

TRANSFORMATIONAL SYNTAX

in the work of Filipo Brunelleschi

by Graham Owen

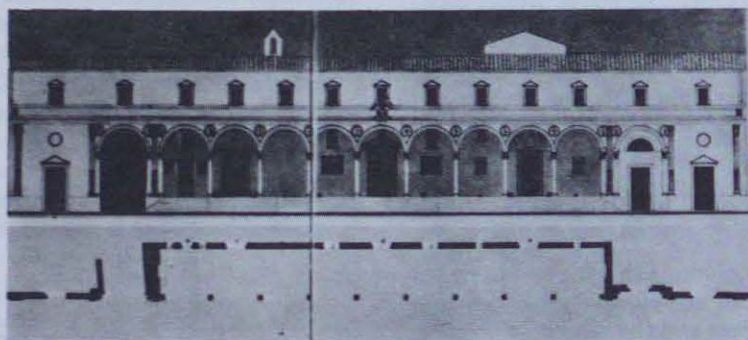


Figure 1.

Graham Owen is a recent graduate of the School of Architecture at University of Toronto.

What happens when a new work of art is created is something that happens simultaneously to all the works of art which preceded it. The existing monuments form an ideal order among themselves, which is modified by the introduction of the new work among them. The existing order is complete before the new work arrives; for order to persist after the supervention of novelty, the whole existing order must be, if ever so slightly, altered; and so the relations, proportions, values of each work of art towards the whole are readjusted ...

T.S. Eliot, *Points of View*

The purpose of this paper, is to examine several buildings by Filippo Brunelleschi with regard to their architectural syntax: more specifically, their syntactical deployment of Classical elements. The proposition inherent in the often invoked linguistic metaphor is that the Renaissance distinguishes itself, as a sensibility, from earlier periods, not by its choice of vocabulary, but rather by the way in which that vocabulary is manipulated.

That proposition is not in itself unique to this paper. It is, however, a further intention to read history backwards. A close examination of a number of apparently anomalous details of Brunelleschian works reveals an approach to syntax that can be loosely termed *transformational*, in which sense such an approach might be taken to resemble, superficially, that usually ascribed to the Mannerist period.

There being no particular merit, however, to the blurring of widely accepted distinctions, this paper will seek to explore the nature of this transformational syntax, while at the same time indicating its distinctly Renaissance character.

Brunelleschi's operation ... implied the end of architecture as a common framework for the various techniques, and its assumption, in so far as its conceptual aspects were concerned, into the sphere of a mental activity preceding any technical specialization.

Leonardo Benevolo, *The Architecture of the Renaissance*

In Brunelleschi's work, a building project was the representation of an idea, not the collective activity of craftsmen ... Brunelleschi had already transformed architecture from the mediaeval 'built' space to a logically controlled framework of visual structures.

Arnaldo Bruschi, Bramante

Classical syntax involves, by definition, an implied process of assembly. One part is added to another according to a particular hierarchy of different parts. Transformational syntax implies, however, a situation of greater intellectual complexity. It no longer only marks the hierarchy of building parts, but now also indicates a temporal order in the building's conception: a process of transformation from prior to present state. Where such syntax occurs, the building can be read as the record of its own conceptualization as well as of its assembly. This is, perhaps, a fundamental distinction to be made between

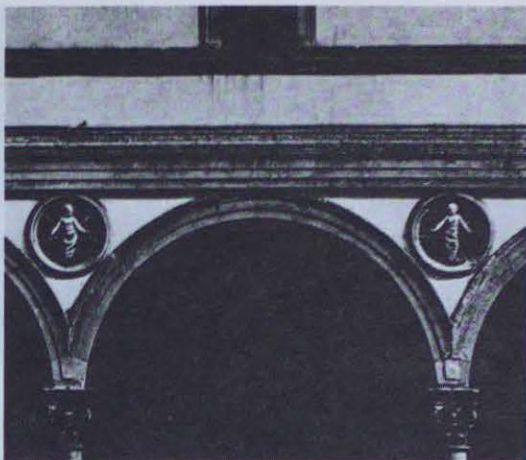


Figure 2.

