ABERTI’S SANT’ANDREA
AND THE ETRUSCAN PROPORTION

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Abstract. Sant’Andrea in Mantua is the last of Alberti’s churches yet it is the most complete, and the one in which his intentions seem to be clearest. It takes the form of a Latin cross, but evidence suggests that Alberti had intended a basilican plan. Alberti specified that his proposal was for a church of the type “known among the ancients as the Etruscan,” but it is not planned like an Etruscan temple. The description in Alberti’s treatise adhered precisely to the account of Vitruvius only in the presence of the unusual proportion of 5:6. In spite of numerous attempts to discover the proportional system in Sant’Andrea, the present study is the first to have found the presence of the proportion 5:6 in the completed building. This paper demonstrates the systematic strategy that Alberti employed to bring every detail of the building into a coherent spatial framework related to the perceiving body, not as an abstract exercise, but as an enveloping web of meaning.

Introduction

The church of Sant’Andrea in Mantua is a paradox (fig. 1). It is the last of the church designs of Leon Battista Alberti, and though construction was not begun until the year of his death, it is the most complete of his churches, and therefore the one in which his intentions might seem to be clearest in the resulting structure. Yet though the church takes the form of a Latin cross, the evidence suggests that Alberti had intended a basilican plan. In an extant letter, Alberti was explicit about his intentions in at least one respect: his proposal was for a church of the type “known among the ancients as the Etruscan.” But the church is not planned like an Etruscan temple as described by Vitruvius. The description Alberti gave in his treatise, De re aedificatoria, adhered to the account of Vitruvius in only one way – the presence of the unusual proportion of 5:6. Yet in spite of numerous attempts to discover Alberti’s proportional system at Sant’Andrea, no one has convincingly found the presence of the proportion 5:6 in the completed building – until now.

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2 Alberti sent this letter, accompanied by a sketch, to Ludovico Gonzaga on 20 or 21 October 1470. For a photograph, transcription and translation of the letter, see [Johnson 1975: 8, 64, pl. 12].
3 The manuscript was completed about 1450 but was first published in 1486 after Alberti’s death. References here are to the translation by Joseph Rykwert, Neil Leach, and Robert Tavernor [Alberti 1988].
Fig. 1. Sant’Andrea, Mantua, façade. Photograph: Alinari

Fig. 2. Sant’Andrea, Mantua. Photograph: Alinari
Alberti and the Etruscan temple

Why an Etruscan temple? Sant’Andrea is not the cathedral of Mantua, but it nevertheless figured prominently in the efforts of Alberti’s patron, Ludovico Gonzaga, to consolidate power over the city of Mantua. The existing building is built on the site of a previous Benedictine abbey church, the last abbot of which died in 1470. At Ludovico’s behest, the abbey was abolished in 1472 and refounded as a collegiate church of which Ludovico’s son, Cardinal Francesco Gonzaga, was made head [Borsi 1977: 229]. The church is in possession of a sacred relic, samples of the Blood of Christ. The Blood is contained in two vials, now on display in the crypt, which were at once time displayed to the pious each Ascension Day. Thus, in Alberti’s words, the “principal intention [of the reconstruction] was to have a great space where many people would be able to see the Blood of Christ” [Johnson 1975: 8, 64, pl. 12]. It was for this aim that Alberti proposed an Etruscan temple, which he said would be “more capacious” [Johnson 1975: 8, 64, pl. 12] than a competing design. On the basis of the testimony of Virgil, himself a Mantuan, Mantua has traditionally claimed its origin as an Etruscan city. Alberti’s strategy, then, at least in part, was to enhance the prestige of the Gonzaga family through this patriotic gesture.

