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The Lombard connection: northern influences in the Basilicas of San Lorenzo and Santo Spirito in Florence

> … la sagrestia si tirò innanzi avanti a ogni altra cosa, e tirossi su di condizione, che la faceva stupire tutti gli uomini e della città e forestieri a cui accadeva el vederla, per la sua nuova foggia e bella. E concorrevavi continovamente tanta gente, che davano grandissima noia a chi vi lavorava[1].

This account of the enthusiastic public reception of Filippo Brunelleschi's Old Sacristy as it reached completion in the late 1420s, even if perhaps embellished by Brunelleschi's admiring biographer to enhance the architect's reputation, is a remarkable record of the novelty and aesthetic appeal of Brunelleschi's early Renaissance style according to one later fifteenth-century resident of Florence[2]. Indeed, the account is not hard to believe, for the sacristy continues to be filled with admiring visitors today. The universal appeal of Brunelleschi's unique style has inspired many scholars to explore its formal origins. What precedents did Brunelleschi assemble as inspirational raw materials, and how did he meld them into such an artistically expressive and influential form of architecture?

Studies of the origins of Brunelleschi's style have, since the late nineteenth century, focused on two perceived characteristics of it. The first is the evident revival and synthesis of earlier architectural forms – though exactly what forms Brunelleschi revived and synthesized has been a matter of extensive discussion and evolving opinion. The second is the evident contrast in overall character between Brunelleschi's early Renaissance style and the Gothic style that preceded it, a quality that scholars often attribute in substantial part to Brunelleschi's purported use of mathematically rational and grid-based proportional systems[3]. The present study expands this ongoing discussion by examining some new possible design precedents for the basilicas of San Lorenzo and Santo Spirito that have never before been considered in this context. It furthermore expands this discussion by accepting the likelihood that Brunelleschi based much of his design for the San Lorenzo/Old Sacristy complex, including the proportional system, on an earlier, partially-executed design by the church prior Matteo Dolfini[4]. It therefore considers the possibility that both Dolfini and Brunelleschi might have brought certain design influences from earlier buildings into the present San Lorenzo design. This study, furthermore, benefits from a new approach to the problem of architectural proportional systems in the works of Brunelleschi.

Most of the design precedents newly proposed in this study have come to my attention as indirect products of my previous study of the architectural proportional systems of the Basilicas of San Lorenzo and Santo Spirito in Florence[5]. That study considers proportional systems to be primary sources of historical evidence that cannot, due to the nature of such systems, have had any significant influence on architectural appearances[6]. The present study builds upon that assumption by using the San Lorenzo proportional system as a non-visual primary source that can call attention to promising new architectural comparisons. Once those comparisons are identified, the visual evidence in the comparisons themselves carries the weight of the argument. In this way, our attention is drawn to a northern region that scholars have not previously considered as a possible source of significant design influence on the seminal works of Florentine early Renaissance architecture.

Brunelleschi the synthesizer

One of the earliest and most widespread scholarly views of Brunelleschi found in the literature frames the architect as the one singlehandedly responsible for the *renovatio* of ancient Roman architectural forms and principles following a pejorative Gothic interlude. This view has reached us, by way of the scholarship of the late nineteenth and early twentieth centuries, from Giorgio Vasari's sixteenth-century *Le Vite*, and ultimately from one of Vasari's own sources, the fifteenth-century *Vita* of Antonio di Tuccio Manetti[7]. Manetti furthermore notes that Brunelleschi sought to revive not only the Romans' way of building, but "le loro proporzioni musicali"[8]. Ever since Carl von Stegmann and Heinrich von Geymüller attempted to identify modular proportions in the Basilica of San Lorenzo in 1883, and especially since the appearance of Rudolf Wittkower's article *Brunelleschi and "Proportion in Perspective"* in 1953, many scholars have adopted the view, closely related to the above-noted one, of Brunelleschi as the architect of "metrical coherence"; a view that assumes that pre-Brunelle-

1. Map of Italy showing possible source locations for Brunelleschi's stylistic synthesis.

schi medieval architecture was not metrically coherent[9].

A dissenting nineteenth-century view introduced by Dehio, inspired by a different reading of Vasari, proposes another kind of *renovatio* as Brunelleschi's main design interest: the revival of classicizing Tuscan Romanesque style forms, to the exclusion of ancient Roman forms[10]. This theme is further developed by Fontana, who insists that Brunelleschi conceived his style not "in Roma sugli esemplari classici, bensì in Firenze ed altrove su fabbriche medioevali di carattere romanico"[11]. Most recent scholarship (i.e., that produced by living scholars) has continued to explore this medieval Tuscan theme, while also broadening the scope of investigation to include extra-Tuscan sources, and reconsidering the question of possible Roman influences. Thus, while Hoffman and Horster have reexamined the ancient Roman theme in relation to Brunelleschi's work, Bruschi, Burns, Klotz, Murray, Saalman, Schedler and Trachtenberg have explored possible Tuscan Romanesque and *trecento* Tuscan Gothic influences. Burns and Bruschi furthermore note certain similarities between Brunelleschi's buildings and architectural depictions in *trecento* frescoes[12].

Looking beyond both Rome and Tuscany, Burns notes the striking formal and documentary links between the Old Sacristy of San Lorenzo and the Romanesque Baptistery of Padua Cathedral, in addition to other possible connections between works attributed to Brunelleschi and medieval buildings in Venice and the Veneto[13]. Elaborating upon the observations of Fabriczy, Fontana and Burns, Hyman illuminates a wide range of stylistic and structural affinities between the works of Brunelleschi and "eastern Early Christian, Venetian and Byzantine, Persian and Islamic structures"[14]. Trachtenberg later explores possible Byzantine connections in more detail[15]. These Eastern explorations are of particular interest in light of Sanpaolesi's ambitious and well-documented comparison between Brunelleschi's cupola of the Cathedral of Florence and the massive, double-shelled, pointed dome of herringbone brickwork enclosing the mausoleum of Ilkhan Ulgiaitu in Soltanieh, Iran (1304-12)[16].

Following its demotion in most Brunelleschi literature in favor of attention to Tuscan and other sources, Roman civilization has recently reentered broad scholarly discussion of Brunelleschi's possible influences. While Hyman proposes that Brunelleschi may have derived much of his classicism from the Early Christian basilicas of Ravenna, Lavin draws connections between the Brunelleschi basilicas and the Early Christian basilicas of Rome itself, as does Trachtenberg, who argues that Brunelleschi's references to the Early Christian basilica were consistent with the medieval Roman tradition of recreation of that building type; an argument that brings us back to the question of ancient Rome[17]. Which Rome, if either, did Brunelleschi reference?

Believing that Brunelleschi's work betrays no evidence of direct quotation from ancient Roman architecture, some scholars embrace an extreme position of total Brunelleschi-in-Rome denial: the belief that Brunelleschi was not only not influenced by Roman architecture, but that he never set foot in the city[18]. This position, however, has much contrary evidence to contend with. There is, for example, the small figure of the *spinario* in Brunelleschi's bronze competition panel of 1401, which is but a clothed and mirror-image replica of the famous Roman statue that may have been displayed outside the Lateran basilica in Brunelleschi's day[19]. There are, furthermore, the Cathedral of Orvieto's projecting semi-cylindrical chapels, slit by tall round-headed windows, that are strikingly similar to those of Brunelleschi's Basilica of Santo Spirito as originally planned[20]. Located between Florence and Rome, Orvieto and its impressive

medieval cathedral would have been a convenient and rewarding rest stop for fifteenth-century artists travelling between the two cities (ill. 1), which is exactly what Vasari tells us Donatello once used it for[21]. Finally, there is the continual traffic that flowed between Florence and Rome in Brunelleschi's day.

Even if one chooses to reject Manetti's claim that Brunelleschi lived in Rome between about 1409 (or earlier) and 1419 and made numerous trips to Florence, the claim itself indicates that such extensive travel between the two cities was physically and culturally possible in the fifteenth century, at least for persons of sufficient stamina and means[22]. We may similarly interpret Vasari's note that Brunelleschi once trudged off from Florence to Cortona (about one-third of the way to Rome) to examine a Roman sarcophagus and returned before anyone realized he had gone[23]. In 1434 Brunelleschi's adoptive son, il Buggiano, absconded all the way to Naples with his master's money and jewels, and was returned to Florence only after the Pope, at Brunelleschi's urging, issued a bull entreating the Queen of Naples to intervene[24]. Thus Trachtenberg is indeed justified in declaring that "the burden of proof falls on those who would *deny* Rome to Brunelleschi"[25].

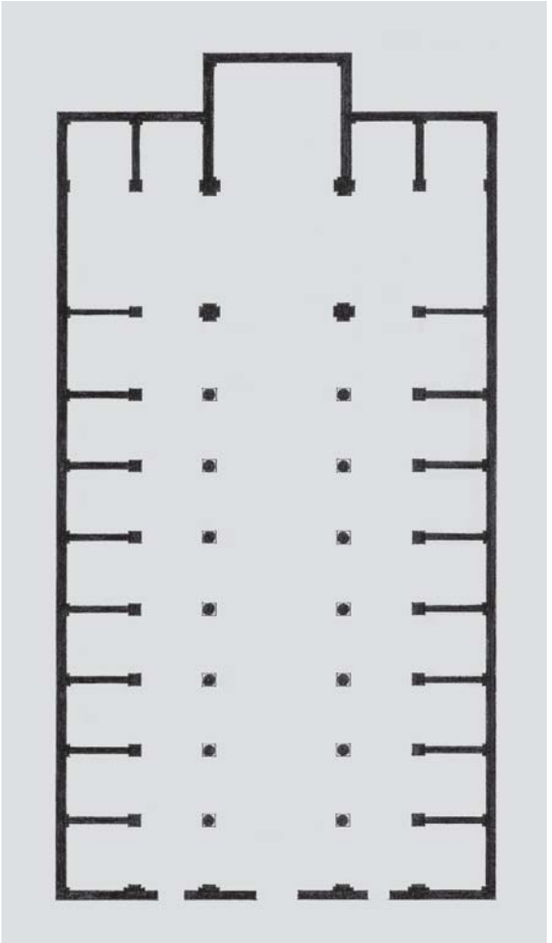
Burns demonstrates that there is no contradiction in observing the evident lack of direct quotation from antique Roman sources in Brunelleschi's work while also accepting the likelihood that Brunelleschi spent extensive time in Rome. He thus reconciles his statements that "Brunelleschi is the true reviver of much of the spirit of ancient architecture" and "there is not a single major work of Brunelleschi for which a plausible and specific post-antique source (or sources) cannot be suggested", by arguing that "the idea of antique architecture as a set of principles, rather than precedents, is implicit in Brunelleschi's buildings"[26]. Indeed, Brunelleschi's stylistic synthesis, no mere cut-and-paste collage, requires of us an alertness to principle as well as precedent, and an acknowledgement of the important role travel played in satisfying Brunelleschi's voracious curiosity about art and architecture[27].

