models, originally used as mathematical teaching tools. For both the engineer, Billington, and the photographer, Sugimoto, the seductiveness of a rational order is linked to monumental scale and an awareness of light and shadow. Billington has noted that Maillart used shadow to increase the appearance of weightless buoyancy in his bridges. Observing the Swiss bridges from below establishes a sense of monumentality, as shown in many of the finest photos Billington uses here, a sense of monumentality that is echoed in the mammoth six-foot-high Sugimoto prints, which dwarf the foot-high models.

The engineer and photographer propose vastly different conceptions of the beauty derived from rational structures. Sugimoto believes that “these machines and models were created without any artistic intention...Art is possible without artistic intention and can be better without it.” Billington, on the other hand, advocates for deliberate aesthetic choices, but his argument becomes increasingly implausible as aesthetics become prioritized beyond economy and efficiency. His position is further weakened by the naïveté of Isler and Menn in relation to aesthetics, which, he notes, consists for them in an appreciation of nature. The clumsy forms of Menn’s recent work unfortunately end the book. Concrete-encased cable stays at the Ganter Bridge (1980) and the heavy flared pylons of the Sunniberg Bridge (1999) in Switzerland are painfully awkward after the tendency toward increased attenuation shown in illustrations of earlier work throughout the book. Furthermore, in a text that initially focuses on simplicity, the overwrought form of the cable-stayed Leonard P. Zakim Bridge in Boston (2002) on the final pages stands in harsh contrast to the unpretentious, unadorned causeways that flank it. Readers with a superficial interest in discovering the beauty in engineering works will appreciate this volume, but those who desire to understand how to achieve or even evaluate such art had best look beyond The Art of Structural Design.

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Notes
1. See the following books by David P. Billington: Robert Maillart’s Bridges (Princeton, 1979); Thin Shell Concrete Structures (New York, 1981); The Tower And The Bridge (New York, 1983); Robert Maillart and the Art of Reinforced Concrete (Cambridge, Mass., 1990); The Innovators: The Engineering Pioneers Who Made America Modern (New York, 1996); Robert Maillart: Builder, Designer, Artist (Cambridge, Mass., 1997); and David P. Billington and Myron Goldsmith, eds., Technique and Aesthetics in the Design of Tall Buildings (Houston, 1983).
5. The same models were photographed by Man Ray in 1936 at the Poincaré Institute in Paris.

Monuments and Architects

John W. Stamper
The Architecture of Roman Temples: The Republic to the Middle Empire

At the core of The Architecture of Roman Temples: The Republic to the Middle Empire is a radical, and intriguing, proposal to reconstruct the temple of Jupiter Optimus Maximus (hereafter JOM)—which must have dominated the center of ancient Rome from its position high atop the Capitol Hill—as significantly smaller than has been assumed by almost all archaeologists and architectural historians. The scholarly and archaeological tradition that would render JOM as challenging in size such behemoths as the temple of Artemis at Ephesus or that of Olympian Zeus in Athens dates back to the discovery of fragmentary remains on the site by Giovanni Pietro Caffarelli in 1545, which apparently survive (15–16). Until the late nineteenth century, antiquarians consistently placed JOM on the northern summit (the “Arx”) of the Capitolium, beneath the church of S. Maria in Aracoeli. This notion was dismissed once and for all in 1875, when Rodolfo Lanciani identified the remains of the temple podium’s substructures in the gardens of the Palazzo dei Conservatori on the southern summit (where they endure today). The measurements of these substructures led Lanciani to suggest an immense temple on that site, one that could be identified with nothing other than the temple that L. Richardson, Jr., has called “the touchstone of Roman sovereignty and immortality.”