Several historians, the first of which was Richard Krautheimer [1969: 338-9], have commented on the fact that Alberti’s description of an Etruscan temple in his treatise bears a much closer relationship to the Basilica of Maxentius than to Vitruvius’s description of one (or to actual Etruscan temples, for that matter), and that the nave of Sant’Andrea resembles both the Basilica of Maxentius and Alberti’s description (fig. 2). This has led to the current consensus that the existing Latin cross plan was not intended by Alberti. It is possible that the decision to extend the church was made around 1526 according to the designs of Giulio Romano. Giulio may also have been responsible for the first of what seems to have been many changes to the windows in the nave as well as aspects of the interior decoration. Round-headed rectangular windows lit the interior of the Basilica of Maxentius. Robert Tavernor suggests that round-headed rectangular windows and niches once reproduced in the nave of Sant’Andrea the appearance of the façade. Currently, oculi occur in these positions (Alberti was on record as disliking these).

If only the nave was intended, how might Alberti have terminated his design? While the Basilica of Maxentius terminated in the typical semicircular apse, a sixteenth-century drawing shows what appears to be a rectangular chapel at the end of Alberti’s nave [Tavernor 1998:

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5 Recently, Robert Tavernor analyzed the number of bricks said in a contemporary letter to have been stockpiled for the project and concluded that they were sufficient only for the nave of the extant building; see [Tavernor 1998: 160-165] and [Johnson 1975: 14, 65].

6 An innovation at Sant’Andrea is the close correspondence of interior and exterior; see [Tavernor 1998: 167-168].

7 Alberti expressed disapproval of oculi in a letter to Matteo de’ Pasti, the site architect for another of Alberti’s churches, the Tempio Malatestiano [Tavernor 1998: 60]. Johnson, however, suggested that the original form of the interior elevations of the nave may have included round headed rectangular niches above the doors to the small chapels, similar to the façade, surmounted by the existing oculi. There is evidence for this view in the form of walled-up openings visible from within the western transept piers. See [Johnson 1975: 16-17, pl. 17, 18].
165]. That such a configuration was possible is confirmed by Alberti's statement, "The tribunal itself may be rectangular or semicircular" [Alberti 1988: 187].

But why would Alberti identify the Basilica of Maxentius as an Etruscan temple? Since it was vaulted Alberti may not have recognized it as a basilica, which, to him, were all timber-roofed, aisled structures. No other extant monument in Rome or the rest of Italy corresponded to Vitruvius’s description of the Etruscan temple with its three cellae side by side facing forward. The Basilica of Maxentius had three sets of chapels facing each other on both sides of a central nave. In the absence of any other evidence this may have motivated Alberti’s identification. Perhaps he imagined the Basilica to be a development of the Vitruvian type, and, given his skeptical attitude toward Vitruvius, preferred to describe a building he had actually experienced rather than something whose details he could not corroborate.

Moreover, the Basilica of Maxentius had been misidentified since antiquity: only in the nineteenth century was it accurately identified. A misreading of ancient texts had caused the Basilica to be mistaken for the adjacent Temple of Peace, of which very little remains. The Temple of Peace had been founded by Vespasian to commemorate the suppression of the Jewish revolt of 70 C.E. and housed plundered treasure from the destroyed Temple of Jerusalem. Since Rome had housed remnants of the Temple of Jerusalem, the Church had additional reason to claim Rome as the successor to Jerusalem, particularly in light of the Muslim occupation of that city. At all times the Temple, whose dimensions and proportions are given in the Bible, has been the model for Christian churches, most commonly as a metaphor but also frequently in terms of physical structure. The combination of Etruscan and Jewish references in this single monument – both mistaken – may have made the Basilica of Maxentius an overpoweringly appropriate model for the church of Sant’Andrea.

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8 For many centuries the Basilica was therefore referred to as the Tempulum Pacis or the Tempulum Pacis et Latonae or simply Tempulum Latona, which is how Alberti knew it. The reference to Latona is another mystery and possibly a case of confusion with an adjacent monument, in this case with the Arcus Latronis. Latona was the mother of Apollo and Artemis [Alberti 1988: 22, 370, note 83].

