasios used marble from Aquitaine at the time when it appears to have been highly sought after for churches (St. Polyeuktos, Hagia Sophia, and the church of the Holy Apostles, and reused at the Topkapi palace). Other sarcophagi, up to those of Constantine VIII and his brother Basil, are in Greek marble (eleven of them in marble from Thessaly), in marble from the islands (nine in Prokonnesian marble) or from Asia Minor (seven in assorted marbles from Sangarios, two in Hierapolitan marble, two in Dokimeionian marble, one in Bithynian [?] marble, two others in *breccia* that probably originated in Asia Minor). Among the others, scattered over diverse points of the city, one notes the presence of marble from Thessaly, from Prokonnesos (or Pikrimaios), from Sangarios,³⁶ and from Bithynia. Michael Psellos complains of the sums lavished by emperors prior to Isaac I Komnenos (1057–59) on sarcophagi in “Phrygian,” Italian (“Roman” or porphyry?), or Prokonnesian marble, for the establishment of monasteries around their tombs and on endowments for monks ordered to pray for the salvation of the deceased.³⁷

Marble continued to play a large role, decorative and often symbolic, in the Great Palace. Recounting the building programs of Theophilos in the Great Palace, the Continuator of Theophanes mentions, in addition to porticoes in Carian marble (a stone used, like that of the Troad, in porticoes: compare the Blachernae marble porticoes, which date to the reign of Maurice),³⁸ porphyry, marble from Dokimeion, Rhodes, Prokonnesos, Thessaly, Cape Vathy (possibly in the island of Thasos), or from Cape Taenaros.³⁹ In the Nea Ekklesia of Basil I, the two *phialai* of the atrium were made of porphyry and Sangarian marble. For the construction of the Kainourgion, Basil used eight Thessalian marble columns and eight onychite columns, whose provenance may be the quarries of Dokimeion. Of the latter, six were adorned with an inhabited scroll—which brings to mind the decoration of the fragments in the Archaeological Museum at Istanbul⁴⁰ and which thus might, like those fragments, date from the proto-Byzantine period—and two with spiral fluting, again a motif widely used in the sixth century, notably for the columns of ciboria. The pavement was made of an assemblage of marbles, dominated by Carian and Thessalian marble; at the center a peacock in display was represented. An act ceding the so-called Palace of Botaneiates to the Genoese in 1202 mentions Bithynian marble and a green marble, undoubtedly Thessalian *breccia*.

Nonetheless, a number of legendary texts testify to a disjunction between the knowledge of marbles and the knowledge of their quarrying. As early as the *Patria* (8th–9th century?), “we live in an age where we no longer hew marble from the quarry; it is all

³⁶ Gnoli, *Marmora romana*, 178.

³⁷ Michel Psellos, *Chronographie*, ed. E. Renauld, 2 vols. (Paris, 1926–28), 2:119 (VII.59).

³⁸ Mango, *Art*, 160–65.

³⁹ Cooper, “The Quarries of Mount Taygetos.”

⁴⁰ Firatli, *La sculpture byzantine*, nos. 190 and 191.

reused architectural elements from antiquity, from nearby (the islands, Bithynia), fated to be pulled down.”⁴¹ The ninth-century account of the construction of Hagia Sophia in Constantinople cites the high esteem accorded colored stone (in particular porphyry and Thessalian *breccia*), but they are no longer deemed to have been quarried expressly for Hagia Sophia; such, in fact, may indeed have been the case for the porphyry columns, which are shorter than the other columns. These stones have become spoils and trophies, raised to celebrate the death of the pagan gods. An anonymous account dating from 1491 identifies the marbles of Hagia Sophia as spolia from the palace built by Solomon the Prophet at Kyzikos-Aydincik. Porphyry and Thessalian *breccia* have become talismans.⁴²

