Since they first became the subject of intensive study in the 1860s, Roman sarcophagi have posed many questions for modern viewers. Early investigators, Otto Jahn and Carl Robert, for example, examined sarcophagi primarily for their iconographic content: to link them with lost Greek paintings or simply to understand them on their own terms. Beginning in the 1920s, scholars such as Gerhart Rodenwaldt and Friedrich Matz considered how sarcophagi related to the overall development of Roman art; the questions they initiated led eventually to those of chronology and workshop attribution, which Bernard Andreae and others pursued in later years. More recently, the focus of inquiry has again shifted in the direction of the logistical and economic aspects of Roman sarcophagus production. Quarrying practices, marble identification, and patterns of marble distribution have now emerged as appropriate fields of investigation for students of sarcophagi. In keeping with the latest direction of inquiry, this article will investigate the celebrated Badminton sarcophagus in the Metropolitan Museum (Figure 1) for technical evidence as to its design and execution.

A large and impressive lenos (vat-shaped) casket of the highest quality, the New York–Badminton sarcophagus was carved in Rome in the first half of the third century A.D. Conventionally labeled a Dionysiac Seasons sarcophagus, it depicts personifications of the four Seasons (in cyclical order from left to right, Winter, Spring, Summer, and Autumn), flanking a central group consisting of Dionysus on a panther and an accompanying retinue of satyrs, maenads, and pans. Although the Seasons complement the Dionysiac realm thematically, the particular iconographic combination of the Seasons with the panther-riding god that appears in the New York chest is relatively rare.

In the short time since Matz’s 1958 publication first brought it to wide attention, the Badminton sarcophagus has come to be regarded as a pivotal work among Roman sarcophagi and for Roman art in general. Matz himself called it a “Roman masterpiece” and Donald Strong singled it out as “one of the finest surviving sarcophagi” of its time. Its dense but coherent massing of figures, play of light and shadow, and highly tactile articulation of surfaces have all had many admirers. Clearly a workshop of virtuoso sculptors executed this magnificent casket. Yet its artistic quality stems from more than a skillful manipulation of tools. Indeed, the success of the finished work depends in no small measure on the extensive planning that preceded the actual cutting of the block—laying out the composition, calculating the relative scale and proportions of the figures, and determining their pose and orientation.

To understand better this phase of the sarcophagus’s making, it is necessary to examine a part of the Badminton sarcophagus that is often overlooked in the literature—its back. In this essay I shall consider the numerous markings found on the back of the Badminton casket as technical evidence for its production. Although some of these markings remain problematic in their interpretation, it will be argued that the back preserves a scheme followed by the Badminton workshop in working out the complex figural design of the front. The way in which it would have been used by the sculptors confirms long-standing speculation about the technical processes of Roman relief-carving and also has implications for the artistic direction of Roman art during the third century.

Description of the Back of the Sarcophagus

Like almost all lenos sarcophagi of the Western Roman type, the New York–Badminton sarcophagus was left uncarved at the back. (Uncarved does
not mean unworked, for the back of the New York sarcophagus bears the man-made marks that are the subject of this inquiry.) At present, the back (Figure 2) is divided into three superimposed horizontal sections, or bands, whose tooling and finish differ markedly from one another. At the top runs a wide (37 cm) band that projects approximately nine centimeters beyond the lower surface of the chest; this band has been picked roughly with the point in a crude, almost violent manner, but with a consistency of direction diagonally down and inward from the upper right corner. Below lies a narrower (varying from 8 to 9 cm) band that also bears marks of the point, although they are noticeably smaller and more densely clustered than the tool marks above. This middle zone is not uniform in its finish—on the left, patches of smoothly finished marble can be seen below the point marks, while on the right, any traces of smoothing that might have existed have been obliterated by deep and concentrated picking. In the third, lowermost, band the smooth surface whose traces can be seen above continues for 44.5 centimeters to the bottom of the chest. On its upper left this zone is distinguished by a drafted edge that extends approximately 13.5 centimeters inward from the outer edge. At that point it disappears, victim of a lack of finish rather than later damage by pointing.

With its range of surface finishes, the back of the New York sarcophagus has few parallels. As has already been mentioned, chests executed in Rome were generally left uncarved at the back in keeping with the Western practice of placing a sarcophagus flush against a tomb wall (as opposed to the Eastern practice of displaying the casket above ground along cemetery thoroughfares). Exceptions do exist—a third-century A.D. mythological sarcophagus in the Metropolitan Museum continues the pastoral landscape of its Endymion theme over the entire back, although the scenes on the back are clearly subordinate to those on the front by virtue of their lower relief. More typically, however, the backs of Roman sarcophagi never received more than preliminary shaping with the point because they were not meant to be seen.

The peculiarities of the back of the New York—Badminton casket have been variously explained. Matz interpreted the unfinished projection at the top as evidence of an ultimate intention to decorate the entire back;7 Anna McCann found the “indented” lower section to be a possible accommodation to the architectural features of the tomb where the sarcophagus originally stood.8 The present appearance, however, becomes more understandable if the sarcophagus is recognized as a reused block of marble that originally formed part of an entablature. The smooth lower zone of the sarcophagus preserves the finish of its frieze, while the roughly pointed upper zone is all that remains of its cornice.9 Originally carved with moldings that projected beyond what is preserved on the sarcophagus, the cornice was roughly hacked off to create an even, unadorned surface. When seen under raking light (as in Figure 2), moreover, the cornice clearly reveals traces of the three moldings that once ran horizontally across the length of the block. It can be imagined that a relatively narrow molding, such as egg and dart, filled the upper and lower zones and a taller molding, such as lotus and palmette, dentils, or acanthus rinceaux, was carved between them in the middle, but no conclusive evidence remains.