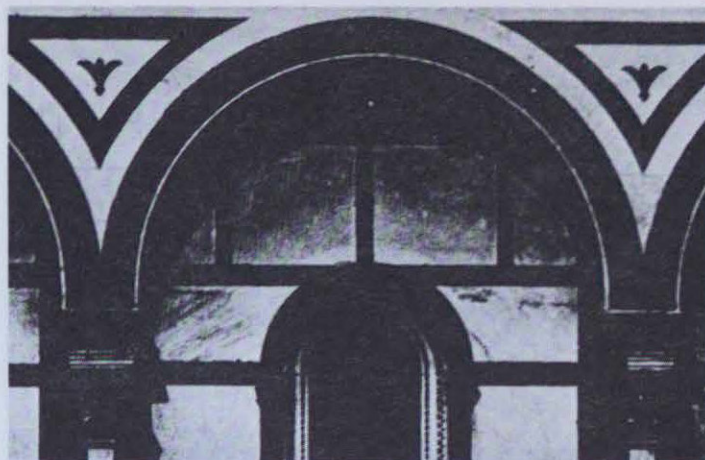


Figure 4.

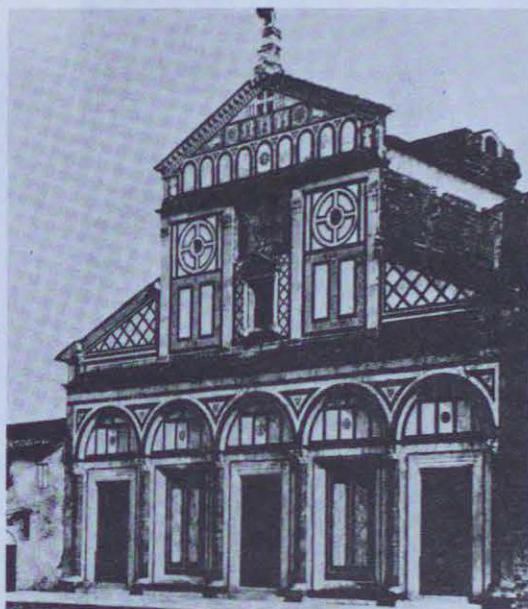


Figure 3.



Figure 5.

Renaissance architecture and that involving a simpler, associational emulation of iconic precedents.

Alberti, as Wittkower notes, declares that the column is "*the principal ornament in all architecture*". He goes on to declare, however, that the column is actually a piece of wall between two discontinuities. Wittkower notes the contradiction inherent in this: which is primary, column or wall? The transformational syntax of the Renaissance involves these ambiguities in the relationship of the column and associated vocabulary to the undifferentiated mass of the wall. In a period when the technique of building is more often the loadbearing masonry wall than the Gothic rib¹, is architecture to be dealt with, conceptually, as composed of massive *walls*, or in terms of a *frame*? Or can the two be combined? If so, are the column and its associated vocabulary deployed in such a way as to imply that the fabric of the building is constituted by an unqualified infill of wall-substance between the solid, primary and three-dimensional frame members (so that the building is considered as a three-dimensional construct at the conceptual level as well as at the perceptual — there being thus implied a reverse reference from the latter to the former)? Or, alternatively, does the Classical vocabulary simply serve firstly as a metaphorical reference to Rome (as would be true in the previous case), but secondly, on the wall rather as a *notation*, in two dimensions, of the wall's conceptual skeleton — such that the building is conceived of as an assembly of planes or elevations amongst which spatial or volumetric effects are somewhat residual, in conceptual terms?