One is tempted to agree with Cyril Mango’s contention that, like Rome, Constantinople abounded in marble and that this superabundance of material favored the reuse of pieces, which could have been acquired on the market, and that there was thus no longer a need to quarry fresh marble, a protracted process that necessitated its transportation. To be sure, Constantinople exported marble to Preslav and Kiev, but the quantities are in no way comparable to those shipped by sea before the seventh century. Psellos is undoubtedly indulging in rhetorical exaggeration when he writes that under Romanos III Argyros (1028–34), who was constructing the monastery of the Peribleptos in an attempt to rival Justinian, “every mountain was excavated, and the art of the quarrier prized more highly than that of philosophy itself.”⁴³ We see emperors at best reutilizing available materials. Theophilos transferred to Lausiakos capitals taken from the Palace of Basiliskos.⁴⁴ Having had the sarcophagus of Constantine V removed from the mausoleum of Justinian near the church of the Holy Apostles, Michael III cut it apart to make chancel panels for the church of the Virgin of Pharos. Basil I used marble from Justinian’s mausoleum at the church of the Holy Apostles, both for the Nea Ekklesia and for the church of the Virgin in the Forum. John Tzimiskes ransacked the Baths of the Oikonomion, identified with the Palace of Marina, the daughter of Emperor Arkadios,⁴⁵ and still in use under Nikephoros II Phokas, to build the church of Christ of Chalke, where he had himself interred. Basil and Leo VI reused, so to speak, the entire monument in restoring it, including its statues of divinities and mythological figures dating back to the original construction of the building, that is, to the first half of the fifth century. Isaac II Angelos (1185–1204) ransacked the Palace of Mangana to decorate the church of the Archangel Michael at Anaplous.⁴⁶

⁴¹ G. Dagron, *Constantinople imaginaire* (Paris, 1984), 267 (with citations to the specific passages).

⁴² S. Yerasimos, *La fondation de Constantinople et de Sainte-Sophie dans les traditions turques* (Paris, 1990), esp. 136–37.

⁴³ Psellos, *Chronographie*, 1:41 (III.14).

⁴⁴ R. Janin, *Constantinople byzantine* (Paris, 1964), 115 n. 5.

⁴⁵ C. Mango, “The Palace of Marina, the Poet Palladas and the Bath of Leo VI,” in ΕΥΦΡΟΣΥΝΟΝ: Αφιέρωμα στον Μανόλη Χατζηδάκη (Athens, 1991), 321–30.

⁴⁶ The main essay on the subject is that of W. Müller-Wiener, “Spoliennutzung in Istanbul,” in *Beiträge zur Altertumskunde Kleinasiens: Festschrift für Kurt Bittel*, ed. R. M. Boehmer and H. Hauptmann

The abundance of reused materials in the churches of Constantinople confirms the information provided by the written sources.⁴⁷ The church erected by Constantine Lips in 907–908 reuses a number of early Byzantine capitals and the fragment of a panel from the church of St. Polyeuktos. Its pavement reutilizes funerary stelae from Kyzikos, the town located across from Prokonnesos; these were quite logically favored since they had already been shaped and could be used in place of freshly quarried marble from the island.⁴⁸ The monastery of the Pantokrator also possesses a panel originating from St. Polyeuktos. The church of St. Theodore contains several capitals dating from the early Byzantine period, reused without alteration, as do Kalenderhane and St. Andrew in Krisei. The latter goes so far as to incorporate in full into its construction the jambs of an early Byzantine door of a highly distinctive style. The church of the Holy Savior in Chora includes early and middle Byzantine capitals (11th century), reused in the fourteenth century, and blind doors of marble dating from the early period. The door-jambs in these churches, whose moldings resemble those of sixth-century churches, are very often likely to be salvage pieces from precisely this time. Wall revetments and paving stones are created from older pieces, notably the *rotae* of porphyry or Thessalian marble that form the center of the *opera sectilia* of the Constantinopolitan and provincial churches.

The Istanbul Archaeological Museum offers several examples of reuses, notably of sarcophagi whose decoration has been reworked to bring it into line with contemporary taste, parapet panels, and tomb slabs.⁴⁹ At the Louvre there is a fragment of the second century with a Constantinopolitan provenance that was transformed into a stele with a representation of a military saint.⁵⁰ Cyril Mango has shown that the facade of the Boukoleon that gives on the sea was decorated with important spolia.⁵¹ In the fourteenth century, the alteration of the land approach to the Golden Gate, where antique and early Christian marbles are set into the wall in two rows, shows the aesthetic value that the Palaiologan emperors drew from spolia.⁵² At this stage, the repre-