Recognizing that the sarcophagus was carved from a reused block is useful in several respects. Most important, it explains the presence of the smoothed back, an otherwise excessive expenditure of labor for no obvious purpose. And it also explains the smoothed bottom of the chest (which is now supported by the four black marble balls added at Badminton Hall in the eighteenth century).10 Of no use to a sarcophagus—and thus somewhat anomalous—this finished lower surface fits readily into an architectural context where it was either visible or closely joined to other elements. An earlier existence as a carved entablature block also helps to explain the rough treatment of the ends of the various zones of the back. Deliberate breakage has truncated preexisting bands: the smooth bottom zone has been obviously broken at its left end (when seen from the front, the sarcophagus’s right side), whereas a series of drill holes have terminated the left end of the projecting zone above.

Several other instances of the reuse of architectural marbles for funerary reliefs are known. A child’s sarcophagus in Djursholm (Sweden) was carved during Hadrianic times from an unfinished entablature block,11 and the lid of a sarcophagus in San Antonio was carved from a row of coffers.12 For a grave relief belonging to a merchant in Ostia a small block carved with a cyma reversa was reused in the Severan period.13 In comparison with the Badminton chest, however, these parallels represent
Figure 1. Front of the Badminton sarcophagus (removed from 18th-century base). Roman, first half 3rd century A.D. Marble, L. 22.05 cm at top, 21.09 cm at bottom; H. 9.0 cm; D. 9.3 cm at top, 7.9 cm at bottom. The Metropolitan Museum of Art, Pulitzer Bequest Fund, 1955, 55.11.5

Figure 2. Back view of sarcophagus in Figure 1
considerably modest sculptural transformations.

It is difficult to estimate how much larger the entablature block was than the Badminton sarcophagus. In its present form the chest extends 2.16 meters in length,14 but the original block could easily have measured three or even four meters. Entablature blocks of this size are documented from various Roman buildings, such as the Temple of Concord or the Temple of Mars Ultor in the Forum of Augustus.15 The only limitation to the size of the original block, of course, would have been the space of the intercolumniation below. The circumstances under which the block came to be used must remain speculative. Nonetheless, because the decorative blocks of Roman buildings generally received their final finish only after they had been set in place,16 the carved block from which the sarcophagus was cut must actually have been used.17 Damage by fire or earthquake, improper carving by an inexperienced mason, or even deliberate dismantling for economic or political reasons might serve as possible explanations for its removal from the original building. Obviously it was more economical for the sculptural atelier undertaking the Badminton commission to use an existing block of suitable dimensions than to quarry and transport a new block.

The marble of the New York sarcophagus is Proconnesian, quarried on the island of Marmara off the northern coast of Turkey.18 Used in major Severan building projects such as the Arch in the Roman Forum in A.D. 203,19 Proconnesian appears to have been the stone preferred by many well-to-do Roman patrons who commissioned expensive sarcophagi during the early decades of the third century. In view of the high status of Proconnesian marble, it is not surprising that it was used for a casket as luxurious and well carved as the Badminton sarcophagus. (In the Price Edict of Diocletian it was valued at four times the price of marble from nearby Thasos.20) That the marble block itself was secondhand is unlikely to have compromised the value of the work, for a high-quality marble was esteemed as such regardless of its source. Despite the value placed on Proconnesian, its use by Roman sarcophagus workshops apparently slowed in the second half of the third century, possibly because quarrying activity was disrupted by the Herulian invasions in Greece in the 260s.21 On the basis of style rather than of marble type, several scholars would in fact date the Badminton sarcophagus to precisely this period.22 Because the Badminton sarcophagus is worked from an architectural block rather than one freshly quarried, the state of production at the Marmara quarries is not relevant to dating the work (except inasmuch as diminished supplies of "new" marble may have encouraged patrons to seek out alternate sources for this prized material). During any period, the reuse of existing blocks was a practical solution that did not need to be justified by limited supplies or political turmoil.23 Proconnesian marble is first documented in architectural projects in Rome during the late first century A.D.,24 which leaves a long time span in which an architectural block could become available for recutting as a sarcophagus.

Two other technical features of the back warrant attention. The first is two vertical channels terminating in squarish dowel holes.25 As can be seen in Figure 2, the channels begin at the upper edge of the sarcophagus and extend for 12 centimeters down the face of the chest. Similar channels are found on numerous caskets, where they are explained as the bedding for metal clamps often used to join a sarcophagus to its lid.26 Although the channels of the Badminton sarcophagus lack the depth or careful cutting typical of these clamp settings, it is possible that the entire clamp did not rest against the marble, but only its ends. Sarcophagi in Boston and London preserve this form of clamp.27 Alternately, they may represent the "gripping points" for the tackle used in hoisting heavy stone blocks. According to this interpretation, the cuttings would have stabilized different pieces of the hoisting apparatus: in the dowelike holes, a metal hook, and in the channels, the ropes to which the hooks were

Figures 3a, 3b, 3c. Details of the back of sarcophagus in Figure 1 showing incised circles
attached. Presumably, similar cuttings were made on the front of the sarcophagus, but these would have been removed during the carving of the relief. With hoisting technology that we now know was in use for monumental architecture as early as the seventh century B.C., workmen could thus have lifted the multi-toned block that became the Badminton sarcophagus during its journey to the sculptor's workshop.

Countless other sarcophagi of diverse typology and date bear similar marks. As most of these chests are smaller (thus, lighter) and rectangular in format, their cuttings are usually found on the ends rather than on the front and back and consist of dowel holes without the accompanying channels above. Occasionally, the cuttings interrupt the design, raising the question of whether they were cut before or after the carving of the sarcophagus was complete or whether they even represent ancient cuttings at all. A number of unfinished Proconnesian sarcophagi from the aboveground cemetery at Tyre bear similar marks prominently on both chests and lids. Cut deeply and cleanly, they may represent the bedding for metal clamps, to be inset as a precaution against dislodging, as John Ward-Perkins has proposed. Yet not all of the cuttings on the chest and lid are precisely aligned one atop the other; sometimes they are of different shapes,
and frequently there is a dowel hole but no adjacent channel.\textsuperscript{35} It does not seem likely that the cuttings have a single explanation.