The above do not exhaust the possibilities, of course. The building as eroded solid, or the building as delimited, sculpturally modelled space (in which the detail of the envelope is somewhat secondary to the shape of the volume it delimits) are conceptual notions for which "mural syntax" is less an issue. It is to be assumed, then, that neither is a primary reading at this stage.

(Whether one could construct a similar argument for the *Renaissanceness* of Renaissance architecture on the study of *spatial* syntax, and whether Classical mural vocabulary can be seen as rigorously related to spatial vocabulary as a syntactical notation of the latter, are topics for other papers. Suffice it to note here that the Classical *vocabulary* under discussion exhibits relatively high degrees of precision, differentiation, hierarchy, and sequentiality, qualities presumably necessary to support the linguistic analogy as it applies to the wall. Such a study of space would require a more rigorous statement of the analogy than is here attempted).

As Damisch notes in *The Column and the Wall*, Alberti, taking the column as primary in this case, states elsewhere in the *Ten Books* that an arch is, conceptually, a curved beam, and a beam a horizontal column. Such an attitude is suggested in Brunelleschi's *Spedale degli Innocenti* (Figs. 1, 2) of 1419-24, a quarter of a century before the appearance of *De re aedificatoria*. The moulding that faces the arches is of a distinct kind: a tripartite low relief identifiable as a Classical *fascia* (Fig.

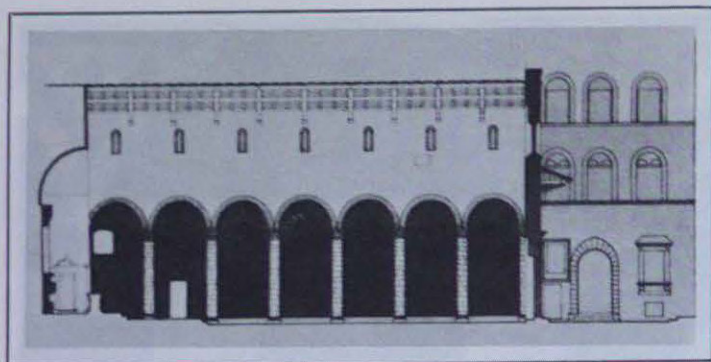


Figure 6.



Figure 8.

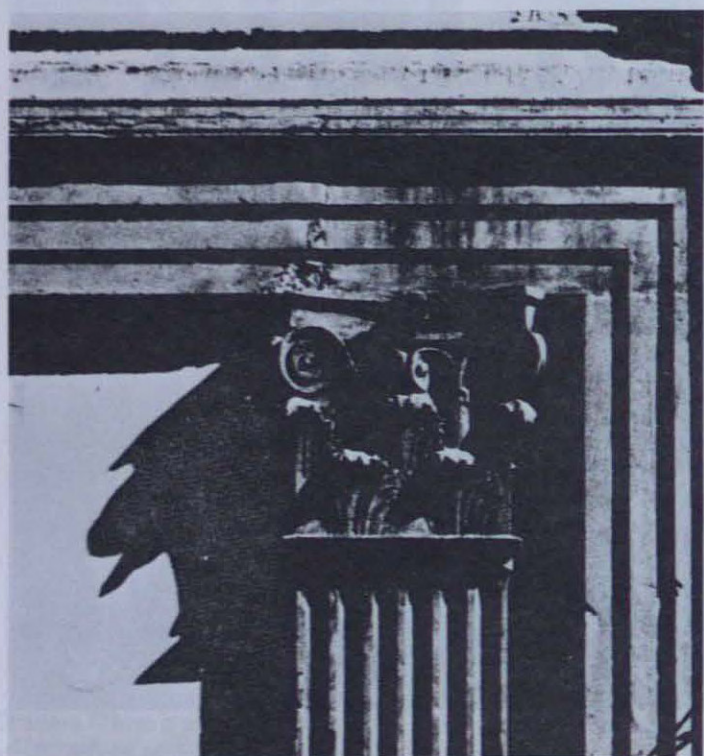


Figure 7.