(Mainz, 1983), 369–82. Note also the valuable commentary of C. Mango, “Storia dell’Arte, seminario,” in *La civiltà bizantina dal IX al XI secolo*, ed. A. Guillou, Corsi di Studi, Università di Bari II (1977) (Bari, 1980), 259–62, 268–69; idem, “L’attitude byzantine à l’égard des antiquités gréco-romaines,” *Byzance et les images* (Paris, 1994), 95–120, and idem, “Ancient Spolia in the Great Palace of Constantinople,” in *Byzantine East, Latin West: Art-Historical Studies in Honor of Kurt Weitzmann*, ed. C. Moss and K. Kiefer (Princeton, N.J., 1995), 645–49.

⁴⁷ Cf. note 46. See also T. F. Mathews, *The Byzantine Churches of Istanbul* (University Park, Pa., 1976), in which a good number of these spolia are illustrated.

⁴⁸ C. Mango and E. J. W. Hawkins, “Additional Notes,” *DOP* 18 (1964): 311–15, and “Additional Finds at Fenari Isa Camii, Istanbul,” *DOP* 22 (1968): 182; L. Robert, “Documents d’Asie Mineure,” *BCH* 102 (1978): 452–60, commentary on the transportation of stone from Kyzikos to Constantinople during the Byzantine and Ottoman periods.

⁴⁹ Firatlı, *La sculpture byzantine*, s.v. “remploi.”

⁵⁰ Mango, “L’attitude byzantine,” 114, fig. 16.

⁵¹ Mango, “L’attitude byzantine”; idem, “Ancient Spolia.”

⁵² Mango, “L’attitude byzantine,” and S. Guberti Bassett, “John V Palaiologos and the Golden Gate in Constantinople,” in *ΤΟ ΕΛΛΗΝΙΚΟΝ: Studies in Honor of Speros Vryonis Jr.*, vol. 1, *Hellenic Antiquity and Byzantium*, ed. J. S. Langdon et al. (New Rochelle, N.Y., 1993), 117–73.

sentations (whose original import had long been forgotten) conferred on these marbles a protective magic, to which a prophetic value would have been ascribed, as well as, undoubtedly, a nostalgia (for which we have abundant evidence in funerary art) for the antique style. Somewhat later (at the beginning of the 15th century), near the Golden Gate, the Mermerkule was built, the lower portion of which is made of a reused facing.⁵³

It is possible that even in Constantinople materials other than marble would have been reused. Brick undoubtedly remained in constant production, and the high precision of its use during the Komnenian dynasty (a period of expansive construction)—in walls of recessed brickwork and in the drums of domes with pilasters—would have precluded the utilization of salvaged materials in important areas (the apses, northern and southern arches, the drums of the domes). In contrast, the city's ramparts, by virtue of the inexactitude of the joints in certain reworked areas, suggest that limestone blocks and even bricks were reused. Doing so would no doubt have preserved the consistency of the construction technique of these walls. But does this explain the reuse of blocks? Were the limestone quarries of Constantinople, about which we know nothing, still functioning after the seventh century?

Outside Constantinople, the situation was surely otherwise, depending on the value attached to the material available for reuse and the scale of buildings to be constructed. The reuse of marble, and more generally of stone that could take a high polish, was significant. In particular, the reuse of proto-Byzantine capitals was common currency in the large urban centers of late antiquity (Athens, Thessalonike), but also in the churches of cities that had developed much later, such as Arta, or in villages such as Merkaba, where materials were deliberately brought from some distance, rather than being fashioned anew. The reuses that provide the most telling evidence of the scarcity of marble are those distinguished by the reworking of an already ornamented piece. A few examples will suffice. In the church of the Dormition in Nicaea, the sanctuary panels originally installed were reused in the eleventh century, with designs recarved and sculpted on the front to reflect the reigning taste.⁵⁴ At Trajanopolis, a bust of Christ is carved on the back of an ambo platform⁵⁵ in a manner that recalls the Virgin at Dumbarton Oaks, sculpted on the back of a sixth-century parapet plaque. Similarly, in Gürnüt, in northeastern Pisidia, a columnar sarcophagus served as the platform for an ambo in the tenth/eleventh century.⁵⁶ In medieval Xanthos as well, where occupation was much more limited than it had been during earlier periods, there was no intromission of new materials: the installation of a middle Byzantine iconostasis was executed by reusing the sculptures of the preexisting early Christian basilica. The pan-

⁵³ U. Peschlow, "Mermerkule: Ein spätybyzantinischer Palast in Konstantinopel," in *Studien zur byzantinischen Kunstgeschichte: Festschrift für Horst Hallensleben zum 65. Geburtstag*, ed. B. Borkopp, B. Schwellewald, and L. Theis (Amsterdam, 1995), 93–97.