The last technical feature of the back that remains to be discussed has far more important implications for the Badminton sarcophagus as a work of art. Concentric and intersecting circles made with a compass have been incised across the entire smooth surface of the back's lowest zone. (They are barely visible except under the right lighting conditions, as in Figure 3; see also Figure 4.) Engraved apparently randomly on the surface—they are not placed according to any discernible grid or pattern and sometimes even overlap one another—the circles look almost like casual doodles. Most of the circles are arranged as a series of multiple concentric rings, separated from one another by as few as 2 or as many as 67 millimeters. In their total diameter, the circles (that is, the outermost of those concentric circles) range from 3.7 centimeters to 36.5 centimeters. A few circles have six-petaled rosettes in their centers.

Few comparable examples of carving on the back are attested in the corpus of Roman sarcophagi. Three horse's heads and two concentric circles are found on the back of a Dionysiac sarcophagus in Baltimore (Figure 5), and several Greek letters are inscribed randomly on the back of a Dionysiac sarcophagus in Paris.\textsuperscript{37} In neither case, however, are the drawings as extensive or as carefully cut as on the Badminton chest.

\textbf{Interpreting the Circles}

Although noted by earlier commentators, the circles on the back have always been dismissed as irrelevant to the sarcophagus itself. Matz interpreted them simply as "tests" made by sculptors in the sarcophagus workshop,\textsuperscript{38} and Sichtermann separated them chronologically from the reliefs altogether.\textsuperscript{39} Only McCann suggested that the marks might bear some relation to the front of a sarcophagus, without specifying to which; for her the marks represented the sculptors' preliminary designs,\textsuperscript{40} but she did not speculate as to how they were actually used.

The double life of the Badminton block—first as an architectural frieze and later as a sarcophagus—compounds the already difficult problem of interpreting circles for which there are few parallels. The incrustation that covers the circles in many places does establish them as ancient rather than modern incisions; but do they belong to the architectural or the sculptural phase of the block's history? The few known parallels fail to resolve the question. Circles are found inscribed around the necks of the fluted columns of many buildings in Rome, where they served to fix the width and position of flutes and fillets on the shafts.\textsuperscript{41} Circular designs are also among the scores of drawings inscribed on the walls of the Temple of Apollo at Didyma over the course of approximately five centuries.\textsuperscript{42} Some of these drawings represent the preliminary designs for particular architectural features of the building and are executed on a one-to-one scale. If the circles had this function at Didyma, however, their role has not yet been determined.\textsuperscript{43}

Ancient drawings of circles are documented in several nonarchitectural contexts as well. Two concentric circles were cut into the back of a Dionysiac sarcophagus in Baltimore (Figure 5). In addition, circles circumscribing rosettes have been found on a fragment of wall painting from Delos,\textsuperscript{44} the interior of several Hellenistic silver cups from Egypt,\textsuperscript{45} and on what were probably paving stones from the fourth-century synagogue at Sardis.\textsuperscript{46}

Thus circles are drawn in a variety of ancient contexts ranging from architecture to wall decoration to sculpture to metalwork. They may preserve a specific design, as they do at Delos or Sardis, or they may simply mark off specific units of measure, as on the column shafts. In the absence of any precise parallel—the Badminton circles do not inscribe rosettes in the same manner as the drawings at Didyma, nor do they form concentric circles that look like those of the Baltimore sarcophagus—we cannot rely on extant comparisons and instead must formulate an explanation particular to the Badminton block itself, where the evidence is mixed. That at least one of the circles (placed on the far lower right of the back) was drawn by a compass whose center was located on a part of the block that is now missing would seem to suggest that the circles (or at least some of them) date from a time before the block was cut down and carved as a sarcophagus. Yet it is difficult to know what to make of this circle (or, more properly, half circle), for it appears never to have been completed at the bottom. If the block on which it was inscribed sat on top of an architrave, the circle could not have continued through the molded edge between them. Alternately, if this one block composed the entire entablature, there would
have been no marble surface below it upon which the rest of the circle could be inscribed. Its appearance in an architectural context thus remains enigmatic. Because the circles do not extend up into the block's middle zone, where the smoothed surface has been picked with the point, but are confined to the smooth lower band, it seems less certain that they were inscribed when the block had an architectural use.

Without compelling evidence for the circles' architectural meaning, we must consider their possible connection to the block in its second and final phase as a sarcophagus. As we shall see, there exists considerable evidence to suggest that the circles represent the preliminary drawings for the figural relief on the front. Related to the front in both general design and specific measurements, the circles incised on the back of the Badminton sarcophagus provide a rare glimpse of the elaborate planning that lay behind a casket of this type.