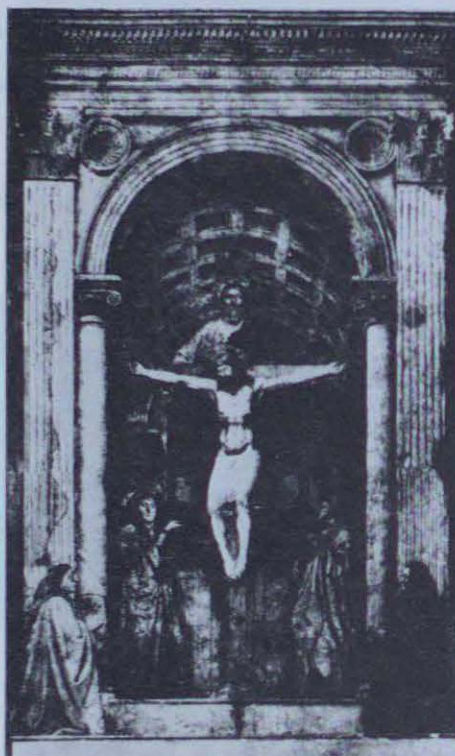


Figure 9.

2). Close examination of the arcades of *San Miniato al Monte*, c. 1090 (Fig. 3) and the Romanesque Baptistry (Figs. 4, 5), both in Florence, reveals the same moulding. There is, however, a difference to be noted which, for the purposes of this paper, is to be considered crucial. On both the earlier buildings, each arch is a discrete element, in only tangential contact with the one adjacent. At the *Spedale*, on the other hand, the arches *merge* over the column, their continuity reinforced by the continuity of the fascia moulding. At either end of the arcade, this moulding travels horizontally between two columns. The arches are, in fact, a transformed entablature. *Arcuation is a transformation from trabeation*; the latter is thus asserted as a primary state. (The shallow *dosserets* that occur on top of the capitals are of *cyma recta* profile, and represent only part of a full vertical entablature sequence). This articulation is given further emphasis by the assertion of *frame as figure*: frontality is only asserted in this facade by the presence of symmetrical end motifs and the small shield above the central bay.

Murray identifies the nave arcade of the 10th- or 11th- century church of *SS. Apostoli* in Florence as a possible model for the Foundling Hospital facade.² However, in *SS. Apostoli* too, the nave arches remain discrete (Fig. 6). Murray also proposes the Baptistry as another model, noting the recurrence on the Foundling Hospital of an entablature (the upper one) *bent down* at the ends of a colonnade (Fig. 7), as occurs on the attic storey or the Baptistry's facade (Fig. 8).

These two features — an entablature transformed into an arcade, and another transformed, in effect, back into pilasters or columns — can be understood as differently conceived from their pseudo-Roman precedents. The question at hand is at what point the Classical elements are seen as having some inherent immutability, some *essence*, or, better, some *canonical prime state*, such that transformations of them can be perceived as such, as distinct from *assembled* forms. The large second-storey arches of the Baptistry, considered relative to the Foundling Hospital, exemplify this notion of assembly particularly clearly. The Classical elements of the Baptistry facade or that of *San Miniato al Monte* can be understood as both assembled from memory and assembled as decoration, as a patterning or decomposition: they constitute a craftsman's activation or animation of a plane with remembered vocabulary, rather than the notation of a facade according to a preconceived overall order, in which case one would seek an anti-redundancy of notation. In Brunelleschi's work, a reductivism is pursued relative to the pseudo-Roman precedents (hence the overlap of the *Spedale* arches). Because of this, there is a clearer hierarchy of elements the striping of the Romanesque precedents tends to undermine the Classical linear elements as elements: they tend to become three-dimensional versions of the stripes, or vice-versa.