⁵⁴ Peschlow, "Neue Beobachtungen," 166–82.

⁵⁵ K. E. Tsouris, "Ἀμβωνὰς ἀπὸ τὴν Τραϊανούπολη," *ΑΔ* 32.1 (1977): 234–51.

⁵⁶ M. Özsaıt and J.-P. Sodini, "Sarcophages à colonnes et église byzantine dans la région de Néapolis de Pisidie," *RA*, n. s. (1991): 43–62, figs. 11–12.

els, the knotted columns, the architrave of the templon—clearly reworked from a column—are all reuses.⁵⁷ It is quite possible that the marble cutters dispatched by Leo of Synada also used spolia.⁵⁸ In central Greece, the church of the Dormition at Skripou (873/874) is built of antique stones from Orchomenos.⁵⁹ One would also suppose that reuses are common in the monastery of Hosios Loukas, although with respect to the architectural sculpture, L. Bouras makes that case only for the bases of the templon of the church of the Virgin.⁶⁰ By contrast, reuse is frequent in the pavings and the revetment of the two churches.⁶¹ In Athens we note few reuses among the epistyles, the slabs, or the colonettes of the templon screens. Attic sarcophagi were sometimes converted in the middle Byzantine period and redecorated for use as panels in the templon (in the church of the Blachernai (in Elis), Panagia (of Melos-Kepos), but also the crowning arch of a despotic icon (at Panagia of Korakonesia).⁶² The use of epistyles and of templon pillars as doorjambes and window frames, evidenced in particular in Arta and its environs (St. Demetrios tou Katsouri, St. Merkourios, Blachernai), testifies to some degree to the relative scarcity of marble. It is essential to distinguish among reuses that seek to embellish a facade, those that represent the conversion of an earlier function or a refitting to reflect contemporary tastes (as was done in a panel at the Byzantine Museum in Athens),⁶³ and those that function as a symbolic magic, as in the “Little Metropolis” in Athens.⁶⁴

In fact, the use of spolia is a widespread phenomenon in the medieval Mediterranean, particularly so in Egypt, Tunisia, and Italy. In Islamic regions, we have been able to trace scattered marbles back to their antique sites: the mosques of Cairo, Tunis, Gafsa, and Kairouan must have obtained their stone by such means, although Kairouan houses a large number of spolia, not limited, moreover, to the main mosque.⁶⁵

⁵⁷ J.-P. Sodini, “Une iconostase byzantine à Xanthos,” *Actes du Colloque sur la Lycie antique* (Paris, 1980), 119–48.

⁵⁸ M. P. Vinson, *The Correspondence of Leo, Metropolitan of Synada and Syncellus* (Washington, D.C., 1985), ep. 45, with the excellent commentary of L. Robert, “Kordakia de Nicée,” *JSav* (1962): 41. In Phrygia they may also have worked in quarries in which we know that the saw was employed during the proto-Byzantine period. Cf. above, 126.

⁵⁹ G. Hadji-Minaglou, “Le grand appareil dans les églises des IXe–XIIe s. de la Grèce du Sud,” *BCH* 118 (1994): 163.

⁶⁰ L. Boura, ‘Ο γλυπτὸς διάκοσμος τοῦ ναοῦ τῆς Παναγίας στὸ Μοναστήρι τοῦ Ὁσίου Λουκά (Athens, 1980), 91, fig. 148.