In relying almost exclusively on the compass to execute these drafted plans, the Badminton workshop acknowledged the capability of this simple tool both to create perfect circles and to reproduce measurements accurately. To judge by its frequent depiction in relief on the tombs of craftsmen, the compass, long a staple tool in the sculptor's workshop, rose to particular importance during the Roman period. In the realm of the sarcophagus workshop the compass found numerous uses: to carve the circles for the round shield and, later, the portrait medallions that frequently adorned Dionysiac and mythological sarcophagi beginning in the late second century A.D.; to create the circular or semicircular forms of certain decorative borders; and, in cases of extremely careful workmanship, to provide an outline for gorgoneia, rosettes, pateras, and possibly even acanthus rinceaux. Enough unfinished examples of these last forms survive to suggest that freehand execution rather than compass-assisted outlining was the norm, but the precise circular shapes found on some sarcophagi can only have been achieved with the aid of a compass. The drill hole in the center of many rosettes could well have served as the anchor point for the compass. As we shall see, the extent to which the
The location of compass-drawn "graffiti" on the back of the Badminton sarcophagus is not difficult to understand, for such smooth, finished surfaces were atypical for sarcophagi and thus would not often have been available in a sculptural workshop. We can imagine that the back of this particular sarcophagus remained visible and accessible in the workshop for a lengthy period. A piece as large and complex as the Badminton casket—it has forty figures, some carved almost completely in the round—would have required many months to execute.51

How the circle functioned as the determining element of the design of the Badminton relief emerges from an analysis of its compositional geometry. Figures 4 and 6 illustrate the argument.52 Using Dionysus's navel as the stabilizing point for the compass, we can inscribe a series of concentric circles that enclose the major figures of the Bacchic procession. Although the god's navel does not fall in the exact middle of the relief, its use in the composition as the midpoint was appropriate because conventional attitudes toward the body regarded the navel as its center in antiquity. In addition, placing the compositional midpoint above the true center of the chest increased the optical emphasis on the upper half that was already conveyed by the outward slant of the relief itself (Figure 7). The innermost circle connects Dionysus's drapery-clad knees and his lower neck; a second circle connects the head and raised knee of the Pan beside the god and the inner corner of the panther's eye; and a third connects Dionysus's head, the inside of Pan's right arm, and the front of the Maenad's face. A fourth circle links the outer edge of the panther's neck and chest with the top of Dionysus's right hand, while a fifth arc connects the inside contour line of Spring and Summer, the back of the Maenad's head, the ear of the deer, Dionysus's foot, and the right front knee of the panther. At this point, circles that are large enough to enclose the lateral figures of the Seasons but also centered on Dionysus's navel extend beyond the frame of the relief at top and bottom. That sarcophagus sculptors used arcs (that is, segments of circles) alone in their designs, can be seen in numerous other chests that will be discussed below. Both of the inner Seasons can, in fact, be enclosed by two circles and were obviously laid out with the aid of a compass. Their lateral cohorts were composed according to an altogether different scheme.

The dominance of the circle in the central composition of the New York sarcophagus emerges all
the more clearly when the chest is compared to its closest relative in terms of composition and iconography, a Seasons sarcophagus in Kassel (Figure 8). Usually dated within a quarter century of the New York casket, the Kassel chest parallels it so closely that the two must reproduce the same model. For all their similarities, however, the two sarcophagi differ in specific details, which provide telling evidence of the dominance of the circle in the design of the New York chest. Importantly, the designer of the Metropolitan Museum's sarcophagus eliminates the wings of the Seasons seen in the Kassel example, as well as the voluminous draperies that hang behind and between them. He both simplifies the lines of the composition for greater visual clarity and makes space for several additional figures whose poses reinforce the circular rhythms of those at the center. Chief among these figures are the cymbal-playing Maenad, whose inward-turning face has already been shown to coincide with several circles and whose body torsion embodies physically what is expressed abstractly in the design, and the small Pan above Spring's bough, whose inward glance helps center the composition. At several other points, subtle differences further emphasize the circular shapes of the central Dionysiac group. The left forepaw of the panther, for example, is largely obscured by a standing Pan whose diagonal movement and back-turned head introduce a circular motion. By relegating the panther's paw to the background, the Badminton designer reaps a strong visual benefit from the strengthened effect of the panther's curving neck. Other new or adjusted forms whose curvature echoes the circular motif include the bough clasped by Spring (replacing the basket held by Spring on the Kassel chest), Pan's upraised right arm, and the sickle held by Summer. With these small alterations the workshop executing the Badminton sarcophagus interpreted the stock subject as a series of circles emanating from a central point. The result is stronger visual clarity.

A role for the circle in the design of the Badminton chest has been suggested, but how do the circles of the back relate directly to the front's carved reliefs? The pattern of circular rings created by the figures on the front (Figure 6) resembles nothing so much as the concentric circles inscribed on the back of the chest. Carefully incised, they vary in their

Figure 7. Left end of sarcophagus in Figure 1

Figure 8. Front of a Seasons sarcophagus, Roman, first half 3rd century A.D. Marble, L. 21.4 cm; H. 9.9 cm. Kassel, Staatliche Museen (photo: Staatliche Museen)
spacing just as the circles on the front do. For this reason, they look like deliberate marks rather than casual doodles. I suggest that they represent a schematic rendition of the circle-based design on the front. Although their character cannot as yet be fully explained, it is likely that they rendered the design on a reduced scale. In addition, the corresponding sizes of some of the circles on the back with forms on the front suggest a direct relationship between the two. As the smooth space available on the back is only about one-half the height of the reliefs on the front, there obviously can be few one-to-one correspondences such as have been found between drawings and executed buildings at Didyma. The largest circle on the back, with a radius of 18.5 centimeters (Figure 4), matches the distance between Dionysus’s navel and left knee, a circle that is by no means the largest to be discerned in the composition. Two smaller circles coincide roughly with the length of the Seasons’ heads, a prominent element of the composition. A third possible correspondence, the length of the Seasons’ bodies from chin to lower edge of knee, approximates the diameter of the 24-centimeter circle just right of center. It may be relevant that these four circles are all found close to one another on the back, just to the left of its center.

There are far too many circles (or sets of concentric circles) incised on the back of the Badminton sarcophagus for them to have all had a direct relationship to the design of its front alone, and there is no reason that they should have. It is unlikely that the workshop sculptors worked exclusively on the Badminton sarcophagus for the extensive period in which it was being carved, and it is entirely plausible that the smooth Badminton back simply offered itself as a surface upon which to configure the design or dimensions of other sarcophagi being executed at the same time. Indeed, the “drawing board” provided by the Badminton back may actually have been more accessible to chests positioned next to it than to its own front. That the workshop would go to the trouble of drawing such marks on the block in the first place—rather than on a piece of linen, paper, or parchment, especially when such portable materials were used for the pattern books that disseminated sarcophagus motifs from one atelier to another—can be explained by the workshop’s preference for a plan that would not stretch, tear, or fray during the long period in which it was being consulted.