In light of the preceding discussion, we must assume that Brunelleschi was open to learning from both Romes, pagan and Christian, and similarly both Florences (in light of his probable belief that the Baptistery of Florence was Roman), along with many other sources of architectural inspiration. Thus, in accordance with this view of Brunelleschi's style as the product of wide ranging design synthesis, Trachtenberg notes that for Brunelleschi, "the past, Roman and otherwise, was […] a vast landscape of architectural resources that he selectively mined for highly original purposes"[28]. A map highlighting Brunelleschi's possible source locations referred to thus far (and a few more to be discussed below) reveals the impressive geographical range of his apparent design synthesis (ill. 1). It also reveals a curious gap. Tuscany, Rome, the Veneto, and the East contained a diverse wealth of notable architectural forms from the years preceding Brunelleschi's lifetime, but what about the major architectural activity underway *during* his lifetime?

Construction of the Cathedral of Florence up to the tambour served as the primary backdrop of architectural construction activity to Brunelleschi's childhood and young adulthood, and both Brunelleschi and his father served on various citizen construction committees associated with it[29]. Studies examining certain similarities between the Cathedral of Florence and the buildings of Brunelleschi have been cited above, but given the stylistic gulf that separates the cathedral from Brunelleschi's early Renaissance style, the former hardly seems to have provided a significant source of inspiration for the latter. Furthermore, before Brunelleschi's own activities turned the cathedral cupola project into an architectural laboratory that drew, according to Manetti, "maestri, architetti e muratori e maestri ingegneri che si trovassono tra' cristiani", construction of the cathedral appears to have been primarily of local interest, involving little if any architectural innovation of note[30]. The same cannot be said of architectural activity in Lombardy during the late fourteenth and early fifteenth centuries.

Lombard architectural innovations

In 1386 the Cathedral of Milan was founded, an event that symbolized the cultural and economic resurgence of Lombardy under the leadership of Gian Galeazzo Visconti (ruled 1378-1402). The scale and structural ambition of the duke's proposed new cathedral exceeded the capabilities of the Lombard masons and, apparently, the technical complexity of the Cathedral of Florence before the cupola became the main focus of attention. Milanese officials thus organized convocations of master masons, engineers, and other experts from Italy and north of the Alps in 1392, 1400, 1401 and later to resolve significant technical issues. So impressive was this architectural activity in Milan that in 1390 the *comune* of Bologna sent the architect Antonio di Vincenzo to study the nascent Cathedral of Milan pursuant to its own ambitious project for the great civic Basilica of San Petronio[31]. Antonio was probably just one of numerous architectural pilgrims who made their way to Milan and other Lombard cities during the late fourteenth and early fifteenth centuries to study this cathedral



2. Reconstruction of Matteo Dolfini's original floor plan of the Basilica of San Lorenzo in Florence, c. 1418.

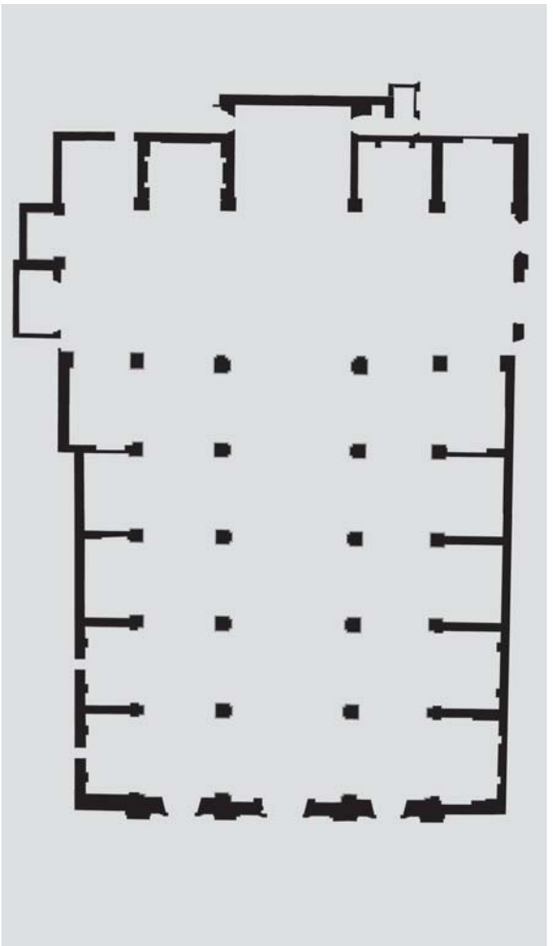
and several other major works. Brunelleschi (1377-1446) came of age during this period of Lombard distinction in Italian architecture and, trained as a goldsmith at a time when goldsmiths and other artists and artisans were frequently called upon as advisers on architectural matters, he surely kept abreast of architectural developments in Lombardy and elsewhere. Indeed, long before he became *capomaestro* Brunelleschi served as an adviser to the *Opera* of the Cathedral of Florence in 1404, and perhaps later to the *Opera* of the Cathedral of Milan as well[32]. The sixteenth-century chronicler Antonio Billi notes one trip by Brunelleschi to Milan (possibly datable to about 1420, if indeed it occurred) at the invitation of Filippo Maria Visconti to advise on the construction of a fortress[33]. That Brunelleschi respected the construction prowess of the Lombards, even while evidently serving as an advisor to them, is implied in Manetti's report that as *capomaestro* of the Florentine cupola he broke a strike of construction workers by hiring "8 lombardi", perhaps in reference to the supervising master masons who Manetti notes were assigned one to each side of the octagonal structure[34]. Brunelleschi's apparent respect for contemporary Lombard architecture also helps to explain his reaction to an alteration that according to Manetti he was compelled to make to his predecessor's design for the Basilica of San Lorenzo.

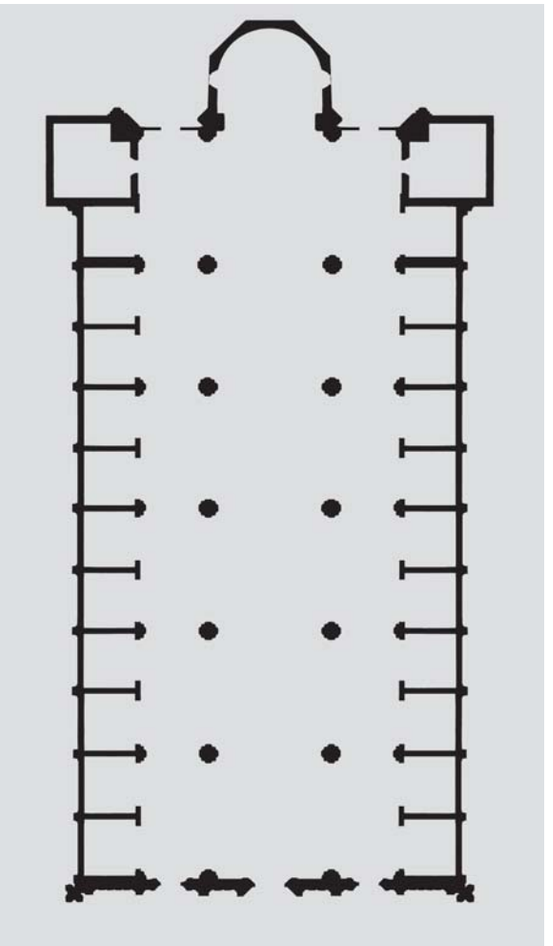
In about 1480 Giuliano da Sangallo, a follower of Brunelleschi, made a drawing that shows the floor plan of the Basilica of San Lorenzo much as it appears today, but lined with nave chapels twice as deep as the present ones[35]. My recent study of the proportional system of this basilica provides compelling new evidence that Giuliano's deep nave chapels in this drawing not only reflect Brunelleschi's preferred San Lorenzo design, but the one he inherited from Dolfini (ill. 2)[36]. According to Manetti, when Brunelleschi took over the project around 1421, probably at Dolfini's death, he removed these nave chapels on the orders of Giovanni de' Medici who, Manetti claims, had patron-like authority over the project. Giovanni did so, Manetti continues, because he was unable to find enough citizens willing to build them. According to Manetti Brunelleschi did so "malvolentieri, perché la gli pareva cosa misera"[37]. Manetti apparently shared Brunelleschi's favorable opinion of Dolfini's chapels, for he laments that "'l corpo della chiesa dalla croce in giù, che non è conforme alla detta croce", an apparent indication that the *present* nave chapels, built after 1457, are not as deep and as tall as Brunelleschi, following Dolfini, intended[38]. Dolfini's deep nave-chapel scheme appears to have been quite progressive for its day.