⁶¹ Cf. the preliminary account of A. Lambraki, “Αναγνώριση τῶν μαρμάρων στὰ δάπεδα τοῦ συγκροτήματος Ὁσίου Λουκά Φωκίδος, 1,” in *12ο Συμπόσιο Βυζαντινῆς καὶ Μεταβυζαντινῆς Αρχαιολογίας καὶ Τέχνης* (Athens, 1992), 31–32, and eadem, “Αναγνώριση, 2,” in *13ο Συμπόσιο Βυζαντινῆς καὶ Μεταβυζαντινῆς Αρχαιολογίας καὶ Τέχνης* (Athens, 1993), 25–26.

⁶² G. Koch, “Christliche Wiederverwendung attischer Sarkophage,” *Boreas* 17 (1994): 115–20.

⁶³ M. Sklavou-Mavroeiidi, “Συμβολικὴ παράσταση στὴ δευτέρη χρῆση τῆς επαναχρησιμοποιημένης πλάκας T.175 τοῦ Βυζαντινοῦ Μουσείου.” *Δελτ.Χριστ.Ἀρχ.Ἐτ.*, 4th ser., 17 (1993–94): 37–44 (reuse of a 4th-century B.C. Attic stele, with an 11th-century addition of an inhabited scroll).

⁶⁴ H. P. Maguire, “The Cage of Crosses: Ancient and Medieval Sculptures on the ‘Little Metropolis’ in Athens,” in *ΘΥΜΙΑΜΑ στὴ μνήμη τῆς Λασκαρίνας Μπούρα* (Athens, 1994), 169–72.

⁶⁵ N. Harrazi, *Chapiteaux de la grande mosquée de Kairouan* (Tunis, 1982); C. Ewert and J.-P. Wissak, *Forschungen zur Almohadischen Moschee*, vol. 1, *Vorstufen* (Mainz, 1981); cf. also the very useful note of

Second, while there are some interesting cases in Norman Italy, the most striking example is that of San Marco in Venice, where reuses, introduced into the core of the structure in the eleventh century, proliferated in the thirteenth century, notably on the south and west facades, like so many trophies brought back from Constantinople, along with the horses from the Hippodrome, the tetrarchs, and the two large columns that stand on the *piazza*.⁶⁶

If fastidiously worked, reuses are often indistinguishable from newly quarried marble. Undoubtedly older marbles that could be reused as needed were carefully gathered. In particular, the development of sarcophagi in and after the ninth century, where the use of marble is limited to a single panel on the outer face, could rely on spolia, even if production was abundant, and such reused pieces were prized in the eleventh and twelfth centuries,⁶⁷ to the point that certain sculptors felt the need to sign their work, as did a certain Coetos on Naxos in 1126.⁶⁸ It seems in any event that, by the fourteenth century, newly quarried marble was a rare commodity. When the Gattilusi in Lesbos, strongly inspired by the Byzantine funeral style, reused sarcophagi and earlier panels, they did not do so solely with the intent of being considered Byzantine princes of long standing.⁶⁹ Even in Constantinople at the beginning of the fourteenth century, the front of a sarcophagus found at the church of St. John the Studite that depicts the Lamentation and is carved, for want of marble, in reddish *breccia* from Bilecik, would have been intended (if one is to believe U. Peschlow⁷⁰) for Constantine Palaiologos Porphyrogenetos, brother of Emperor Andronikos II, who restored the monastery in 1293. The renewal of architectural sculpture at the end of the thirteenth century in Macedonia and Thessaly (evidenced by the ambos at Serres and Ochrid)⁷¹ may also have depended on the reuse of marble pieces.

C. Barsanti, "Tunisia: Indagine preliminare sulla diffusione dei manufatti di marmo proconnesio in epoca paleobizantina," *Milione* 2 (1990): 429–31. In contrast to the east, where rulers often resorted to Byzantine *spolia*, the Umayyads of Spain seem to have resumed the quarrying of marble in the late 9th century: P. Cressier, "Les chapiteaux de la grande mosquée de Cordoue . . . I," *MadrMitt* 25 (1984): 216–81, esp. 250, and idem, "Les chapiteaux de la grande mosquée de Cordoue . . . II," *MadrMitt* 26 (1985): 257–313, esp. 310.