JOM is described by Vitruvius (4.7.5; cf. 3.3.5) as a sort of inflated version of the standard “Tuscan” temple plan, which was inherited by the Romans from their Etruscan forebears. Vitruvius’s brief description has always formed the basis for any reconstruction of the temple; the difficulty since 1875 has been to square that description with the paltry remains on the Capitoline itself and those of Tuscan temples known elsewhere, and in greater detail, throughout Etruscan and Roman Italy. Einar Gjerstad made the most influential attempt, first published in 1960, which attributes to JOM truly monumental proportions (23–25). Despite logical problems inherent in accepting Gjerstad’s reconstruction, his is the version that has made its way into the textbooks and histories of Roman architecture. Stamper challenges that reconstruction and does so with a conviction that is often convincing. Perhaps the most important passages of the book begin at the bottom of page 25, when the author enters into a reevaluation of the evidence Gjerstad employed to devise his reconstruction. As Stamper points out, few architectural historians have looked critically at how Gjerstad or his predecessors interpreted the data, or analyzed the supposed plan and elevation of JOM in relation to other temples of the period (25–26). After laying down the challenge, Stamper proceeds to demonstrate—by comparing
JOM to roughly contemporary and later Tuscan temples throughout Italy—that a temple of the huge size that Gjerstad suggested was technologically impractical, indeed in essence impossible, for architects and builders of the end of the sixth century B.C.E. This objection is not new; Stamper acknowledges that scholars Axel Boethius, Ferdinando Castagnoli, Amanda Claridge, Mauro Giuliani, and A. Trevor Hodge have all, at various times, expressed doubt that JOM could possibly have been as large as Gjerstad’s reconstruction posits (227 nn. 27–32). Stamper goes further than these scholars, however, in demonstrating that no such dimensions appear ever to have been attempted in the wooden architecture of sixth- or fifth-century-B.C.E. Italy. He proposes instead a reconstruction that would reduce JOM’s overall size by about one third, which would place it within the realm of technological feasibility for the end of the sixth century B.C.E. It would still have been the largest Tuscan temple ever built, and would have dominated the southern summit of the Capitoline Hill. This first part of Stamper’s hypothesis makes good sense and is imminently plausible, if “probable” only ex silento.

But that leaves Stamper to face the problem of the known, documented, and much larger foundation substructures on the southern summit of the Capitoline. If they do not reflect the dimensions of the temple itself, what do they represent? Stamper’s answer, while ingenious, fails to carry the conviction of his “downsizing” of the temple itself. He proposes that JOM stood atop a much wider and longer podium that rose in a series of steps and broad platforms to the base of the (now smaller) temple itself. He provides elegant axonometric drawings and elevations to support his hypothesis (esp. figs. 15–18). However, he cannot offer a single convincing contemporary example of such podium design at so early a date, because none exists in Italy or anywhere else in the Mediterranean. All the comparanda provided are much later, and therefore prove nothing in relation to the reconstruction of the sanctuary and temple. Stamper views JOM as the ultimate predecessor of such magnificent conceptions as the sanctuaries of Fortuna Primigenia at Praeneste and Jupiter Anxur at Terracina. While he could in theory be correct, there is no evidence on which to hang his hypothesis. The layouts of the second- and first-century-B.C.E. temple complexes were indebted to the monumental architecture conceived for showpiece sanctuaries in the Hellenistic Greek East (such as the Claros and Lindos sanctuaries on Rhodes), and they depended for their very existence on the availability of Roman concrete, which cannot be attested before the second century B.C.E. It is very difficult to credit an independent invention of such massive design for one isolated—though admittedly large—temple in a small city near the west central coast of Italy, several centuries before such design concepts, not to mention the mortar to hold them together, appear elsewhere. The anachronism is difficult to accept.

The remainder of the book consists of a well-written, moderately comprehensive survey of temple building and design in (primarily) Roman Italy up to the middle of the second century C.E. (which appears to be an arbitrary cutoff point, since the construction of “Tuscan” temples continued well beyond it). Documentation is generally good, though far more of the sources are in English than French or German: for instance, there are few specific references to the first volume of Pierre Gros’ essential L’architecture romaine (Paris, 1996), although it is listed in the bibliography; in dealing with temples of the Augustan age, more attention ought to have been paid to the work of Alessandro Viscogliosi (Il tempio di Apollo “in circo” e la formazione del linguaggio architettonico Augusteo [Rome, 1996]) and of Martin Spannagel (Exemplaria Principi. Untersuchungen zur Entstehung und Ausstattung des Augustusformus [Heidelberg, 1999]), both of which also appear in the bibliography but only cursorily in the text and notes. It is difficult to figure out why some monuments (such as the Curia and Comitium complex in the Roman Forum, for example) are included at all (esp. 92–93) since those buildings had no architectural or conceptual connection to the “Tuscan” temple.