9 Establishing the Temple of Jerusalem as the model for Sant’Andrea would be most convincing if there were the replication in Sant’Andrea of the dimensions and proportions of the inner chamber of the Temple, given in the Bible as 20 cubits wide by 30 cubits high by 60 cubits long, a proportion of 2:3:6 (1 Kings 6:2). This corresponds to Pythagorean musical consonances of a fifth (2:3) and an octave (1:2 = 3:6), ratios condoned by Alberti in his treatise [1988: 305]. Numerous observers have measured Sant’Andrea and have found that the width of the nave is 40 Mantuan braccia wide by 60 Mantuan braccia high, a ratio of 2:3, the same as the Temple [Tavernor 1998: 169 f]. The question of the length is more difficult since the extension of the church in the sixteenth century. At least one observer, the local historian Giovanni Cadioli, established in 1763 that the nave of the then Latin cross plan was 120 Mantuan braccia long [Cadioli 1763: 61]. If this figure was the same for Alberti’s plan, then their correspondence with the Temple would be perfect, and the ratio between height and length would be 1:2, an octave. Yet the best attempts to reconstruct Alberti’s design fail to support this number. Tavernor measured the length of the existing nave as “closer to 115 braccia,” based on a photogrammetrical survey made of the church prior to a 1994 exhibition [Tavernor 1998: 171]. Based on the same survey, the present study suggests that the length of Alberti’s nave was precisely 116 Mantuan braccia long. This result would not seem to fall within an acceptable range of approximation to the Temple for an architect as rigorous as Alberti, so the proportional model for Sant’Andrea must lie elsewhere.
As mentioned above, the common element in the descriptions of an Etruscan temple by Alberti and Vitruvius is the presence of the proportion 5:6, an unusual proportion because it is not one of the Pythagorean musical consonances upon which so much of ancient and Renaissance proportional theory was based. Alberti’s description, which otherwise fits the Basilica of Maxentius very closely, does not
initially seem to match in terms of the proportional scheme of the overall plan. But subtracting the vestibule, the main part of Basilica of Maxentius does conform to the proportion of 5:6 (fig. 3). The reality of the situation is that the combination of three chapels on a side and the proportion of 5:6 would have been enough to convince Alberti that the Basilica of Maxentius, known to him by a different name, corresponded more closely to Vitruvius’s description of an Etruscan temple than any other surviving example of antique architecture.

Other prototypes

The Basilica of Maxentius is not the only ancient prototype for Sant’Andrea. The Roman triumphal arch, particularly that of Constantine, was an equally important source for the form of the church. The Blood of Christ, the sacred relic of Sant’Andrea, is both the wine that is drunk at Communion, in remembrance of Him as a community of believers, and the very means to our salvation. It is through Christ’s sacrifice and subsequent Resurrection that the pious may defeat death and enter heaven. It was due to Constantine’s efforts that the triumph of Christ came to be associated with the Roman triumph. The specifically Roman column capital, the Composite, originally appeared on triumphal arches and was therefore associated with the triumph of Rome. Seemingly in deference to the Saviour, Constantine’s own triumphal arch in Rome, however, has Corinthian capitals.11

Alberti had already used the triumphal arch motif for the church façades he had executed at the Tempio Malatestiano at Rimini, where the model was the local Arch of Augustus, and at Santa Maria Novella, where the model was the Arch of Constantine in Rome.12 At Sant’Andrea the use of the triumphal arch motif for the façade becomes a completely three-dimensional creation for the first time, a building

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10 Tavernor has suggested that the disconnect between Alberti’s description of the Basilica Maxentius and its proportional scheme may have been a typographical mistake. He suggests that with a simple transposition of numbers, Alberti’s proportional scheme can be made to fit the Basilica of Maxentius more exactly. Alberti’s text reads, “In plan, their length, divided into six, is one part longer than their width. A portico, serving as the vestibule to the temple, takes up two parts of that length” [Alberti 1988: 197]. Tavernor suggests that a closer fit to the Basilica of Maxentius would be obtained if the passage were to read, “In plan, their length, divided into six, is two parts longer than their width. A portico, serving as the vestibule to the temple, is one part in addition to that length.” If this were the case the text would precisely reflect the reality of the plan of the Basilica.