The Badminton sculptors may have worked in the following way: equipped with the measurements and abbreviated design drawn on the back, the sculptors laid out the design on the front. Inscribing a series of circles whose relationship to the intended figures had already been determined, they established the major outlines of the center of the composition. That the central circles had priority in the actual carving of the relief as well as in its planning can be seen from the treatment of the Seasons that flank the Dionysus group. At first glance, these four slightly pudgy young male personifications exhibit a strikingly homogeneous appearance. Reaching the full height of the relief, they share the same costume, pose, and coiffure. Upon closer examination, however, the initial impression of sameness from one to the other is altered. Although all four rest their weight casually on one leg, they vary the choice of weight-bearing leg from the right in the left-hand pair and the left in the right-hand pair. Their gazes do not follow the direction of their extended, free legs, but instead each couple turns inward. Within the group the proportions and spacing of the figures vary, but, importantly, only between the left and right pairs. Thus the left pair of Winter and Spring both measure 30.02 centimeters from the top of the head to the navel, whereas Summer and Autumn both measure 32.7 centimeters. (The drill holes from which the sculptor measured with his compass or caliper can be easily seen above the foreheads of the Seasons as well as of all other major figures; see Figures 9 and 10.) The spacing of the Seasons also varies from left to right, as Winter and Spring measure 40 centimeters from navel to navel while Summer and Autumn measure 34.5 centimeters. Because of the wide space available between Winter and Spring on the left there is room for two ducks with arched necks and two Pans, as opposed to the single hare and Pan between Summer and Autumn on the right.

The absence of absolute numerical symmetry in the seasonal pairs leads to some conclusions about the working procedures of the Badminton workshop. First, executing the work was a collaborative effort involving several sculptors and not the exclusive herculean effort of a single artist who functioned as both designer and carver, as Matz supposed. Second, the team of carvers worked from general rather than specific instructions. And third, the rigid linear grid advocated by Andreae and others as the geometric underpinning of many sarcophagus reliefs is not at work here. It is worth describing Andreae’s influential ideas in some de-
tail. To illustrate his arguments, Andreae superimposed a symmetrical grid of vertical, horizontal, and diagonal lines on various sarcophagus reliefs; in his view, the conjunction of grid and relief highlights the simple geometric principles to which he reduces the often complex, multiformal carvings. Attractive as Andreae's proposal may be on a theoretical level, it is not as convincing on visual grounds, because the major points of intersection on the grid—for example, the middle of the top edge—often do not fall on any element of importance in the relief. So the center of the top of the Great Ludovisi Battle sarcophagus in Rome, supposedly the apex of the foremost triangle discerned by Andreae in the composition, falls above and to the left of the head of its main protagonist, the general. A similar problem of nonalignment occurs in virtually every sarcophagus that Andreae has analyzed in this manner.

This is not to say that sarcophagi were never composed according to a linear grid. The parts of many compositions, particularly the lateral figures of complex, multiformal scenes, often do seem to reflect a simple linear scheme of organization. So the barbarians on the Portonaccio sarcophagus, or the pairs Abundantia/Roma and general/wife on the Balbinus sarcophagus function as side panels flanking a centerpiece in a triptychlike arrangement on their respective reliefs.

In the full-fledged form in which it has been presented, however, Andreae's linear grid appears unnecessarily detailed and actually in contradiction to the workshop practices that can be documented elsewhere for Roman artists. In the realm of freestanding statuary, the workshops that made copies of Greek masterpieces typically followed their models carefully in terms of dimensions and certain iconographic details, but they freely interpreted the rest according to sometimes highly individualized modes. Even more comparable to the Badminton sarcophagus in terms of execution are the reliefs on Trajan's Column. Peter Rockwell's investigations have demonstrated the substantial latitude granted to individual stone-carvers working on the monument by their supervisor, who was probably the column's designer. Told what type of scene to make and where to put it, the sculptors apparently could interpret the subject largely as they wished. Scenes were executed primarily by two carvers, one responsible for the foreground figures, the other for the background. Mistakes and discrepancies noted by Rockwell between the two parts suggest that no detailed preparatory drawing served as a model for these sculptors. The working mode seen in these various sculptural genres can perhaps best be characterized as flexibility of interpretation within a structure of geometrical organization.

We encounter the same kind of loose working methods—and resulting compositional discrepancies—even in a work of such obviously virtuoso quality as the Badminton sarcophagus. Most glaringly, the sculptor(s) miscalculated the space between the panther and Summer, for the personification's right arm just grazes the animal's ear (Figure 1). Similarly, the figures of each end are not...
integrated with those on the front in an equivalent manner. As can be easily seen in Figure 1, Oceanus on the (viewer's) right bares nearly his entire upper torso to a viewer standing in front of the sarcophagus, while his counterpart on the left, Terra, remains much less visible. Oceanus's greater prominence, in fact, seems to result from a general shift of the entire composition slightly to the left from the center of the casket. As already noted, Dionysus's navel, which functioned as the midpoint for the central group, is not aligned with the precise center of the chest but, instead, lies higher and off-center by some six centimeters. Possibly the two-centimeter difference in length between the chest's top and bottom—due to the greater projection of the figures in the upper zone—caused the sculptors' confusion in locating the exact lateral center of the sarcophagus.66