The drawings and plans, most of them executed by the author, are elegant and invaluable and will, I am certain, be reproduced for generations. To some extent, the drawings may represent the greatest single contribution this book
makes to the history of ancient Roman architecture. Overall, it is a well-designed and well-executed volume, parts of which students at every level as well as interested scholars may be referred to with confidence, with the reservations offered above, especially to those who might accept wholesale all the reconstructions suggested herein. Caveat lector.

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Note

In Pursuit of Holy Wisdom

W. Eugene Kleinbauer, Anthony White, and Henry Matthews

Hagia Sophia

Alessandra Guiglia Guidobaldi and Claudia Barsanti, editors
Santa Sofia di Costantinopoli.
L’arredo marmoreo della Grande Chiesa giustinianea
Studi di Antichità, Vol. 60

Maria Luigia Fobelli
Un tempio per Giustiniano. Santa Sofia di Costantinopoli e la Descrizione di Paolo Sienzario

Robert S. Nelson

Hagia Sophia, 1850–1950: Holy Wisdom Modern Monument

For specialists in Byzantine architecture, Hagia Sophia in Constantinople looms large, and for the nonspecialist it may be the only Byzantine monument with name recognition. In many ways, it is both the pivot around which Byzantine architectural studies revolve and the exception that proves the rule. Earlier developments in church architecture are often erroneously presented as a process of formalization and conceptualization that culminates in Hagia Sophia, while later Byzantine architecture is dismissed equally erroneously as a series of uninspired, pale reflections of Justinian’s masterpiece. Considering its miraculous survival through the ages—Richard Krautheimer once commented that we should not wonder that the original dome collapsed but that so much of the building remains standing—one does wonder if it would be possible to write a history of Byzantine architecture without it. The monument is a singular achievement in the history of architecture.

Considering its central position in our discourses, it is remarkable how much we do not know about the building. Engineers continue to puzzle over the structural system and the form of a lost first dome; art historians still debate the “meaning” of Hagia Sophia; and liturgists attempt to track the movements of ceremonies through its vast, directionless interior. At the same time, much of the edifice’s fabric and interior decoration remain unpublished. Thus, the structure continues to generate a considerable body of literature, posing the dual challenge of interpretation and documentation. At least four new books have appeared in the last year, approaching Hagia Sophia from a variety of viewpoints. Kleinbauer, White, and Matthews attempt the oxymoronic task of writing an intelligent guidebook. Guiglia Guidobaldi, Barsanti, and a team of Italian scholars continue the thankless but absolutely necessary task of documenting the interior decoration. Fobelli reexamines the famous sixth-century ekphrasis by Paul the Silentiary on which so much current interpretation rests. Nelson’s study is also interpretive, as it questions the reception of the building as it was physically and conceptually transformed from a functioning religious edifice to a “monument” in the modern sense.

Hagia Sophia is small but lavishly illustrated with excellent color photographs by Tahsin Aydoğmuş of well-chosen general views and splendid details of the architectural decoration. While plans and architectural drawings are limited, the images convey the drama and magnificence of the building. The first chapter, by Kleinbauer, is the most substantial, providing a succinct and up-to-date description and analysis of the Byzantine church, and placing it within the context of sixth-century Byzantium and the larger one of Roman and medieval architecture.1 While accepting Robert Mark’s structural analysis of the great dome, for example, he takes issue with Mark’s comparisons with the Pantheon. In the end, he emphasizes the building’s uniqueness—“singulariter in mundo”—characterized by both its novelty and its audacity.

White’s chapter on the Byzantine mosaic decoration is primarily derivative yet well illustrated. The final chapter by Matthews addresses the transformations of the structure from the fifteenth century to the present, as it was converted into an imperial mosque and subsequently into a museum. The later history of the building is perhaps less familiar to scholars and is clearly laid out here, following largely the groundbreaking work of Gülru Necipoğlu. Together, the latter two chapters emphasize the continued investment in the building through the Byzantine, Ottoman, and Republican periods.2 While as a guidebook Hagia Sophia probably includes far too much information for most tourists and not enough for most specialists, it would function well as a classroom text, providing an intelligent and evocative introduction to a major monument of world architecture.

Santa Sofia di Costantinopoli documents the hundreds of decorated marble panels that appear throughout the building—as closure slabs, frames, and softs in the windows, as balustrades and railings between the columns of the gallery, and as transennae. The catalogue is supplemented by chapters on the reused marbles and on the masons’ marks that

BOOKS 435