11 See [Onians 1988: 59] for a discussion of the meaning of the Composite capital, the Roman triumph, and Christianity.

12 Alberti’s experiments became standard motifs for subsequent Renaissance architecture; see Wittkower’s classic discussion of Alberti’s church façades [1962: 37 ff]. Tavernor [1998: 178] links the Arch of Constantine with the façade of Santa Maria Novella.
in its own right. Due to the presence of the relic of the Blood of Christ, at Mantua the triumphal arch motif became a specific expression for a particular church in addition to being a standard theme appropriate for every church. Possibly for this reason Alberti continued the triumphal arch motif inside the church onto the walls of the nave. Each major chapel with its two adjacent minor chapels repeats the organization of the façade. This gave Sant’Andrea an unusual degree of correspondence between inside and outside, which was to have important consequences for the future of Renaissance architecture. But in one important way the inside and outside are different: the pilasters on the façade are Corinthian, while those in the interior of the church are Composite.

Neither the façade nor the nave walls conform to the proportional system for a triumphal arch which Alberti provided in his treatise [Alberti 1988: 265-268]. Alberti’s system does not establish an overall relationship of width to height. The height of the arch depends on the dimensions of the columnar order, which dimensions are not directly controlled by the geometry of the arch as a whole. The illustration that was provided by Cosimo Bartoli in the first illustrated edition of Alberti, published in Florence in 1550 (reproduced in [Alberti 1988: 267]), shows an arch that has a height equal to its width, and this seems to have influenced subsequent authors. If one proportional diagram is printed in any work dealing with Sant’Andrea, it is one that shows that the façade fits within a square. It is true that the width of the portico is equal to the height of the pediment, and this is taken by Tavernor and others as a link to Alberti’s preferred proportions for a triumphal arch. In the process, however, a key relationship is obscured. Roman triumphal arches were built to a variety of designs and proportions. Alberti’s description of one in his treatise was intended to refer to a typical, not a specific, arch. The Arch of Constantine, to which Alberti’s description of an arch otherwise closely adheres, does not fit within a square. Rather, the Arch of Constantine is controlled by the proportion of 5:6, and its details fit rather neatly into a grid of that proportion (fig. 3). Thus both the appropriateness of the design for a city founded by the Etruscans and the appropriateness of the design to a church that houses the Blood of Christ point to the same proportional system as crucial to the meanings embodied in this particular building. But it still remains to demonstrate the use of this proportion in the building as built.

A demonstration of the proportions

This task seems simple enough, but its solution has evaded all those who have attempted it. Not atypical in this regard is the plan diagram reproduced in the beautiful book on Alberti’s architecture published by Franco Borsi [1977: 232] (fig. 4).

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13 One of the most distinctive facts about Sant’Andrea is that the presence of the pre-existing campanile meant that the portico could not be as wide as the church behind, thus accentuating its semi autonomous nature.
Fig. 4. Sant’Andrea, Mantua. Plan and proportional diagram after Borsi [1977]

Fig. 5. Sant’Andrea, Mantua. Proportional scheme, plan. Drawing by author
In this diagram the solution seems simple: the nave has a proportion of 5:6 based on a square module which defines the cells of the major and minor chapels. There are two problems, however. First, this system does not include what would have been the final chapel and is now the crossing pier, suggesting an unlikely asymmetrical elevation of the nave wall in Alberti’s building. Second, if one places the plan at the bottom over the diagram on the top, one discovers the reason for not showing the diagram on top of the plan: they do not correspond. The faint lines of the plan beneath the diagram have been stretched to make the diagram work. More honest, but still unsatisfactory, are all other published attempts to place a diagram over the plan which illustrates an application of the Etruscan proportion.  