⁶⁶ F. W. Deichmann, *Corpus der Kapitelle der Kirche von San Marco zu Venedig* (Wiesbaden, 1981); cf. also H. Buchwald, "The Carved Stone Ornament of the High Middle Ages in San Marco, Venice," *JÖB* 11/12 (1962–63): 169–209, and *ibid.*, 13 (1964): 137–70; F. Zuliani, *I marmi di San Marco* (Venice, 1970), and, with respect to spoliated Constantinopolitan pieces, reworked by 11th-century Venetian workshops, see S. Minguzzi, "Le transenne del matroneo della basilica di San Marco in Venezia," *CorsiRav* 41 (1994): 627–47. With respect to Norman Italy, see, for example, T. Garton, *Early Romanesque Sculpture* (New York–London, 1984), and P. Pensabene, "Contributo per una ricerca sul reimpiego e il 'recupero' dell'antico nel Medioevo: Il reimpiego nell'architettura normanna," *RIASA*, 3d ser., 13 (1990): 5–138.

⁶⁷ T. Pazaras, *Ανάγλυφες σαρκοφάγοι και επιτάφιας πλάκες της μέσης και ύστερης Βυζαντινής περιόδου στην Ελλάδα* (Athens, 1988).

⁶⁸ G. Mastoropoulos, "Μαΐστρος ὁ Κόητος, ἕνας μαρμαρᾶς τοῦ IB' αἰῶνα στὴ Νάξο," in *Αφιέρωμα στὸν Καθηγητὴ Ν.Β. Δρανδάκη* (Thessalonike, 1994), 436–43.

⁶⁹ E. A. Ivison, "Funerary Monuments of the Gattilusi at Mytilene," *BSA* 87 (1992): 423–37.

⁷⁰ U. Peschlow, "Ein paläologisches Reliefdenkmal in Konstantinopel," *Gesta* 33 (1994): 93–103.

⁷¹ T. Pazaras, "Πρόταση γιὰ αναπαράσταση τοῦ Ἄμβωνα τῆς Παλαιᾶς Μητροπόλεως στὴ Βέροια," *ΘΥΜΙΑΜΑ* (as above, note 64), 251–54.

Nonetheless, the search for fresh marble or polishable limestone expressly intended for church decoration could well have existed during the Byzantine period. At Chios the ancient quarry that was the source for *portasanta* seems to have been reopened expressly to adorn the Nea Moni.⁷² The development of church construction during the second half of the tenth and first half of the eleventh centuries in Phrygia and in Greece—notably on Mount Athos, in central Greece, and in the Mani—took place on a scale that might have necessitated quarrying. With respect to Phrygia, the abundance of material from the medieval period, over a short duration, suggests access to freshly excavated marble, but that remains to be proved: no medieval quarry sites are known, and reuses are ubiquitous. In Greece, the most puzzling case is that of the Mani, where even ancient edifices were scarce, as were by consequence reuses prior to the end of the eleventh century. From that time forward, however, the workshops of the *marmaras* Niketas and the *mastoras* Gregory yielded a great abundance of architectural ornamentation over a narrowly circumscribed area.⁷³ This activity seems to have persisted as late as the middle of the twelfth century.⁷⁴ One might well question whether in this case reutilization would have supplied the necessary quantity of marble.⁷⁵

In the Mani, the reuse of older material other than marble would not have been sufficient for the construction of churches to house the quantity of carved ornaments noted above. At St. Nicholas in Platsa in the Mani, the stone used for the lower part of the walls would have been quarried from a site near the structure, even before 900.⁷⁶ A. H. S. Megaw has noted the use in the eleventh century of a purple limestone, quarried locally, to create the polychrome facades at Hagios Soter in Gardenitsa and at Hagios Stratigos at Ano Boulario. He also mentions access, prior to the development of the cloisonné masonry technique, to poros, more easily worked than local marble and limestone, both of which were reserved for architectural sculpture.⁷⁷

In the twelfth century, in Boeotia, at Hosios Meletios, and at the Zoodochos Pege of Dervenosalessi, which must be the monastery of the Virgin Theometor (founded by the same hermit, Meletios the Younger, who, like Sabas, the great Palestinian *higoumenos*, was a tireless builder), the hard limestone quarries of Kakoniskiri provided a number of carved pieces (sarcophagi) and *omphalia* for pavements.⁷⁸ Columns at Sa-

⁷² C. Bouras, *Ἡ Νέα Μονή τῆς Χίου* (Athens, 1981), 153.