The working method by which the Badminton sarcophagus was carved can be summarized as follows: starting with a pattern book or sketch that provided the basic figural scheme of Dionysus astride the panther and the four Seasons—presumably close to if not identical with what was available to the carver of the Kassel sarcophagus—the Badminton workshop recast that scene to a design whose circular rhythms were more emphatic. (In their efforts the Badminton sculptors may well have been inspired by the portrait medallions that were so often inserted in contemporary Seasons sarcophagi,67 for medallions and their typological predecessors, the clipei borne by Erotes, victories, and other personifications,68 had established a precedent for compass-made circles at the center of the figural relief.) It is this stage of reformulation that is probably reflected in some of the circles on the back. We can imagine the designer or head carver instructing his assistants by means of these drawings (the artist's phrase "pencil-talk" comes to mind as a descriptive analogy) in preparation for carving the reliefs on the front; also some of the circles probably represent his attempt to establish the proportions and dimensions of individual figures of the relief (as they do on the column shafts described above). With these forms in mind, the sculptor began to carve the front by inscribing circles as guidelines for the central Dionysiac group and then chiseled in the outlines of its major figures.69 (That no such similar circles or even lines have come to light within the extensive corpus of unfinished sarcophagi is perhaps due to the fact that almost all of the evidence consists of incomplete ends rather than fronts.) As they are of secondary importance to the chest's design, the ends are likely to have been executed in a largely freehand manner without extensive preparation and measurement of the surface; thus the kinds of guidemarks we imagine for the front of the Badminton chest may never have existed on the ends at all.

Having completed a rough sketch of the center, the sculptor went on to outline the flanking pairs of Seasons. In view of the obvious miscalculation that occurred in the spacing between the panther and Summer, it seems unlikely that the sculptors had at their disposal a full preparatory cartoon such as was used by fresco painters of the Renaissance. Beginning the final carving with the central group rather than the side figures made sense because of the prominent role played by the center within the composition as a whole. Indeed, this same procedure would seem to have been employed as well in another Seasons sarcophagus, left unfinished, in Rome.70 The midpoint of that relief is occupied by a standing figure, probably Dionysus; to his right stand four figures (probably two Seasons and two other personifications) in various stages of execution, which range from bare outline to near-completion. In other reliefs where different, non-centralized compositional arrangements prevailed, other sequences of carving may have been favored. It is doubtful that a single procedure found universal application during several hundred years of sarcophagus production throughout the empire.

**The Circles in the Context of Third-Century Sarcophagi**

In a general discussion of Seasons sarcophagi, Hellmut Sichtermann has remarked on the composite nature of the iconography in this category of Roman sarcophagi. Rarely do the Seasons appear alone, that is, without companions drawn from the mythological (particularly Dionysiac) or historical spheres. Typically, Seasons sarcophagi possess a central motif derived from one of these separate spheres: "They have as well, almost without exception, a central motif that belongs to another thematic sphere."71 With its complex and carefully constructed composition, the Badminton sarcophagus obviously represents no slapdash sandwiching of Dionysiac and Seasonal figures. Nonetheless, it clearly unites on its front two distinct compositional
elements that stem from separate artistic traditions. Dionysus on the panther derives from a Hellenistic design via the sarcophagus repertory and the Seasons from an extensive Hellenistic usage. This same process of selection and combination, aiming to produce novelty within established pictorial conventions, operates as well in some of the finest sarcophagi coming from Roman workshops.

In its centered composition and "encircled" central motif, the Badminton sarcophagus accords perfectly with the prevailing principles of design of third-century Roman sarcophagi. Indeed, a new focus on the center was the foremost formal event to occur in Roman sarcophagus design during the Severan years of the early third century, a time of stylistic and iconographic transformation of the entire sculptural genre. How the center became the visual focus of the relief depended to some extent upon the typological category of the sarcophagus: on strigillated or Seasons sarcophagi the sequence of repeated forms could be interrupted in the center by tomb doors, medallions bearing portraits of the deceased, or even more elaborate figural scenes. On marine sarcophagi, by contrast, busts of Venus or the deceased encased in shells were inserted into the middle of the frieze.

The center received most emphasis on mythological sarcophagi in which the protagonists moved toward the frieze's midpoint; there they were the focus of attention with their enlarged scale and, sometimes, portrait features. Thus Adonis and Venus, idealized in body but realistic in face, sit enthroned amid a dense assemblage of figures on a chest of Severan date. Or Selene, placed at the center and filling the entire height of the relief, descends from her chariot to approach the sleeping Endymion on another third-century chest. The makers of Amazon, battle, and hunt sarcophagi, genres closely derivative from the mythological chests, used similar means to focus the viewer's attention on the center.

That the motif of the circle was not confined to the actual compositional center of third-century sarcophagi can be seen from a number of chests whose carved reliefs contain figures arranged in a series of concentric arcs that pulsate like sound waves across the surface. A third-century Dionysiac sarcophagus in Paris offers a particularly elegant example (Figure 11). In the upper half of the chest, a small portrait medallion is held aloft by centaurs that gallop inward, pulling the chariots that carry their masters Dionysus and Ariadne. On this chest circles
determine the composition, for on either side of the center the centaurs, chariots, and figures can be neatly circumscribed by a series of circles that become ever larger as they radiate farther from the center. Similarly, the figures flanking the central portrait medallion on third-century chests as diverse in theme as an Erotes sarcophagus in the Vatican, a Seasons sarcophagus in Pisa, or a marine sarcophagus in Naples can all be circumscribed by the lines of concentric circles. Indeed, the compass worked so effectively to create a symmetrical and ordered composition that it was used even on chests where a central focus was absent—a Seasons sarcophagus in Rome (Figure 12), the only known example of the genre without a central focus, aligns four chubby Seasons along two concentric circles.