The present analysis begins with the plan in its restored state, using the plan restoration published by Robert Tavernor (fig. 5). It has been immediately noticeable to all observers that the side chapels divide the length of the building such that the void of the major chapels approximately equals the solid mass of wall surrounding the minor chapels. This divides the length of the nave into seven equal spaces, not counting an extra bit at each end caused by the repetition of a pilaster in the corner. However, a square drawn around these chapels, taking as its side the longitudinal modular dimension, produces no apparent relationship to the width of the nave, yet this square is apparently equal in size to the plan of the campanile left over from the Benedictine abbey church. Closer study of the major chapels reveals that the centerline to centerline distance between the pilasters and arches that define the front and rear of the chapels appears to be in the ratio of 5:6 to the width of the chapels. This suggests a modular dimension created by dividing the notional width of the chapels by 6. The width of the nave measures 15 of these proposed modules across. The width of the nave has been given by numerous observers as 40 Mantuan braccia. Dividing by 15 gives the unusual dimension of 2 2/3 braccia as a possible module, a puzzling number. However, multiplication by 6 for the width of the chapels produces the

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14 See the list of publications in n. 4 above.
15 In the case of Sant’Andrea good drawings are available on which to base a proportional study. An exhibition on Alberti’s architecture was mounted in 1994 by the Alberti Group, an organization created with the financial assistance of the Olivetti Corporation for the purpose of staging an exhibition. Photogrammetric surveys were made of the major works of Alberti at that time, and these were made available over the Internet at the web site of the Centre for Advanced Studies in Architecture at the University of Bath (available at http://www.bath.ac.uk/casa/alberti/index.html). The surveys available for Sant’Andrea are the south and west elevation of the nave and the west façade. These plus a restored plan and west elevation from [Tavernor 1998: 142, 185] formed the basis for this study. These drawings show current conditions, of course, and not the original intentions of Alberti. No attempt has been made to restore these elevations or to suggest any disagreement with the restorations published by Tavernor. It should be noted that using another’s reconstruction of the original building helps to avoid the trap of devising a plan to fit a proportional system. Verification of key dimensions of the photogrammetrical surveys was possible by comparison with the survey published by Ernst Ritscher [1899], republished in [Johnson 1975: pl.14, 15, 45, and 79]. Every modular dimension in this paper that can be verified numerically by comparison to Ritscher’s work deviates less that a fraction of a percent from the actual given value.
16 See above, n. 9. A braccio (arm, plural braccia) is an Italian cubit whose exact length varied from city to city. The Mantuan braccio was equal to .467 meters. A stone monument still exists in Mantua which established the official standard for the braccio and other measures. There is a photograph in [Rykwert 1979: 76].
result of 16 braccia, the Vitruvian perfect number, the sum of 10 and 6, the numbers explicit in the human body.\textsuperscript{17} In his treatise Alberti does not single out the number 16 as did Vitruvius, but he does call 6 and 10 the “perfect” numbers [Alberti 1988: 304]. The dimension of the sides of the existing campanile appears to be 16 braccia, at least notionally, and the starting point for the layout of the new church. Applying the ratio of 5:6 to the number 16 produces a modular plan unit of 13 1/3 x 16 braccia that defines both the major chapels and the nave itself, which is defined by a grid that is three of these plan modules wide by seven long. The odd fractions produced by the proposed module may have a rational explanation. The module of 2 2/3 braccia equals 8/6, which can be restated as 16/6 braccia.