The two rows of deep nave chapels in Dolfini's plan transform the conventional Latin Cross medieval basilica type from a cruciform building in space, to a rectangular block from which is carved a cruciform negative space (ill. 2). They also provide an elegant solution to the increasing demand in late medieval urban culture for family chapels by a growing class of merchant patricians[39]. This spatial and social transformation of the basilica building type had previously appeared in Florence in the late fourteenth-century reconstruction of the Basilica of Santa Trinita, though this small, dimensionally irregular church hardly seems architecturally compelling enough to have served as the model for the first major basilica to be initiated in Florence in over a century (ill. 3). It lacks the confident geometrical clarity of Dolfini's San Lorenzo scheme, perhaps due to its severe site constraints, and provides an unremarkable interior experience[40]. The existence of a common source for both basilicas seems more likely. Manetti's note that Dolfini began his project "di pilastri di mattoni" offers a possible hint that the source might not have been Florentine[41]. Brick was an unusual primary building material in medieval Florence, but common in the north[42]. Indeed, in Dolfini's day the largest basilica construction project underway near Florence was Antonio di

3. Floor plan of the Basilica of Santa Trinita in Florence.

4. Floor plan of the Basilica of San Petronio in Bologna.





Vincenzo's aforementioned Basilica of San Petronio in Bologna, which is built entirely of brick. The enormous basilica that we see today was originally intended to constitute just the nave of an even larger cruciform structure, and Florentine architects must have been familiar with the project[43]. It displays a modular bay system with deep nave chapels very similar to that of Dolfini's San Lorenzo, the only significant difference between them being the elimination of alternate nave piers in the Bologna basilica (ill. 4), where the executed Dolfini/Brunelleschi plan has uninterrupted rows of point supports (ill. 2)[44]. The deep nave chapel scheme, however, does not appear to have originated with Antonio either.

The drawings that Antonio di Vincenzo made in 1390 provide a record of the projected design of the Cathedral of Milan just four years after groundbreaking and indicate that the design of the Basilica of San Petronio owes a significant debt to it, particularly in the way the cross-section rises from a five-bay-wide nave[45]. Other aspects of the Bologna design indicate, however, that while Antonio may have been sent to Milan to examine the cathedral works, he came home equally impressed by another basilica under construction nearby. Architectural pilgrims from central Italy who made their way to Milan during the late fourteenth and early fifteenth centuries would have been sure to visit Pavia, just 35 kilometers to the south (ill. 1). Pavia boasted numerous impressive Romanesque churches harking to the city's past distinction as capital of the Longobard kingdom (seventeenth to twelfth centuries), and several major new works attesting to the city's then-current distinction as the seat of the powerful Visconti dukedom[46]. The most impressive of the new works were designed by the Visconti court architect, Bernardo da Venezia[47]. These works include the Castello di Pavia (the duke's residence), begun c. 1370 under Galeazzo II Visconti (ruled 1354-1378); the basilica of Santa Maria del Carmine in Pavia, begun c. 1373; and the Certosa of Pavia, a vast monastic complex begun in 1396 under Gian Galeazzo Visconti to house the ducal tombs[48]. One of these works appears to have attracted the sustained attention of the architectural community of northern and central Italy for many decades after its first vaults began to rise.

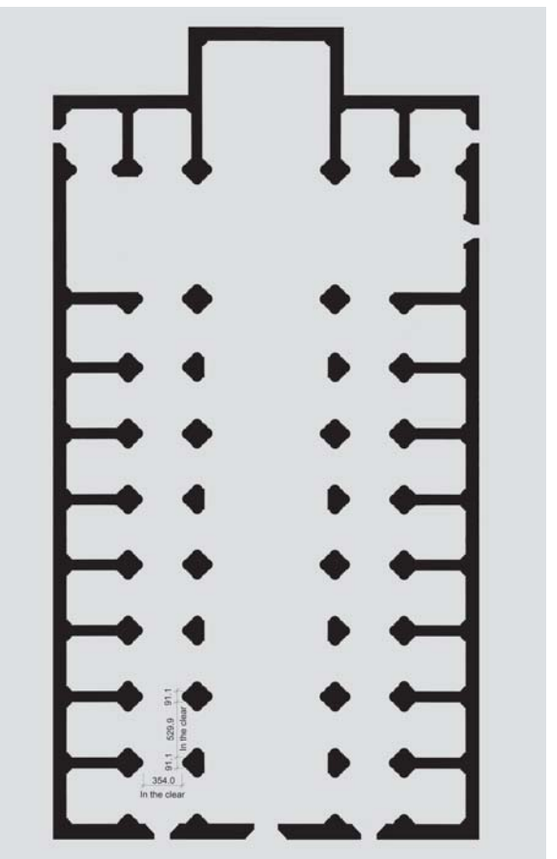
The Basilica of Santa Maria del Carmine in Pavia is a compact yet imposing basilica, characterized on the outside by a low, broad, box-like form, and on the inside by weighty, closely spaced clusters of brick columns, colonnettes, and piers (ill. 5). The blunt, curving surfaces of the engaged columns and cushion capitals of the minor order,

5. Pavia, Basilica of Santa Maria del Carmine, nave view.

6. Bologna, Basilica of San Petronio, nave bay.

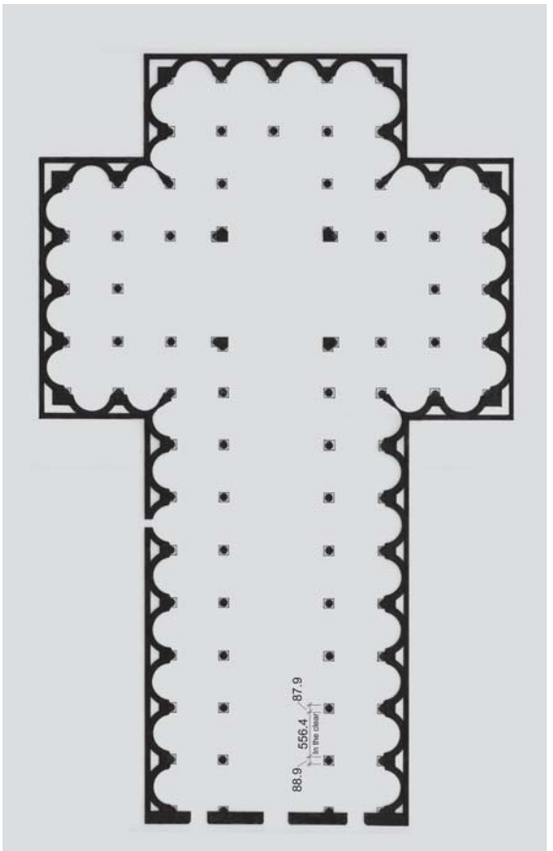
7. Pavia, Basilica of Santa Maria del Carmine, nave bay.

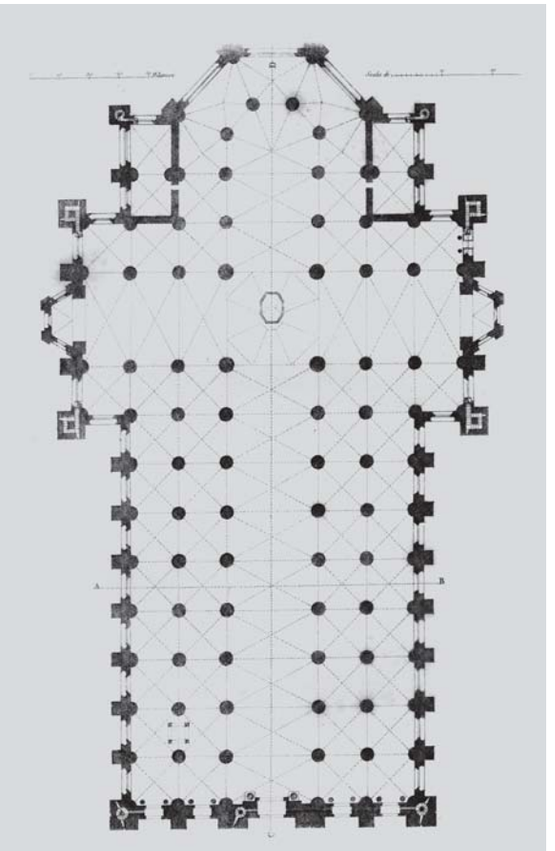
8. Floor plan of the Basilica of Santa Maria del Carmine in Pavia.



9. Floor plan of the Basilica of Santo Spirito in Florence.

10. Floor plan of the Cathedral of Milan (G. Franchetti, Storia e descrizione del duomo di Milano, *Milano 1908*, *fig. n.n.).*





the restrained use of ornament (confined to the major order column capitals), the slightly pointed arches of varying sizes, and the lucid geometrical logic throughout create a unique spatial experience that conveys seemingly contradictory impressions of strength, solidity, and lightness. From certain vantage points the basilica appears to have been carved from a living mountain of brick. From others it appears strangely ephemeral, its upper regions dematerialized by blank expanses of smooth white plaster. Much of this emotive impact of the design comes from an aspect of regulation and discipline that seems driven by a latent but deliberate classicism.

Comparison of the repeating interior elevations of the Santa Maria del Carmine and San Petronio nave bays suggests that Antonio admired the forceful and compositionally efficient design of the Carmine bays, and copied it directly. He appears to have merely increased the bay width slightly relative to its height, enlarged the oculus, and modified the forms of the pier shafts and capitals perhaps based on those of the Cathedral of Florence (ills. 6 and 7)[49]. Antonio's admiration for the Carmine of Pavia may have stemmed in part from his ability to observe a substantial portion of it already standing. At the time of his visit to the Cathedral of Milan, after all, there was little to observe but some unfinished foundations, tentative intentions, and a host of rancor[50]. The Carmine of Pavia, by contrast, about seventeen years into construction under the direction of a single, politically powerful architect, was probably already displaying imposing vaulted spaces.