⁷³ N. B. Drandakis, “Νικήτας μαρμαρᾶς,” *Δωδώνη* 1 (1972): 21–44; idem, “Ὁ Ταξιάρχης τῆς Χαροῦδας καὶ ἡ κτιτορικὴ ἐπιγραφή του,” *Λακ.Σπ.* 1 (1972): 275–91; idem, “Ἄγνωστα γλυπτά τῆς Μάνης ἀποδιδόμενα στό μαρμαρᾶ Νικήτα ἢ στό ἐργαστήρι του,” *Δελτ.Χριστ.Ἀρχ.Ἐτ.* 4th ser., 8 (1975/76): 19–28; idem, “Ἡ ἐπιγραφή τοῦ μαρμαρίνου τέμπλου στή Φανερωμένη τῆς Μέσα Μάνης (1079),” *Ἀρχ.Ἐφ.* (1979): 218–25; idem, *Βυζαντινές τοιχογραφίες τῆς Μέσα Μάνης* (Athens, 1995).

⁷⁴ N. B. Drandakis, “Ὁ ναός τῆς Ἁγίας Τριάδος στό Μπρίκι τῆς Μέσα Μάνης (1708) μέ τά πολλά ἐντοιχισμένα γλυπτά,” *Λακ.Σπ.* 10 (1990): 111–34. Among the reused pieces is a *templon* epistyle dated 1122.

⁷⁵ No study has been published regarding this aspect of carved stone from the Mani: Bouras, personal communication.

⁷⁶ Hadji-Minaglou, “Le grand appareil,” 163–64.

⁷⁷ A. H. S. Megaw, “Byzantine Architecture in Mani,” *BSA* 33 (1932–33): 154; Hadji-Minaglou, “Le grand appareil,” 164–65.

⁷⁸ A. K. Orlandos, “Ἡ Μονή τοῦ Ὁσίου Μελετίου καί τά παραλεύρια αὐτῆς,” *ABME* 5 (1939–40): 34–106 (references 67 and 76); C. Bouras, “Ἐπανεξέταση τοῦ Καθολικοῦ τῆς Ζωοδόχου Πηγῆς, Δερβε-

marina in Messenia (12th century) do not seem to derive from spolia.⁷⁹ In Mistra in the fourteenth and fifteenth centuries, sarcophagi and the templa of the Pantanassa, the Sts. Theodore, and St. Demetrios are made of a marble quarried directly from sites behind the Hodegetria church and in the Eurotas valley.⁸⁰

Like the monuments themselves, written sources suggest only limited quarrying, tied to specific work sites. In the Life of St. Mary the Younger, the saint has a quarry opened near the site where she seeks to raise the church that will house her remains.⁸¹ The recourse to quarries adventitiously situated near the planned church must have occurred quite often, in particular outside ancient cities. There has been no systematic research, however, to establish an inventory of these sites. One of the rare examples of the opening of a large-scale quarry during the Byzantine period is found in Romania, in the large chalk hills of Tîbişir near the village of Murfatlar (in the county of Constanţa)⁸² in the quarries on the left slope of the valley of Karasu, or even those of Păcuiul Lui Soare. The latter—eight in number—have been the object of a valuable geographic survey. Although we lack written evidence to confirm it, they were supposedly opened by the Byzantines and would have made use of a Bulgarian workforce from the region of Pliska/Madara/Preslav, where a strong tradition of quarry workers thrived in the second half of the tenth century.⁸³

In some cases, stone was renounced altogether in favor of molded plaster, which appears in the tenth century at Mount Athos (in the crowning arches of despotic icons, templa, the cornices of the katholika at Protaton and at Vatopedi) and reappears in the eleventh on windows at Hosios Loukas. In Epiros, a region with very little marble, plaster was widely used in panel decorations, notably at Arta.⁸⁴

We thus have, lasting from the fourth to the seventh century (as a continuation of the Roman Empire), and disappearing thereafter, a highly centralized exploitation of marble, under state control (even when leased to private individuals and despite the existence of a number of independent quarries). At Constantinople, the imperial court

νοσάλεσι," *Δελτ.Χριστ.Ἀρχ.Ἐτ.* 4th ser., 17 (1994): 35. With respect to the importance of the sculpture from Hosios Meletios, cf. C. Vanderheyde, "La sculpture architecturale du Katholikon d'Hosios Meletios et l'émergence d'un style nouveau au début du XIIe siècle," *Byzantion* 64 (1994): 391–402.