The proportional scheme of the major chapels is repeated in the central vaulted bay of the façade, with the exception that the rear pilasters at either side of the entry door and their corresponding arch have been truncated at their center, reinforcing the idea that the centerline dimension has significance.\textsuperscript{18} The tribunal at the other end of the nave as restored by Tavernor according to the sixteenth-century sketch and based on the side chapels neatly balances the central bay of the façade. The interior of the porch has the ratio of 1:4, based on a square of four modules. This same four-module square circumscribes the minor chapels.

Turning to the side elevations of the nave, attention is directed first to the triumphal arch motif that has been said to characterize the nave walls when looking at a grouping consisting of one major chapel and the two minor chapels on either side (fig. 6).

The floor of the nave before three contiguous chapels has a dimension of fifteen modules by eighteen modules, a proportion of 5:6, highlighted on the plan in the center of the nave. The height of the cornice line of the interior has been given as forty Mantuan braccia, the same dimension as the width of the nave.\textsuperscript{19} This means that the three bays of the triumphal arch motif also fit within a proportion of 5:6 following the example of the Arch of Constantine. Moreover, the inspiration for the articulation of the plan of the major and minor chapels, where the void of one equals the solid wall mass encasing the next, is now seen explicitly to have been the Arch of Constantine. There the internal dimension between the central two columns equals the out-to-out dimension of the pair of columns on either side. In the case of the Arch of Constantine it is the precisely this arrangement of columns which establishes the proportion of 5:6, and not the mass of masonry beyond to which the columns are attached. In both the Arch and Sant’Andrea, the key dimensions seem to occur at the pedestals.

\textsuperscript{17} The length of the plan unit, 16 Mantuan braccia, can be verified numerically. A close look at Ritscher’s 1899 survey and the photogrammetrical survey reveals that the bays of the nave side elevations, which appear to be uniform in terms of their decoration, in fact show a degree of variation, as one might well expect. If we take the average in either case and extend the existing nave by this dimension for the missing final bay, the answer gives a dimension, which, when divided, produces a value of within a fraction of a percent of 16 braccia. See n. 15 above.

\textsuperscript{18} Ritscher gives the width of the central façade bay as 7.1 meters versus the width of the typical major chapel as the aforementioned 7.16 meters; see [Johnson 1975: pl.14, 15, 45, and 79].

\textsuperscript{19} Ritscher’s measurement is 18.82 meters, which is 0.75% greater than the ideal value of 40 Mantuan braccia, or 18.68 meters; see [Johnson 1975: pl.14, 15, 45, and 79].
Fig. 6. Sant’Andrea, Mantua. Proportional scheme, nave south elevation. Drawing by author.

Fig. 7. Sant’Andrea, Mantua. Proportional scheme, nave west elevation. Drawing by author.
Squares as well as 5:6 rectangles occur repeatedly in the details of the side elevations of the nave. The arched openings of the major chapels conform to the proportion of a square on top of a 5:6 rectangle. Squares and 5:6 rectangles also appear on the west end wall of the nave (fig. 7). Major elements as well as the subdivision of entablatures and other moldings appear to be dimensioned typically in multiples of either sixths or sixteenths of the module and their factors of three, four, and eight respectively. The west end elevation reveals the 2:3 proportion of the section through the nave.

The height to the apex of the pediment of the west façade is approximately equal to the distance across the façade measured at the dados of the pedestals (fig. 8). As
already mentioned, this is the proportion of the square as commonly observed in writings on Sant’Andrea. But unnoticed by virtually every writer – and undoubtedly more significant – is the fact that the ratio of the height to the top of the entablature to the width across the façade is 5:6, following yet again the example of the Arch of Constantine. Again, squares as well as 5:6 rectangles occur repeatedly in the details and many of the other dimensions of the façade are again multiples of the module or of sixths or sixteenths of the module. The central doorway is rigorously based on a double square, the patterning of which can be further subdivided into a grid of eight one-module squares. Perhaps the most spectacular discovery concerns the painted grid which once filled the blank wall spaces of the façade and of which only small traces remain. The module of 2 2/3 Mantuan braccia which has been proposed as the key to the design of Sant’Andrea receives its ultimate validation by precisely dimensioning this grid on a reconstruction drawing by Tavernor, made without knowledge of the proportioning system proposed here (not reproduced here due to lack of space).