Floor plan comparisons suggest that the Carmine may have served not only as the source of Antonio's deep nave chapel scheme (ills. 4 and 8), but more significant for this investigation, as the model for Dolfini's entire San Lorenzo floor plan, not including the double chapels at the ends of the transept (ills. 2 and 8)[51]. While we have no information regarding the shapes and sizes of the nave piers or columns that Dolfini intended for his San Lorenzo design before Brunelleschi turned them into monolithic columns of *pietra serena*, and while my comprehensive survey of the Carmine floor plan has thus far revealed no significant proportional similarities with my reconstructed Dolfini floor plan, the two plans are nevertheless schematically virtually identical[52]. With appendages removed, as shown in illustrations 2 and 8, both consist of rectangular perimeters broken only by square high altar chapels; both have four transept chapels and sixteen nave chapels, all identical; both contain cruciform spines conceptually composed of eight large squares, one each for the crossing square, high altar chapel and each transept arm, and four for the nave; and both are based on a conceptual module corresponding to one of these large bays – let us say the crossing square – in which could fit four of the chapels, approximately if not exactly.

11. Firenze, Basilica of Santo Spirito, aisle view.

12. Pavia, Basilica of Santa Maria del Carmine, aisle view.

Antonio di Vincenzo's and Matteo Dolfini's apparent interests in the designs of the Cathedral of Milan and the Carmine of Pavia anticipated Brunelleschi's own apparent architectural investigations in Lombardy. The Basilica of Santo Spirito (ill. 9) and the Cathedral of Milan (ill. 10), although dissimilar in scale and style, share several fundamental characteristics. In plan, both have rows of freestanding columns arranged on regular grids on center – an 11 br. grid at Santo Spirito and 16 br. at the Cathedral of Milan – that are echoed by peripheral rows of identical engaged columns[53]. In both buildings these columnar arrays create impressions of freestanding, hypostyle hall-like skeletal structures that resemble formerly open-air pavilions that have seemingly been enclosed by walls only due to functional necessity. Perhaps most significant, both have such similar numbers and arrangements of bays, columns and engaged columns that the Cathedral of Milan floor plan, with a few minor modifications, could have served as the template for the simplified and more regularized Basilica of Santo Spirito floor plan[54].

If we imagine the outermost side aisles of the Cathedral of Milan nave divided up into chapels – as perhaps originally intended (see below) – then both this basilica and that of Santo Spirito would have three-bay wide naves, transept arms, and apses, the outermost bays of which form continuous ambulatories that lead worshippers in from either side door in the façade, down the aisle, around the transept and apse, and out through the other aisle. Furthermore, counting outwardly from the crossing piers, both basilicas have nine-bay long naves, three-bay long transept arms; and, if we exclude the canted end of the Cathedral of Milan apse, three-bay long apse-like projections as well. The preceding observations point more strongly toward the Cathedral of Milan as the primary source of inspiration for the Santo Spirito floor plan than the more proximate Cathedral of Pisa, which features a similar extended ambulatory but entirely different numbers and arrangements of bays[55]. While Brunelleschi may have studied the projected design for the Cathedral of Milan, however, like Antonio di Vincenzo before him he appears to have returned home particularly impressed by the interior of the Carmine of Pavia, and well versed in its details.

One of the most memorable features of the securely attributed Basilica of Santo Spirito is the surreally foreshortened vista that greets visitors upon entering either the left or right façade portal (ill. 11)[56]. On one side of each aisle, the columns appear to touch one another forming an apparently solid yet diaphanous wall. On the other, engaged columns appear closely packed together, separated only by complex moldings resembling rubbery, compressed gaskets. When similarly viewed down either of the aisles, the Carmine of Pavia appears to be virtually a brick version of the Basilica of Santo Spirito (ill. 12). In the Carmine, rows of classically proportioned engaged columns appear tightly packed together, separated only by forms resembling rubbery, compressed gaskets. Here, however, the gasket-like forms occur on both sides of each aisle, and

13. Masaccio, Trinity, *detail (Firenze, Basilica of Santa Maria Novella).*

consist of clusters of attenuated colonnettes. Perhaps Brunelleschi even took measurements of the Carmine column diameters and intercolumniations, for their dimensions are very similar to those of Santo Spirito (ills. 8 and 9, dimensional annotations)[57].

Since the visual evidence presented here places Brunelleschi at the end of one of the aisles in the Santa Maria del Carmine nave, carefully studying the striking effect of one-point perspective and quite possibly recording measurements to further his investigation, we might reasonably propose that the Carmine contributed to Brunelleschi's research pertaining to his eventual development of scientific perspective drawing techniques. Indeed, some influence of the Carmine may be detectable in Masaccio's *Trinity* fresco in the Basilica of Santa Maria Novella in Florence, a project on which Brunelleschi very likely collaborated[58]. In that fresco, small Doric columns serve as visual gaskets that separate pairs of Ionic columns in the foreground and background (ill. 13, middle column). The resultant clusters of three columns visible on each side of the central barrel vault appear tightly packed together in perspectival compression, much like the engaged columns and colonnettes of the Carmine of Pavia, and the engaged columns and complex molding strips of Santo Spirito (ills. 11 and 12). Perhaps Brunelleschi considered these little intermediate Doric columns in the *Trinity* to be necessary devices for leading the eye into perspectival space, after having first observed a similar effect in three-dimensions at the Carmine.

Another hallmark feature of the Basilica of Santo Spirito that is prefigured in the Carmine is the union of the first step leading into the chapels with the plinths of the engaged columns standing between the chapels (ill. 14). Following Saalman, scholars typically attribute this elegant device to Brunelleschi, but we now see that Bernardo used it first in the Carmine (ill. 15)[59].

The visual evidence presented above regarding deep nave chapels, nave bay interior elevations, foreshortened aisle views, and plinth/step unions suggests that the Carmine of Pavia exerted a substantial influence on an impressive array of late fourteenth and early fifteenth-century basilicas outside of Pavia, including the Basilicas of San Petronio in Bologna; and Santa Trinita, San Lorenzo and Santo Spirito in Florence. Other possible Carmine-inspired basilicas, recognizable by their modular layouts and signature rows of deep nave chapels, perhaps include two more works of Bernardo da Venezia: the Certosa of Pavia, which according to Ackerman's reconstruction originally was to include deep nave chapels, and the Basilica of Santa Maria del Carmine in Milan (founded c. 1400)[60]. Later deep nave-chapel basilicas that perhaps belong to this lineage include those of Santa Maria delle Grazie in Milan (begun by Giuniforte Solari in 1463), San Francesco in Ferrara (begun c. 1470), and San Salvatore in Padua (begun c. 1460)[61].

The list of Carmine-influenced basilicas should perhaps also include the Cathedral of Milan which, as noted above, may have been originally planned with deep nave chapels in place of the outermost side aisles (ill. 10). By 1391, after the foundations for at least a portion of these nave chapels had been completed, the chapels were removed from the design. In 1400 Bernardo da Venezia and a collaborator, Bartolino da Novara, petitioned Duke Gian Galeazzo Visconti for their reinstatement. Although the petition was unsuccessful, it illuminates some contemporary arguments in favor of this innovative and influential chapel scheme. The architects' first argument is iconographical: through this modification, they claim, "se porave vedere el corpo de Cristo," in other words, one would perceive the shape of the cross in the interior void thus created. Their second argument is structural: the deep nave chapels "vegniarevese a dare grandissima forteza ale altre tre nave [i.e., the central nave and two side aisles] per quilli archi butanti avereve più fermo," in other words, the chapel walls would serve as buttresses to support the vaulted nave and aisles[62].

These contemporary observations, combined with the observations presented above, indicate that the remarkable Basilica of Santa Maria del Carmine of Pavia appears to have introduced social, spatial, experiential, optical, iconographical, structural and classical ornamental innovations into late fourteenth and early fifteenth century architectural culture. To this list may now perhaps be added a stylistic innovation that may be particularly relevant to our research into the sources of Brunelleschi's early Renaissance style.

Regional romanesque revivals

In the Carmine of Pavia Bernardo presents a highly disciplined Lombard Romanesque style that is analogous to Brunelleschi's own unique style, which is essentially Tuscan Romanesque in architectural vocabulary and found its first complete expression half a century later in the design of the Basilica of San Lorenzo in Florence. A seemingly conscious revivalist tendency in the Carmine becomes apparent through comparison with the small Romanesque abbey church of Cerreto in Lodi, which Romanini identifies as its likely model (ills. 5 and 16)[63]. In addition to their floor plans based on cruciform arrangements of eight large square modules – that of the Carmine lined with deep nave chapels, that of Cerreto lacking nave chapels – both churches share Romanesque features such as robust columns with cushion capitals, rudi-

14. Firenze, Basilica of Santo Spirito, engaged column plinth and chapel step detail.

15. Pavia, Basilica of Santa Maria del Carmine, engaged column plinth and chapel step detail.

16. Lodi, Abbey Church of Cerreto, nave view.

mentary ogival cross-vault ribs, and plain archivolts that are semi-circular at Cerreto, and only slightly pointed in the Carmine[64].

Of particular note, however, is not merely the reuse of outmoded forms, but the apparent deliberateness with which Bernardo has refined and regularized them, replacing Romanesque improvisation with a rigorous code of classical consistency and rationality. Gone, for example, are the gravity-defying, engaged corbelled columns of the Cerreto nave that taper, contrary to classical norms, from top to bottom, and the ambiguous surfaces to which they are attached that transmogrify from massive piers to delicate colonnettes (ill. 16). In their places appear various standardized columns of a distinctly classical character (ill. 5). Bernardo even demonstrates an understanding of antique superposition: at Cerreto all column capitals are identical; in the Carmine of Pavia the major order has Corinthian-like capitals, in notable contrast to the Doric-like cushion capitals of the minor order (ill. 5). Even more remarkable is Bernardo's use of the double-scotia column base, an uncommon feature in Lombardy that implies direct knowledge of ancient Roman works (ills. 15 and 17)[65].