With its reformulation of a stock scene into a more emphatically circular design, the Badminton sarcophagus combines the two modes of design that we see in these contemporary chests: compositional centering and figural arrangement with the aid of a compass. Although rare, its design solution does have parallels. A small chest depicting Hylas and the nymphs (Figure 13), for example, renders the figural triad in the center within an encompassing circle. With nearly all its figures pushed into the foreground plane, the Hylas sarcophagus is strikingly simple in its conception compared to the Badminton chest, but nonetheless both would seem to be based on similar circle-based compositions. More akin in Dionysiac theme and spatial complexity to the New York casket is a lavish sarcophagus in Paris (Figure 14) rendering Dionysus’s discovery of the sleeping Ariadne. Here ingenious planning brings order to the potentially chaotic mass of figures: a pipe-playing Maenad stands in the middle of the upper zone of the relief while at her side cavort full-length figures whose contorted bodies line up with a series of circles emanating from the chest’s center. The superb technical quality of this sarcophagus, comparable to the Badminton chest, points to an explanation for the relative paucity of reliefs whose centers are constructed in this way. Considerable
talent was necessary to rethink complex scenes from the existing workshop repertory according to the newly popular centralized design formulas. Thus the designers of the Paris and New York chests matched the actual carvers in their consummate ability.

Along with the impulse toward centering the composition, important iconographic and typological changes transformed the Roman sarcophagus in the first decades of the third century. Once-popular types were retired to make way for new ones. Large sarcophagi supplanted small ones as they became a primary means for patrons to express their wealth and social aspirations. Even chests of modest size achieved a more monumental effect by their decoration with enlarged figures that filled the entire height of the frieze. Such figures, whether arranged in circles or queued in paratactic sequences, permitted designs that were simpler and more legible than those found on earlier chests. In this sense, the circles of the New York—Badminton sarcophagus paved the way for the most far-reaching development of Roman art in the third century, the triumph of abstraction.

Conclusion

The many reliefs cited above illustrate clearly how the circle functioned as a primary design principle for sarcophagi during the third century. Making a break with prior solutions, the often complex, circle-based compositions of these chests required considerable planning. The preliminary stages of this planning are visible on the back of the Badminton sarcophagus, where the sculptural atelier made use of an available finished surface to work out the design of this and other chests. Although atypical in its provision of such a drawing board, the Badminton block preserves the evidence of essential planning that must have once been commonplace in the sarcophagus workshop. It is likely that further investigations of the backs and design of other Roman sarcophagi will shed additional light on the technical—but hardly insignificant—aspects of sarcophagus production that the Badminton chest raises so provocatively.

ACKNOWLEDGMENTS

Staff members of The Metropolitan Museum of Art have assisted this project greatly. I thank in particular Joan Mertens and Richard Stone for much assistance and advice and Carlos A. Picón for support. In addition, Alfred Frazer and Lothar Haselberger gave generously of their time to discuss specific aspects of this article with me.

ABBREVIATIONS

AJA—American Journal of Archaeology


Helbig—Wolfgang Helbig et al., Führer durch die öffentlichen Sammlungen klassischer Altertümer in Rom, 4th ed. (Tübingen, 1986)

JdI—Jahrbuch des Deutschen Archäologischen Instituts


Kranz—Peter Kranz, Jahreszeiten-Sarkophage. ASR, V, pt. 4 (Berlin, 1984)


LouvreCat—François Baratte and Catherine Metzger, Musée du Louvre. Catalogue des sarcophages en pierre d’époques romaine et paleochrétienne (Paris, 1985)

McCann—Anna McCann, Roman Sarcophagi in The Metropolitan Museum of Art (New York, 1978)


MemPontAcc—Memorie. Atti della Pontificia Accademia romana di archeologia

PBSR—Papers of the British School at Rome

RendPontAcc—Rendiconti. Atti della Pontificia Accademia romana di archeologia
1. For a recent survey of the major literature on these subjects, see Hazel Dodge, “Ancient marble studies: recent research,” Journal of Roman Archaeology 4 (1991) pp. 28–47.

2. Acc. no. 55,11.5. McCann, pp. 94–106, no. 17, and Kranz. pp. 62–63, no. 131, provide the most recent full discussion of the piece, although Matz remains an important starting point for any discussion. The sarcophagus is in excellent condition, with only a few very minor modern restorations (McCann, p. 95) and the obviously post-antique inscription “1733 hic post(ita)um,” recording its placement at Badminton. It has also lost its lid and the paint applied to the front (Matz, p. 5). On the practice of painting sarcophagi, see K-S, pp. 87–88.


6. Acc. no. 47,100.4: McCann, pp. 39–45, no. 4. For other exceptions, see K-S, p. 65.


8. McCann, p. 95. Its findspot is unknown.

9. For comparison, see the entablature of the Temple of Castor in Rome as illustrated in Fritz Toebelmann, Römische Gebälke (Heidelberg, 1923) p. 5, fig. 48.


12. San Antonio Museum of Art, acc. no. 90.17. I thank Carlos Picón for notice of this work.


14. This is the measurement at the top. It is slightly shorter at the bottom, measuring 2.14 m. This difference reflects the subtle flare of the chest upward and outward in order to enhance its visual effect.

15. See Toebelmann, Römische Gebälke, fig. 46 following p. 50 and fig. 39 following p. 36.


17. Hairline cracks found on the front running from Dionysus's chest to the panther's neck and on the left side of the back's smoothed section, even if they were apparent in antiquity, obviously did not deter the carver.

18. Identification of the marble (which is technically not marble but undurated limestone) is based on isotopic analysis of a sample undertaken by Norman Herz at the Center for Archaeological Sciences, University of Georgia, in May 1992. The sarcophagus has the distinctive color of stone from this quarry, white streaked with blue/grey. On Proconnesian marble in general, see Dario Monna and Patrizio Pensabene, Marmi dell'Asia Minore (Rome, 1977) pp. 145–177; p. 157 discusses its use in architectural contexts.