The modular system extends to the order of the interior and the major and minor orders of the façade (figs. 6 and 8) The interior Composite order is 10 1/2 modules, or 9 implied diameters, tall. The height of the capital equals the column diameter equals 13/12 of the module. The major Corinthian order of the façade is 11 modules, or 9 1/2 implied diameters, tall. The height of the capital equals the column diameter equals 7/6 of the module. The minor Corinthian order of the façade is 1/12 module less than 8 modules, the same less than 9 1/2 implied diameters, tall. The height of the capital is 1/12 module less than the column diameter, which equals 5/6 of the module. From this it would appear that every single dimension of the building can be proportioned according to the modular system.

Alberti’s design process

In Architectural Principles in the Age of Humanism, Rudolf Wittkower described the creation of Renaissance architectural theory through the ideas and architecture of Alberti and Palladio. Wittkower credited to Palladio the creation of an architectural design methodology that unified a systematic proportional procedure with an interest in precedent conceived as type. According to Wittkower contrasting Neo-Platonic and Aristotelian doctrines were unified in Palladio’s architectural design process through the control by number of a building fabric whose design was determined by the interplay of functional types, based in present patterns of use, and of formal types, found in the Classical past [Wittkower 1962: 68]. Clearly, a design process of this type is implicated in the work of Alberti at Sant’Andrea.

The need to house and show the Blood of Christ suitably was met with a scheme which integrated a functional type, the traditional basilica, appropriate for the accommodation of crowds, with three formal prototypes from the ancient world: the Basilica of Maxentius, with its presumed tie to the Temple in Jerusalem; the Arch of Constantine, emblematic of the victory over death offered by Christ; and the Etruscan temple, suggestive of civic pride and independence. All three prototypes shared the same generative proportion, 5:6, which was then applied to Sant’Andrea
as well. A module was devised which related to the 5:6 proportion through the perfect numbers of 6 and 10, and through this module every detail of the work was related back to the generative ideas which informed the whole.

Fig. 9. Sant’Andrea, Mantua. Axonometric of 5:6 proportional scheme. Drawing by author

Fig. 9 summarizes the relationship of the 5:6 proportion to the fabric of the building. The axonometric drawing over which the diagram is drawn is taken from Robert Tavernor and illustrates his reconstruction of Alberti’s intentions for various details of the interior of the church.20 A point that has been made as forcibly as possible is that there is no detail that is too small not to be integrated into the overall system, either by Alberti or his many followers, both great and small, in the centuries during which the building was under construction. On this point Alberti was absolutely clear:

In short, everything should be measured, bonded, and composed by lines and angles, connected, linked and combined – and that not casually, but according to exact and explicit method... so that however much [one] searched, he would not find anything in the entire work inconsistent or incongruous or not contributing its every number and dimension to the splendor and grace [Alberti 1988: 314].

20 Note that this axonometric drawing shows an apsidal termination to the nave, another possible solution to the question of how Alberti would have completed his design.
References


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Michael R. Ytterberg received undergraduate and graduate degrees in architecture from Rice University and a Ph.D. in the history, theory, and criticism of architecture from the University of Pennsylvania. He teaches urban design and the history of architectural theory at Drexel University in Philadelphia. He is a registered architect in a number of US states and a design principal and member of the executive committee of BLT Architects, a 130-person firm headquartered in Philadelphia. Currently under design are high rise residential towers in Philadelphia and Newark, NJ, and a new casino resort on the strip in Las Vegas, with five hotels, shopping mall and convention center. His research interests include Hadrian’s Villa, the subject of his Ph.D. dissertation, architectural theory before the seventeenth century, and the changing relationship of architecture as a component of material culture to human societies.