Just as Bernardo, at the Carmine, rationalized and in some cases quite specifically Romanized the forms of the Lombard Romanesque style, so too did Brunelleschi, at San Lorenzo and Santo Spirito, dispense with the polygonal column shafts, irregular arches, and exuberant polychromy that characterize his apparent Tuscan Romanesque sources such as the exterior arcades of the Baptistery of Florence, in favor of, in the words of Saalman, "reduction and regularization of forms and the absolute uniformity of identical details"[66]. For example, he did not merely borrow the entablature blocks of the aforementioned Baptistery arcades (and perhaps those of other works such as the Badia of Fiesole façade) down to the smallest detail, but elevated their status from autonomous elements of surface decoration to integral components of rationalized and comprehensive minor order entablature systems (ill. 11)[67]. As in the Carmine of Pavia, in the Basilicas of San Lorenzo and Santo Spirito structural members (whether actually structural or merely expressions of structure) are set off by white plaster walls that do not appear to have ever been intended to be frescoed. The overall result is a monumentality and regularity that is distinctly Roman in character, if Romanesque in vocabulary.

Manetti's description of Brunelleschi's particular brand of classicism as "alla romana ed alla antica", together with his accounts of Brunelleschi's Roman sojourn, indicate that at least one fifteenth-century observer believed that Brunelleschi was driven by a conscious revivalist impulse, even if the evidence presented above indicates that this impulse was not limited to Roman sources[68]. Would it be correct to interpret Bernardo's classicism at the Carmine of Pavia in a

17. Roma, The Pantheon, portico column base detail.

similar revivalist light? Would this Lombard building best be described as an example of a "provincial Gothic ecclesiastical style", as does Ackerman in his 1949 article *The Certosa of Pavia and the Renaissance in Milan*, or as an early example of what Ackerman later in the same article describes as "the strange phenomenon of the Romanesque revival" which he proposes "as the leitmotif of the Milanese Renaissance"?[69] Thus, does Bernardo's classicism constitute Survival or Revival of Romanesque forms?[70] Although we lack commentary from a contemporary Lombard observer comparable to Manetti, the preceding discussion would seem to suggest that both interpretations may be equally valid.

The chief characteristics of the style of the Carmine of Pavia, according to Ackerman, are "first, that this Lombard Gothic has ignored thirteenth- and fourteenth-century developments elsewhere, and second, that it is none the less truly Gothic, and not a sub-Romanesque vestige"[71]. Yet the style of the Carmine would also seem to be consistent with Ackerman's description of the Milanese Renaissance style that emerged nearly a century later. Driving the adoption of the Lombard Romanesque revival by Milanese patrons and architects in the mid- to late-fifteenth century, Ackerman proposes, were four factors: 1) the intense regionalism of Lombard architects, 2) "the impressive effects of massing and interior space" that the Romanesque style provided, 3) the "non-Gothic" character of the Romanesque style, which made it modern in the Renaissance sense, and 4) the belief that the Romanesque style was "the stepping stone to Rome, and as such enjoyed high repute"[72]. Indeed, the same four factors might also explain not only the Romanesque features of the Carmine of Pavia, but the Tuscan Romanesque features of Brunelleschi's works in Florence.

Conclusion

If Bernardo da Venezia's Lombard Romanesque-inflected style in the Carmine of Pavia is the product of a conscious revival and refinement of regional Romanesque forms, it would constitute a particularly provocative precedent for our study of Brunelleschi's Tuscan Romanesque-inflected style, for it would raise the question of whether or not Brunelleschi understood the style of the Carmine to be a conscious Romanesque revival. If he did, it would raise the additional question of whether Brunelleschi borrowed this revivalist impulse from the Carmine, as he appears to have borrowed other ideas; or conversely, whether his own Tuscan Romanesque revival constituted a similar yet independent development half a century later. Scholars have identified other examples of Romanesque revivals in Europe from the late fourteenth to the early sixteenth centuries, but those of Bernardo and Brunelleschi are distinguished by their highly disciplined, Romanizing classicism[73].

This comparison between Bernardo's and Brunelleschi's revivalist styles is, of course, a limited one due to the obvious differences of appearance between them. While each may be interpreted as a "stepping stone to Rome", due to its refinements of its respective regional Romanesque style forms, Brunelleschi's appears, at least outwardly, to lead more directly to Rome than Bernardo's. Not only does the Tuscan Romanesque style look more Roman than the Lombard Romanesque, but Brunelleschi's use of monochromatic *pietra serena* for all structural articulations imbues his buildings with a marble-like austerity that reinforces the Roman resemblance (ills. 11 and 12)[74]. These characteristics made Brunelleschi's style an effective conduit to the revival of the supra-regional architecture of ancient Rome initiated by the next generation of architects, including Alberti, Bramante and Giuliano da Sangallo – a revival that may be considered the essential characteristic of Renaissance architecture.

Whether or not Bernardo da Venezia's revivalist impulse helped to inspire Brunelleschi's similar impulse – and thus indirectly influenced the development of the Renaissance style of subsequent generations – is too complex a question to be answered given the current state of knowledge about late medieval Lombard architecture and its fifteenth-century dissemination. As for the particular characteristics of Brunelleschi's style itself, however, a decisive Lombard influence seems undeniable in light of the evidence presented in this study. Previous scholars have viewed Lombardy as the *recipient* of early Renaissance architectural influence from Florence, through the work of Filarete and others beginning in the mid-fifteenth century. We now see that the influence appears to have been mutual, and to have begun when Brunelleschi, and probably Dolfini before him, looked to Lombardy as a source of architectural design innovation.

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1. "… the sacristy went forward before every other thing and advanced to a state that aroused the marvel of everyone in the city, and of the visitors who chanced to see it, because of its new and beautiful form. The many people constantly gathering there caused great annoyance to those working there" (Antonio di Tuccio Manetti, *Vita di Filippo Brunelleschi*, critical text ed. by D. De Robertis, introd. and notes by G. Tanturli, Milano 1976, p. 109).

2. Antonio di Tuccio Manetti (1423-1497) was only five years old when the Old Sacristy reached completion in 1428. Nevertheless, when he composed the *Vita di Filippo Brunelleschi*, probably in the 1480s, the completion of the Old Sacristy was an event from the recent history of the city, and he could conceivably have spoken to reliable eyewitnesses. On the dates of the *Vita* and Manetti's birth see H. Saalman, *Introduction*, in Antonio di Tuccio Manetti, *The Life of Brunelleschi*, introd., notes and critical text ed. by H. Saalman, English translation of the Italian text by C. Engass, University Park 1970, pp. 10, 17.

3. M.A. Cohen, *How Much Brunelleschi? A Late Medieval Proportional System in the Basilica of San Lorenzo in Florence*, in "Journal of the Society of Architectural Historians", LXVII, 1, 2008, p. 18 and note 2; and R. Wittkower, *Brunelleschi and 'Proportion in Perspective'*, in "Journal of the Warburg and Courtauld Institutes", XVI, 3-4, 1953, pp. 275-291.

4. Cohen, *How Much Brunelleschi?…*, cit. [cf. note 3], pp. 41-43.

5. *Ibid.*, pp. 18-57.

6. Proportional systems consist of geometrical, numerical and arithmetical relationships that can be comprehended only mentally, not visually. Modern observers who attribute architectural beauty and value to proportional systems (whether rigorously documented or imagined) perpetuate a mystical belief system that traces back through the Romantic period to the medieval and Renaissance periods.

7. Giorgio Vasari, *Le Vite de' piú eccellenti architetti, pittori, et scultori italiani da Cimabue insino a' tempi nostri nell'edizione per i tipi di Lorenzo Torrentino, Firenze 1550*, eds. L. Bellosi and A. Rossi, Torino 1986, p. 283: "… solo l'intento suo era l'architettura, che già era spenta, dico gli ordini antichi buoni e non la todesca e barbara, quale molto si usava nel suo tempo". Manetti, *Vita di Filippo Brunelleschi*, cit. [cf. note 1], p. 48: "... si rinnovò questo modo de' muramenti che si dicono alla romana ed alla antica, a che molto vanamente si va oggi tanto dietro; e chi di nuovo l'arecò a luce; ché prima erano tutti tedeschi ...", and pp. 55, 64-70, 76. Other early promoters of this view include Filarete and Giovanni Rucellai. H. Burns, *Quattrocento Architecture and the Antique: Some Problems*, in *Classical Influences on European Culture A.D. 500-1500: Proceedings of an International Conference Held at King's College, Cambridge, April 1969*, ed. R.R. Bolgar, Cambridge 1971, p. 277 note 3. F.P. Fiore, *Introduzione*, in Id. (ed.), *Storia dell'architettura italiana. Il Quattrocento*, II ed., Milano 2007, p. 9. E.H. Gombrich, *From Revival of Letters to the Reform of the Arts: Niccolò Niccoli and Filippo Brunelleschi*, in *Essays in the History of Art Presented to Rudolf Wittkower*, eds. D. Fraser, H. Hibbard and M.J. Lewine, London 1967, p. 79. For two early survey text references to Brunelleschi as the reviver of ancient Roman architecture, see B. Fletcher, *A History of Architecture on the Comparative Method*, XVI ed., New York 1958, pp. 624, 629, and earlier editions; and W.H. Goodyear, *Renaissance and Modern Art*, London 1900, p. 73. See also J. Onians, *Bearers of Meaning: The Classical Orders in Antiquity, the Middle Ages, and the Renaissance*, Princeton (NJ) 1988, p. 130; H. Saalman, *Filippo Brunelleschi: Capital Studies*, in "The Art Bulletin", XL, 2, 1958, pp. 114-115; and M. Trachtenberg, *Gothic/Italian 'Gothic': Toward a Redefinition*, in "Journal of the Society of Architectural Historians", L, 1, 1991, pp. 22-23.