⁷⁹ Bouras, personal communication.

⁸⁰ A. Kavvadia-Spondilis, "Remarks about the Byzantine Sculpture of Mystras: The Paleologan Templa," *Byzantium: Identity, Image, Influence. XIX International Congress of Byzantine Studies, University of Copenhagen, 1996. Abstracts of Communications* (Copenhagen, 1996), no. 5254.

⁸¹ AASS Nov. 4: appendix, *De S. Maria Juniore*, 698–99, § 17, trans. A. E. Laiou, "Life of St. Mary the Younger," in *Holy Women of Byzantium*, ed. A.-M. Talbot (Washington, D.C., 1996), 271–72. I am indebted to A. Laiou for this reference.

⁸² I. Barnea, *Christian Art in Romania*, vol. 2, *7th–13th Centuries* (Bucharest, 1981), 16–20, pls. 9–31, illustrating several chapels associated with quarry works in which graffiti with the dates 992 and 982 may be found.

⁸³ P. Diaconu and E. Zah, "Les carrières de pierre de Păcuiul Lui Soare," *Dacia* 15 (1971): 289–306. I am indebted to A. P. Kazhdan for this reference.

⁸⁴ The dissertation of C. Vanderheyde, "La sculpture architecturale mésobyzantine en Epire du Xe au XIIIe s." (doctoral thesis, Université de Paris I, 1996), provides a more detailed treatment of this problem.

maintained a traditional and symbolic recourse to the principal varieties of stone. These were no longer quarried directly (except perhaps in Phrygia in the tenth and eleventh centuries and in certain quarries with a local market, e.g., in the Mani) or to provide material for a specific structure. Reused pieces—abundant in cities such as Constantinople, Athens, and Thessalonike, or even brought in from more or less adjoining coastal regions—became a common device. These might have included whole pieces (bases, columns, capitals, sarcophagi), but also—and particularly extensively—wall revetment and *opera sectilia*. The use of spolia, a medieval phenomenon well attested also in the West and in the Islamic world, may be cloaked with layered meanings. To be sure, it sometimes reflected a scarcity of materials or an attempt to obtain them at a better price. It also, however, testified to a concern to enhance not only the beauty of a monument but also its dignity, by rooting it in a past to be sustained, resurrected, or even appropriated outright. It may also, by only a small shift of symbolic meaning, invest the monument with magical associations. Trophy, talisman, relic—spolia may thus have been systematically sought out and valued, in combination with newly quarried stones, which constituted the major part of new construction. The development of architecture in certain Greek towns whose pasts did not stretch back very far, and the construction of monasteries in rural areas at some distance from the coast, must have required the limited, occasional exploitation of new quarries.

At the same time, whether its constituent stone was reused or newly quarried, Byzantine sculpture from the tenth to the fourteenth century presents, in spite of its diversity, an incontestable homogeneity of inspiration, drawing the same serene grandeur from the representation of the human form that we find in the painted icon. Byzantine sculpture, like Byzantine painting, reaffirms the unity of the Orthodox world, but the light that it casts blazes less brightly. Its economic impact at the close of the empire was no longer comparable to what it had been in the fourth to the sixth century. At the moment when the western world was witnessing a vigorous rebirth of sculpture and the use of marble,⁸⁵ in the Ottoman Empire the ubiquity of carved wood sent stoneworking into eclipse, and the marble workers ceded pride of place to the *esnafia* of the *tayadori*.

⁸⁵ C. Klapisch-Zuber, *Les maîtres du marbre: Carrare, 1300–1600* (Paris, 1969). Despite this afflux of freshly quarried marble, trade in spolia was still a profitable business, particularly with respect to the western demand for colored marble. Cf. A. Laronde, “Claude Le Maire et l’exportation des marbres,” *BAntFr* (1993): 242–55.

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