The wall of the Foundling Hospital is thus organized by elements derived from a prime element and qualified by their being vertical, horizontal or curved — a kind of inflected frame that

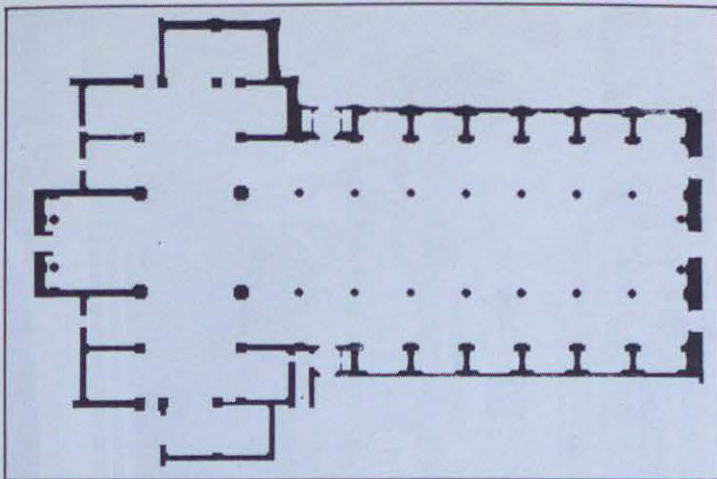


Figure 10.



Figure 11.

includes arches — and is filled in between by a white membrane of wall material, which is conceptually subordinate.

These qualified elements still indicate their own transformations, which might be represented (albeit simplistically): column — entablature — arch — entablature — column. What is implied here is a *concinnitas* in the general Albertian sense, but based not so much in proportion (which it still obtains) as in the transformational relations between elements. The iconic power of this frame is revealed to the fullest in Masaccio's *Trinity* of c. 1425 (Fig. 9), in which Brunelleschi is believed by some to have had a hand. Here as in the Spedale, the columns are seen to be partly *behind* the larger pilasters. A perspective layering is implied that, when deployed in the facade, constitutes another variety of transformation, one that has implications for Brunelleschi's later work as well.

But Alberti qualifies the sequential relationship between arch and column by claiming that the two could only be combined with the intermediary of an entablature. The facade of the *Spedale degli Innocenti* is, in these terms, problematically ambiguous. Brunelleschi anticipates Alberti's concern by changing his syntax in *San Lorenzo* (Figs. 10,11) of 1419 and later, where a *dosseret* articulated as a fragment of entablature (Fig. 12) sits between arch-spring and capital. This entablature, complete only in the mind, corresponds in section to that running across the chapel arches. The *dosserets* are, significantly, four-sided, implying a grid of intersecting

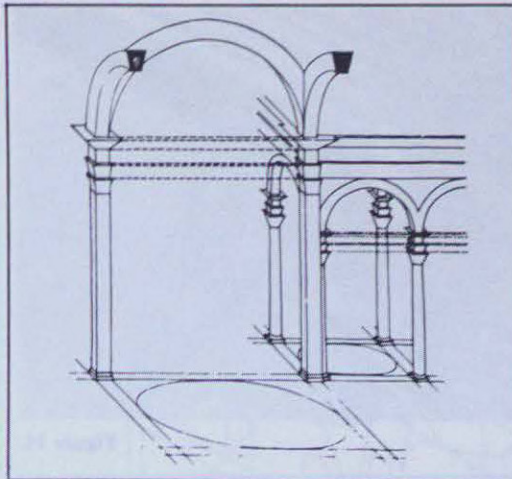


Figure 12.



Figure 13.

entablatures suspended in mid-air. Over the columns, two (or perhaps four) entablatures occupy the same position in space. The markings of the building refer to a prior state of conceptually complete elements which have been abbreviated, or better, elided.