8. "their musical proportions" (Manetti, *Vita di Filippo Brunelleschi*, cit. [cf. note 1], p. 66). Whether or not it is accurate, this comment may represent an attempt on Manetti's part to associate Brunelleschi with the avant-garde architectural theories of Alberti, whose *De re aedificatoria* was published around the time Manetti composed the *Vita*, and which contains a detailed discussion of musical proportions. Leon Battista Alberti, *De re aedificatoria*, Firenze 1486 [by modern reckoning], IX, 10.

9. C. von Stegmann, H. von Geymüller, *Die Architektur der Renaissance in Toskana*, München 1885, I, p. 18. For the term "metrical coherence", and variations thereof in relation to the work of Brunelleschi, see Wittkower, *Brunelleschi and 'Proportion…*, cit. [cf. note 3], pp. 132-133, 275-291.

10. Vasari does not only associate Brunelleschi's style with ancient Roman architecture [cf. note 7], but also with a prominent example of the Tuscan Romanesque style in Florence, the Basilica of Santi Apostoli: "In Fiorenza poi migliorando alquanto l'architettura, la chiesa di Sant'Apostolo, che fu edificata da Carlo Magno, fu, ancor che piccolo, di bellissima maniera […]. In somna, l'architettura di questa chiesa e tale, che Pippo di ser Brunellesco non si sdegnò di servirsene per modello nel fare la chiesa di Santo Spirito et quella di San Lorenzo nella medesima città" (Giorgio Vasari, *Le vite de' piu eccellenti pittori scultori e architettori*, ed. Karl Frey, München 1911, I, p. 195). Building upon this comment by Vasari, Dehio notes that the correspondences between the Basilicas of Santi Apostoli, San Lorenzo, and Santo Spirito are precise enough to preclude any inspiration from Rome on the part of Brunelleschi (G. Dehio, *Romanische Renaissance*, in "Jahrbuch der königlich preußischen Kunstsammlungen", 7, 1886, p. 129). Saalman believes that Dehio's Brunelleschi/Tuscan Protorenaissance connection is "somewhat overemphasized", since Saalman observes notable differences between the capitals of Brunelleschi and their Tuscan Romanesque predecessors (Saalman, *Filippo Brunelleschi: Capital Studies*, cit. [cf. note 7], p. 115).

11. "in Rome, from the classical exemplars, but rather in Florence and elsewhere from medieval works of Romanesque character" (P. Fontana, *Il Brunelleschi*, in *Atti del X congresso internazionale di storia dell'arte in Roma: l'Italia e l'arte straniera*, Roma 1922, p. 177; cf. Id., *Il Brunelleschi e l'architettura classica*, in "Archivio storico dell'arte", VI, 1893, pp. 256-267).

12. On Hoffman and Horster see discussion and references in M. Trachtenberg, *Brunelleschi, "Giotto", and Rome*, in *Renaissance studies in honor of Craig Hugh Smyth*, eds. A. Morrogh *et al.*, Firenze 1985, p. 677. H. Klotz, *Filippo Brunelleschi: The Early Works and the Medieval Tradition*, London 1990. U. Schedler, *Filippo Brunelleschi: Sythese von Antike und Mittelalter in der Renaissance*, Petersberg 2004, pp. 11-15. Burns, *Quattrocento Architecture…*, cit. [cf. note 7], pp. 271-275, 281. P. Murray, *Architecture of the Italian Renaissance*, New York 1963, pp. 10-15, 33-34. A. Bruschi, *Religious Architecture in Renaissance Italy from Brunelleschi to Michelangelo*, in H.A. Millon, V. Magnago Lampugnani (eds.), *The Renaissance from Brunelleschi to Michelangelo: The Representation of Architecture*, New York 1994, p. 125. I. Hyman, *The Venice Connection: Questions About Brunelleschi and the East*, in *Florence and Venice: Comparisons and Relations*, acts of two conferences at Villa I Tatti (Firenze, 1978-1979), eds. S. Bertelli, N. Rubinstein and C. Hugh Smyth, Firenze 1978, I, p. 194 and references therein. *Filippo Brunelleschi: la sua opera e il suo tempo*, proceedings of an international conference (Firenze, 16-22 October 1977), contributions by A. Bruschi *et. al.*, Firenze 1980, II, pp. 389-458. J. Onians, *Brunelleschi: Humanist or Nationalist?*, in "Art History", V, 3, 1982, pp. 259-271. Id., *Bearers of Meaning…*, cit. [cf. note 7], pp. 130-146. A. Bruschi, *Filippo Brunelleschi*, Milano 2006, pp. 53-175.

13. Burns, *Quattrocento Architecture…*, cit. [cf. note 7], pp. 277-283. Klotz, *Filippo Brunelleschi…*, cit. [cf. note 12], pp. 133-139.

14. Hyman, *The Venice Connection…*, cit. [cf. note 12], pp. 193-208, and Fabriczy as cited therein, note 1.

15. M. Trachtenberg, *On Brunelleschi's Old Sacristy as Model for Early Renaissance Church Architecture*, in *L'Église dans l'architecture de la Renaissance*, papers of the colloquium (Tours, 28-31 May 1980), ed. J. Guillaume, Paris 1995, pp. 16-22.

16. P. Sanpaolesi, *La Cupola di Santa Maria del Fiore ed il Mausoleo di Soltanieh*, in "Mitteilungen des Kunsthistorischen Institutes in Florenz", XVI, 3, 1972, pp. 221-260.

17. Hyman, *The Venice Connection…*, cit. [cf. note 12], p. 206. I. Lavin, *Donatello's Bronze Pulpits in San Lorenzo and the Early Christian Revival*, in Id., *Past-Present: Essays on Historicism in Art from Donatello to Picasso*, Berkeley (CA) 1993, pp. 1-27. According to Trachtenberg, of interest to Brunelleschi were not only the Early Christian basilicas of Rome and the later medieval recreations thereof, but also antique buildings later consecrated as churches, notably including the Pantheon, rededicated as Santa Maria Rotunda. M. Trachtenberg, *On Brunelleschi's Choice: Speculations on Medieval Rome and the Origins of Renaissance Architecture*, in *Architectural Studies in Memory of Richard Krautheimer*, ed. C.L. Striker, in collaboration with J.S. Ackerman *et al.*, Mainz 1996, pp. 169-173.

18. Onians, *Bearers of Meaning…*, cit. [cf. note 7], p. 130. Trachtenberg, *Brunelleschi, "Giotto"…*, cit. [cf. note 12], p. 675, and references therein.

19. R. Cocke, *Masaccio and the Spinario, Piero and the Pothos: Observations on the Reception of the Antique in Renaissance Painting*, in "Zeitschrift für Kunstgeschichte", XLIII, 1, 1980, pp. 21-32.

20. L. Benevolo, S. Chieffi, G. Mezzetti, *Indagine sul S. Spirito di Brunelleschi*, in "Quaderni dell'Istituto di Storia dell'Architettura", XV, 85-90, 1968, pp. 34-49. F. Quinterio, *Il cantiere della chiesa: il vestibolo e la sagrestia*, in C. Acidini Luchinat (ed.), *La chiesa e il convento di Santo Spirito a Firenze*, Firenze 1996, pp. 91-99.

21. Vasari, *Le vite…*, cit. [cf. note 7], p. 285.

22. Manetti, *Vita di Filippo Brunelleschi*, cit. [cf. note 1], pp. 77-80.

23. Vasari, *Le vite…*, cit. [cf. note 7], p. 285.

24. E. Battisti, *Filippo Brunelleschi: The Complete Work*, New York 1981, p. 334.

25. Trachtenberg, *Brunelleschi, "Giotto"…*, cit. [cf. note 12], p. 681.

26. Burns furthermore notes: "… it is much more likely than not that Brunelleschi went to Rome and studied its monuments on one or more occasions" (Burns, *Quattrocento Architecture…*, cit. [cf. note 7], pp. 277, 283, 286).

27. In addition to his early travels Brunelleschi, according to Manetti, continued to travel later in his life as well, at the frequent invitation of diverse municipalities (Manetti, *Vita di Filippo Brunelleschi*, cit. [cf. note 1], p. 99).

28. Trachtenberg, *Brunelleschi, "Giotto"…*, cit. [cf. note 12], p. 675.

29. F.D. Prager, G. Scaglia, *Brunelleschi: Studies of His Technology and Inventions*, Cambridge (MA) 1970, pp. 2-18.

30. "masters, architects and masons and master engineers from all of Christendom". This quotation is in reference to a convocation conceived, according to Manetti, by Brunelleschi in 1419 with regard to construction of the cupola (Manetti, *Vita di Filippo Brunelleschi*, cit. [cf. note 1], p. 79 and cf. p. 89).

31. J.S. Ackerman, "*Ars Sine Scientia Nihil Est*": *Gothic Theory of Architecture at the Cathedral of Milan*, in "The Art Bulletin", XXXI, 2, June 1949, pp. 84-111. L. Bellosi, *et al.*, *La Basilica di San Petronio in Bologna*, Milano 1983. *Una basilica per una città: sei secoli in San Petronio*, proceedings of a conference (Bologna, 1990), eds. M. Fanti and D. Lenzi, Bologna 1994. R.J. Tuttle, *The Basilica of S. Petronio in Bologna*, in Millon, Magnago Lampugnani (eds.), *The Renaissance from Brunelleschi…*", cit. [cf. note 12], pp. 522-527, cf. pp. 429-430. Id., *Bologna*, in Fiore, *Storia dell'architettura…*, cit. [cf. note 7], pp. 256-259.