22. See Andreae and Jung, Archäologischer Anzeiger, chart following p. 434.

23. Lazzarini et al., “Determination of the Provenance of Marbles,” p. 405. There are even instances of the reuse of carved sarcophagi (see K-S, p. 86).


25. The dimensions of the left dowel hole are as follows: height, 2 cm; width, 2.2 cm; depth, 1.75 cm; and of the right: height, 3 cm; width, 2.2 cm; depth, 2.25 cm.

26. These clamps did not function as hinges, but rather as safeguards against dislodging during transit, or possibly, like a personal seal, as deterrents against tampering.

Sarcophagi
workshop
at
they
cophagus,
they
ert,
involved
(Frederick
fig.
sarcophagus
(Musee
long
pp.
Roman
Muse
kophage.
seems
120.

the
tomb
uncertain
28.

34.

46-50,

Sheila
Einzelmythen.
John
For
these
PRB
examples
the
as

Baltimore,

Ward-Perkins,

of

metal

and

Ward-

sarcophagus

in

the

PRB

at

PRB

3

Musee

LouvreCat,

no.

138–142,

fig. 141.

Matz, p. 6.

Sichermann, in K-S, p. 86. The incrustation covering the circles in many places does secure them as ancient carvings rather than modern.

McCann, p. 95.


Lothar Haselberger, their discoverer, does not believe their function to have been architectural (personal communication, March 7 and Aug. 17, 1992).


They may have served as guides to the workmen installing the opus sectile of the lower walls. These unpublished findings were reported to the author by Richard Stone.

On the compass, see Charles Darenberg and Edmond Saglio, Dictionnaire des Antiquités grecques et romaines I, pt. 2 (Paris, 1918) pp. 1185–1186, s.v. circinus (Saglio). Fig. 1512 on p. 1186 and fig. 2 of Hugo Blümmer, Technologie und Terminologie der Gewerbe und Künste bei Griechen und Römern (Leipzig, 1884) III, p. 91, illustrate typical reliefs. See also a stele from Aiquelea (Gerhard Zimmer, Römische Berufsarbeitsskanzen [Berlin, 1982] p. 150, no. 70).

Adam, The Technique of Greek Sculpture, pp. 82–83, records its use as early as the archaic period in Greece, where it was employed, among other things, to carve perfect circles for leopards’ spots.


As on a garland sarcophagus in Thessaloniki (K-S, figs. 391–392).

 Probably elevated during carving, the sarcophagus would have had even greater accessibility. For an image of a sarcophagus-carver at work on a striigillated lenos sarcophagus with lions’ head protomes, of roughly the same date as the Badminton chest, see the so-called Eutropos sarcophagus in Urbino (K-S, figs. 66, 67).

Any optical distortions caused by the camera are too minor to affect the accuracy of this illustration.

Staatliche Museen, inv. Sk 46 (Kranz, pp. 218–219, no. 130, pl. 56; 1; George Hanfmann, The Seasons Sarcophagus in Dumbarton Oaks [Cambridge, 1951] II, p. 175, no. 461, figs. 20, 28;
65. How this awkward squeeze came about can be understood from Figure 6. Although both the panther’s neck and Summer’s torso fall within the circles generated from the center, the Season’s arm does not. In terms of the design the arm was an afterthought and as such suffered accordingly.

66. See note 14. It should be noted, however, that the compositional midpoint on sarcophagus reliefs frequently falls off-center on the finished chest. See also the location of Dionysus on the Kassel chest (see text above and Figure 8) and of a Satyr and Maenad couple on a sarcophagus in Boston (the so-called Farnese sarcophagus in the Isabella Stewart Gardner Museum; Matz, ASR IV, pt. 1, no. 9, pls. 13–15). Although the figures to either side of the Boston casket’s center echo one another in composition, they are by no means strict mirror reversals. As a rule sarcophagus designers avoided rigid symmetry.


69. Sichermann (K-S, p. 84) postulates inscribed lines as one of several methods for transmitting designs to the block. Given their minuscule depth, the inscribed circles would have been barely more invasive of the surface than the red paint also postulated for marking (K-S, p. 84; Ward-Perkins, “Workshops & Clients,” p. 220).

70. Palazzo dei Conservatori, Museo Nuovo, inv. 839 (Helbig4 1794; K-S, fig. 69).


74. For example, the Seasons sarcophagus with tomb door in the Palazzo dei Conservatori, Rome (inv. 1185, Helbig4 1451 [dated a.d. 240–250]; K-S, fig. 258).


76. For example, a sarcophagus in Rome (Galleria Borghese, Andreas Rumpf, Die Meerwesen auf den antiken Sarkophagreliefs. ASR V, pt. 1 [Berlin, 1939] pp. 36–37, no. 92, pl. 36) and one in Tipasa (K-S, fig. 242). On the trend see K-S, p. 196.

77. Vatican, Museo Gregoriano Profano, inv. 10409 (ASR III, pt. 1, pp. 22–24, no. 21, pl. 5; Helbig4 1120; K-S, p. 132, fig. 142).

79. On Amazon sarcophagi, see K-S, p. 139.

80. Musée du Louvre, inv. Ma 1013; LouvreCat, pp. 146–150, no. 71.


82. Camposanto, inv. 31; K-S, fig. 257; Kranz, pp. 196–197, no. 44, pl. 32 (dated 220s to early 230s).

83. Museo Nazionale, inv. 6589; K-S, fig. 316.

84. Palazzo dei Conservatori, inv. 1212; Hanfmann, The Seasons Sarcophagus, p. 169, no. 372, fig. 30; Kranz, p. 217, no. 128, pl. 64 (dated to the late 230s).


86. A compass centered on Hylas’s navel encloses him and the surrounding nymphs. As in the Badminton sarcophagus, the figural groups to the sides of the middle lack strong symmetry.