32. In 1404 Brunelleschi served on a board of nineteen advisers to the *Opera* of the Cathedral of Florence that voted to require partial reconstruction of a buttress newly completed by the then *capomaestro*, Giovanni d'Ambrogio (Prager and Scaglia, *Brunelleschi…*, cit. [cf. note 29], pp. 15-16). Vasari notes that Brunelleschi advised the master masons of the Cathedral of Milan during one of his trips to that city (Vasari, *Le Vite…*, cit. [cf. note 7], p. 302). According to Battisti, Brunelleschi was mentioned in an undated, now destroyed fifteenth-century list of architects active at the Cathedral of Milan (G. Franchetti, *Storia e descrizione del duomo di Milano*, Milan 1908, p. 21 as cited in Battisti, *Filippo Brunelleschi...*, cit. [cf. note 24], p. 374 note 8; the reference does not appear in the 1821 edition of Franchetti's *Storia*, however, and I have been unable to locate a copy of the above-cited 1908 edition).

33. F. Benedettucci (ed.), *Il libro di Antonio Billi*, Roma 1991, p. 34. Cohen, *How Much Brunelleschi?...*, cit. [cf. note 3], p. 53 note 58.

34. "8 Lombards" (Manetti, *Vita di Filippo Brunelleschi*, cit. [cf. note 1], pp. 96-97.

35. For an illustration see Cohen, *How Much Brunelleschi?...*, cit. [cf. note 3], p. 39 Fig. 31. Note that Giuliano da Sangallo often made his own editorial modifications to known buildings in his sketches. While the deep nave chapels he shows in the sketch in question are consistent with other historical evidence, there is no reason to believe that the portico, numerous domical vaults, or second sacristy that he also depicts conform to Brunelleschi's intentions.

36. *Ibid.*, pp. 37-44.

37. "unwilling, because it seemed to him a miserable thing" (Manetti, *Vita di Filippo Brunelleschi*, cit. [cf. note 1], p. 108). Caroline Elam has noted to me the problematic nature of this passage, since the construction of the basilica during Giovanni de' Medici's lifetime was a corporate enterprise, not an act of individual patronage. In this passage Manetti may be confusing the role of Giovanni with that of his son Cosimo de' Medici, who after 1442 accepted sole responsibility for construction of most of the basilica. Even if Manetti has confused some of the facts, however, the account may correctly indicate that Giovanni had substantial influence over important design decisions, and that private chapel patrons were difficult to find. The other details of the account, furthermore, would seem to be too specific to dismiss entirely. Though perhaps not factually flawless, as a first hand fifteenth century account Manetti's *Vita* must be given careful consideration.

38. "the present body of the church from the transept downward [i.e., the nave] does not conform to the aforesaid transept" (Manetti, *Vita di Filippo Brunelleschi*, cit. [cf. note 1], p. 111).

39. H. Saalman, *Filippo Brunelleschi: The Buildings*, University Park (PA) 1993, p. 107. R.A. Goldthwaite, *The Building of Renaissance Florence: An Economic and Social History*, Baltimore (MD) 1980, pp. 98-102. A.I. Pini, *Tra orgoglio civico e 'status symbol': corporazioni d'arte e famiglie aristocratiche in San Petronio nel XIV e XV secolo*, in *Una basilica per una città…*, cit. [cf. note 31], pp. 87-100.

40. Saalman, conversely, believes that Brunelleschi took the Santa Trinita floor plan as his model for San Lorenzo. Saalman, *Filippo Brunelleschi: The Buildings*, cit. [cf. note 39], pp. 206-207. Saalman's detailed proposed reconstruction for this Santa Trinita-inspired scheme is problematic, however, for it includes freestanding, square, fluted, minor order columns – a device that occurs nowhere in the Brunelleschi œuvre and would have significantly complicated Brunelleschi's otherwise lucid architectural language. For a tentative chronology of the fourteenth-century rebuilding of the Basilica of Santa Trinita see H. Saalman, *The Church of Santa Trinita in Florence*, New York 1966, pp. 37-38. Fontana, *Il Brunelleschi*, cit. [cf. note 11], p. 173.

41. "with brick piers" (Manetti, *Vita di Filippo Brunelleschi*, cit. [cf. note 1], p. 106).

42. The molded brick capitals of the former nave columns in the partially-preserved Romanesque Basilica of San Pier Scheraggio (today part of the Uffizi) is the only significant, surviving medieval example of the visible use of this building material in Florentine ecclesiastical architecture.

43. G. Lorenzoni, *L'architettura*, in Bellosi *et al.*, *La Basilica di San Petronio…*, cit. [cf. note 31], pp. 53-124.

44. Whether Dolfini intended compound piers to support a vaulted nave, or nave columns to support a flat wooden ceiling, is unknown. See note 52, below.

45. Ackerman, "*Ars Sine Scientia Nihil Est*"…, cit. [cf. note 31], p. 88. For a high-quality color reproduction of Antonio's sheet of sketches see C.L. Frommel, *Reflections on the Early Architectural Drawings*, in Millon, Magnago Lampugnani (eds.), *The Renaissance from Brunelleschi…*, cit. [cf. note 12], p. 103, Fig. 5.

46. That Pavia remained a destination of architectural interest more than a century after the founding of the cathedral in nearby Milan is suggested by Giuliano da Sangallo's visit to Pavia in 1492. His sketch of the Tower of Boethius, or according to Giuliano's own label, "La Tore di Pavia" (the tower in which Severinus Boethius was imprisoned and eventually executed), is now a valuable record of the appearance of that ancient monument, which collapsed in 1584. V. Prina (ed.), *Vedute di Pavia dal '500 al '700*, Pavia 1992, pp. 205, 218-219. Arioaldo moved the seat of the Longobard kingdom to Pavia in the early seventh century. G.P. Bognetti, *Colombano a Milano – la politica universale a le reazione barbarica*", in *Storia di Milano. 2: Dall'invasione dei barbari all'apogeo del governo vescovile (493-1002)*, Milano 1954, p. 161. Pavia was destroyed by the Hungarians in 924, and burned in an uprising of 1004. *Enciclopedia italiana di scienze, lettere ed arti*, Roma 1935, XXVI, p. 542. The kingdom did not reach the peak of its prosperity until the eleventh and twelfth centuries, and most Romanesque monuments in Pavia today date to the twelfth century.

47. G. Mariacher, *Bernardo e Niccolò da Venezia*, in "Rivista d'arte", XXIV (S. II, XIV), 1-2, 1942, pp. 12-25. A.M. Romanini, *L'architettura viscontea e Bernardo da Venezia*; *La certosa di Pavia dalla fondazione sino alla metà del xv secolo*, and *La chiesa di S. Maria del Carmine a Milano nella prima metà del quattrocento*, in *Storia di Milano. 6: Il Ducato Visconteo e la Repubblica ambrosiana (1392-1450)*, Milano 1955, pp. 611-648. Ead., *L'architettura gotica in Lombardia*, Milano 1964, I, pp. 415-436.

48. On the Viscontean works listed here see articles by Romanini in *Storia di Milano. 6: Il Ducato…*, cit. [cf. note 47], and Ead., *L' architettura gotica…*, cit. [cf. note 47], I, pp. 415-429. See additional bibliographical references in J.S. Ackerman, *Postscript to "The Certosa of Pavia and the Renaissance in Milan*, in Id., *Distance Points: Essays in Theory and Renaissance Art and Architecture*, Cambridge (MA)-London 1991, pp. 300-302. For a summary of the dates of Visconti rule, see *Tavola Genealogica della Famiglia Visconti - III*, in *Storia di Milano. 6: Il Ducato…*, cit. For a review of documentary evidence pertaining to the beginning date of construction of the Carmine, see F. Gianani, *Il Carmine di Pavia: storia e guida del grande monumento*, Pavia 1962, p. 13. Romanini, *L'architettura viscontea…*, cit. [cf. note 47], pp. 613-615; Romanini, *L' architettura gotica…*, cit., I, pp. 419, and 475 note 13. H. Oertel, *Die Baugeschichte der Kirche "S. Maria del Carmine" in Pavia*, Pavia 1936, pp. 17-35.

49. For the comparison with the Cathedral of Florence, see Lorenzoni, *L'architettura*, cit. [cf. note 43], p. 60.

50. Ackerman, "*Ars Sine Scientia Nihil Est*"…, cit. [cf. note 31], pp. 87-111.

51. Gianani provides simple single-line diagrams comparing the nave bay systems of the Basilicas of San Petronio and Santa Maria del Carmine of Pavia (Gianani, *Il Carmine di Pavia…*, cit. [cf. note 48], p. 20). Lorenzoni notes that San Petronio has lateral chapels similar to those of the Carmine of Pavia (Lorenzoni, *L'architettura*, cit. [cf. note 43], p. 60).

52. On Dolfini's contributions to the present San Lorenzo floor plan see note 4. On the question of whether Dolfini might have intended the Basilica of San Lorenzo to have either compound nave piers or freestanding nave columns, perhaps of brick (see note 41), the Basilica of San Tommaso in Pavia is a relevant precedent to examine. This imposing brick basilica, today deconsecrated, partially demolished and converted into offices, was begun c. 1400, and has a nave lined with two colonnades of six massive brick columns each. The basilica, which has no nave chapels, was built with a flat wooden ceiling, but may have originally been intended to be vaulted. The authorship is unknown, though it resembles works of Bernardo da Venezia. Thus, the Basilica of San Tommaso provides a late medieval example of a colonnaded, flat-ceilinged nave similar to both those of the Basilica of San Lorenzo in Florence and the Early Christian basilica type. On San Tommaso see: Romanini, *L'architettura gotica…*, cit. [cf. note 47], I, p. 465. E. Arslan, M.G. Bossi, *La chiesa di S. Tommaso in Pavia nella sua ambientazione urbanistica*, in *Atti del convegno di studi sul centro storico di Pavia, 4-5 luglio 1964*, Pavia 1968, pp. 305-311.

53. For *trecento* evidence of the 16 br. *milanesi* grid of the Cathedral of Milan floor plan, see the letter and diagram of the late fourteenth-century mathematician Stornaloco (P. Frankl, *The Secret of the Mediaeval Masons*, in "The Art Bulletin", XXVII, 1, 1945, p. 53). For documentary and observation-based evidence of the 11 br. *fiorentine* grid of Santo Spirito see L. Benevolo, S. Chieffi, G. Mezzetti, *Indagine sul S. Spirito di Brunelleschi*, in "Quaderni dell'Istituto di Storia dell'Architettura", XV, 85-90, 1968, p. 4, and Cohen, *How Much Brunelleschi?…*, cit. [cf. note 2], p. 34 Fig. 25, p. 42, and Appendix 4.

54. The Gothic-period sketchbook of Villard de Honnecourt contains a simple sketch of a grid-based cathedral floor plan that resembles both those of the Cathedral of Milan and the Basilica of Santo Spirito. The caption inscribed below the sketch reads: "This is a square church designed for the Cistercian Order", thus indicating a possible, ultimate source of these plans. The word "square" in this context perhaps refers to the regular grid (Villard the Honnecourt, *The Sketchbook of Villard de Honnecourt*, ed. Th.R. Bowie, Bloomington [IN] 1959, pp. 92-93, Plate 41).

55. In 1922 Fontana noted that the Cathedral of Pisa had long been believed to have suggested to Brunelleschi both the general form of the Santo Spirito floor plan, and the idea of continuing the colonnades around the transept arms and apse (Fontana, *Il Brunelleschi*, cit. [cf. note 11], p. 173).

56. In contrast to Manetti's warning pertaining to the basilica of San Lorenzo that "stimandosi di Filippo, si stimerebbe el falso, e non v'è punto drento l'onore suo" ("judging it as Filippo's would be to judge falsely, because his honor is not in it", Manetti, *Vita di Filippo Brunelleschi*, cit. [cf. note 1], p. 111), regarding Santo Spirito Manetti notes that Brunelleschi himself commented with satisfaction "gli pareva avere posto una chiesa secondo la sua intenzione in quanto al composto dello edificio" ("that it seemed to him that he had founded a church according to his intention, as far as the arrangement of its parts was concerned", *ibid.*, pp. 123-124). Manetti furthermore tells us that Brunelleschi documented his Santo Spirito design with "un modello di legna-

me a braccia piccolo" ("a wooden scale model", *ibid.*, p. 122), and that in overseeing the first phase of construction, which probably began around 1436, "E certamente se del modello e' non si usciva" ("certainly he did not depart from the model", *ibid.*, p. 124). Evidence suggests that even decades later, this model was still respected as the authoritative record of the master's design. A document of 1477 pertaining to the activity of the construction workers notes, for example, "si seguissi il modello di Filippo in tutto" ("they say that they followed Filippo's model completely"). C. Botto, *L'edificazione della Chiesa di Santo Spirito in Firenze*, in "Rivista d'arte", XIII, 1931, pp. 501-502). For documentary evidence of construction as early as 22 March 1436 (modern style), see E. Luporini, *Brunelleschi: forma e ragione*, Milano 1964, p. 231, Doc. 2; F. Quinterio, *Un tempio per la Repubblica: la chiesa dei SS. Maria, Matteo, e dello Santo Spirito in Firenze: dal primo nucleo duecentesco al projetto brunelleschiano*, in "Quaderni dell'Istituto di Storia dell'Architettura", 15-20, 1990, p. 307; and Id., *Il cantiere della chiesa: il vestibolo e la sagrestia*, in Acidini Luchinat (ed.), *La chiesa e il convento*…, cit. [cf. note 20] p. 109.

57. According to my partial survey of the Carmine of Pavia and my complete survey of the Basilica of Santo Spirito, the column diameters of the Carmine (both 91.1 cm, in the sample measurements in ill. 8) are 2-3 cm thicker than those of Santo Spirito (88.9 cm and 87.9 cm in the sample measurements in ill. 9). In the Carmine, however, the clear distance between adjacent engaged column shafts that face in toward the aisles, measured in the longitudinal direction (529.9 cm in the sample measurement in ill. 8), is 26.5 cm less than the corresponding clear distance at Santo Spirito (556.4 cm in the sample measurement in ill. 9). Thus, the Carmine column shafts are slightly thicker than those of Santo Spirito, and stand about one-third of a column diameter closer together than the corresponding columns of Santo Spirito. For the complete Santo Spirito survey, see Cohen, *How Much Brunelleschi?*…, cit. [cf. note 3], Appendix 4. Brunelleschi's apparent desire to recreate the effect of perspectival foreshortening that he observed in the Carmine of Pavia thus constitutes a third possible reason for his reduction of the intercolumniations from 9 2/3 br., plinth to plinth, used at San Lorenzo, to 9 br. used at Santo Spirito. The other two possible reasons are number symbolism and site constraints (*ibid.*, p. 42).

58. On this likely collaboration see Bruschi, *Filippo Brunelleschi*, cit. [cf. note 12], pp. 78-85.

59. Saalman, *Filippo Brunelleschi: Capital Studies*, cit. [cf. note 7], p. 127 note 70. Note that Brunelleschi uses two steps in Santo Spirito, while Bernardo uses only one in the Carmine of Pavia. Variations of this step/plinth device are also found in the Basilica of San Petronio in Bologna, and the Old Sacristy of San Lorenzo.

60. For illustrations and dates see J.S. Ackerman, *The Certosa of Pavia and the Renaissance in Milan*, in "Marsyas", V, 1947-49, p. 26 and Fig. 6, and Id., *Postscript to "The Certosa*…, cit. [cf. note 48], p. 301. Romanini, *L'architettura gotica*…, cit. [cf. note 47], I, pp. 428-430.

61. *Ibid.*, pp. 509-512, 519-521, 526 note 85. B. Tietzel-Hellerforth, *La facciata del Duomo di Faenza ed il problema della facciata nel Rinascimento*, Faenza 1977, pp. 330-331.

62. "… li contraforti del corpo dela giesia non hanno tuta quella grandeza che sareve de bisognio, consciderando la largheza e l'alteza dela dicta giesia, vorave se reduze la prima nave in forma de capelle cum le mezature tra l'una capella e l'altra, cum alchuni strafori, per li quali se porave vedere el corpo de Cristo da l'uno con l'altro de la giesia, e fazendo così vegniarevese a dare grandissima forteza ale altre tre nave per quilli archi butanti avereve più fermo el suo principio e el corpo dela giesia parerave più bello, e più con sova rexone per che el seguireve la grandeza de la cruxe" (*Addi 8 maggio 1400: Bertolino da Novara - Bernardo da Venezia ingegneri*, in *Annali della fabbrica del duomo di Milano dall'origine fino al presente*, Milan 1877, I, p. 213). Romanini, *L'architettura gotica*…, cit. [cf. note 47], I, pp. 415-416. Ackerman, *The Certosa of Pavia*…, cit. [cf. note 60], p. 25, and Id., *"Ars Sine Scientia Nihil Est"*…, cit. [cf. note 31], p. 92.

63. Romanini, *L'architettura gotica*…, cit. [cf. note 47], I, pp. 421-422.

64. Although the minor order columns at Cerreto are too short relative to their diameters to appear classically proportioned, they currently lack bases, perhaps indicating that the floor level has been raised (cf. *ibid.*, pp. 55 note 30, 421-422). For Romanini's observations regarding Lombard Romanesque revival tendencies in the works of Bernardo da Venezia see Romanini, *L'architettura viscontea*…, cit. [cf. note 47], pp. 620-621; and Ead., *L'architettura gotica*…, cit. [cf. note 47], I, p. 424.

65. Double scotia column bases are found in the church of Santa Maria di Gradaro in Mantua, c. 1256-60, but considering the short proportions of the columns their usage there appears more regionally idiosyncratic than deliberately Romanizing (Romanini, *L' architettura gotica*…, cit. [cf. note 47], I, p. 155 and II, Tav. 58-B). On the importance of the double scotia base in the development of Renaissance architectural theory, see H. Burns, *Baldassarre Peruzzi and Sixteenth-Century Architectural Theory*, in *Les Traités d'architecture de la Renaissance*, papers of the colloquium (Tours, 1-11 July 1981), eds. A. Chastel and J. Guillaume, Paris 1988, pp. 207-226. Perhaps Bernardo da Venezia even made a sketch of Roman examples of the double scotia base in Rome itself, similar to the mid-sixteenth century sketch made by Baldassarre Peruzzi, reproduced in Burns, *Baldassarre Peruzzi*…, cit., p. 224, Fig. 18.

66. Saalman, *Filippo Brunelleschi: Capital Studies*, cit. [cf. note 7], p. 115.

67. Another detail that reveals Brunelleschi's intended reduction and regularization of Tuscan Romanesque forms is the down-turning architrave of the Ospedale degli Innocenti façade which, according to the fifteenth-century chronicler Antonio Billi, Brunelleschi never intended. According to Billi, when Brunelleschi had to be away during construction of the façade, his surrogate copied the detail from the Baptistery of Florence, not realizing that Brunelleschi considered that particular detail to be the one error in that building (Benedettucci [ed.], *Il libro di Antonio Billi*, cit. [cf. note 33], p. 34).

68. See note 7.

69. Ackerman, *The Certosa of Pavia*…, cit. [cf. note 60], pp. 23, 33.

70. Cf. Burns' comments regarding the concept of "Survival and Revival" in relation to antique forms in the *quattrocento*. Burns, *Quattrocento Architecture*…, cit. [cf. note 7], p. 270.

71. Ackerman, *The Certosa of Pavia*…, cit. [cf. note 60], p. 24.

72. *Ibid.*, p. 33.

73. *Ibid.*, pp. 30-34. I. Campbell, *A Romanesque Revival and the Early Renaissance in Scotland, c. 1380-1513*, in "Journal of the Society of Architectural Historians", LIV, 3, 1995, pp. 302-325.

74. In the mid-fifteenth century Flavio Biondo described the *pietra serena* columns of San Lorenzo as being of marble, thus indicating his identification of this work with ancient Roman works (Burns, *Quattrocento Architecture*…, cit. [cf. note 7], p. 273).