In the corners of the side chapels, there occurs a curious event: a squared-off column, or pillar, apparently buried almost completely within the wall (Figs. 13,14). This occurs again in the *Sagrestia Vecchia* of *San Lorenzo*, also by Brunelleschi, of 1421-8 (Figs. 15-18). The oddness, to the modern eye, of the motif is intensified by its location in the unique apse space and by the different articulation of the other corners. In these remaining corners, it appears at first as if a pilaster has been folded forwards (Fig. 17) — as if a continuous strip of internal elevation, divided at intervals by pilasters, has been folded so as to enclose a space. The implied reading of *folding* would itself imply a general conceptual *planarity*, with space and mass residual.

This is a reading that can be made of Michelozzo's courtyard in the *Palazzo Medici*, 1444-c. 1464 (Fig. 19). Here, in effect, there is a simple transformation of a (presumably iconic by this time) precedent by folding the facade of the *Spedale degli Innocenti* from two into three dimensions (disregarding for the moment the lower-order three-dimensionality of the individual columns). Murray sees this move as causing difficulty at the corners, the famous *corner problem* which is to haunt the spatial type and

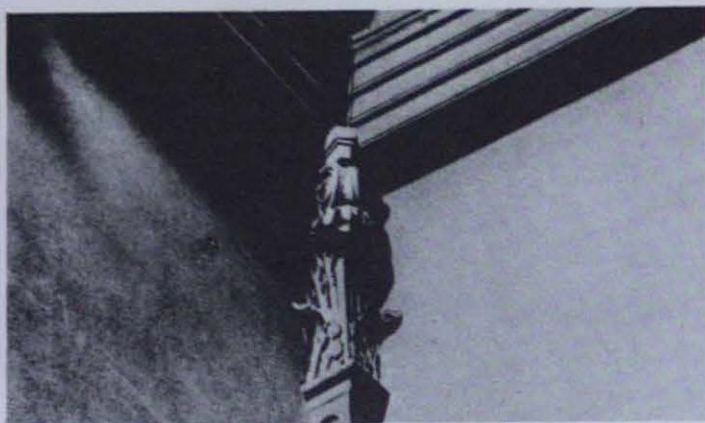


Figure 14.

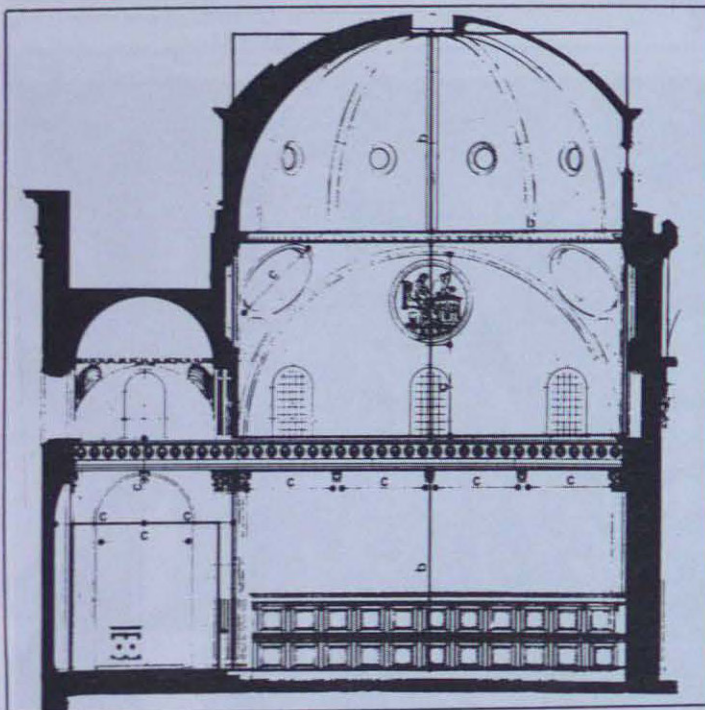


Figure 15.

the Classical corner in general for centuries to come. In Michelozzo's building, the notion of transformation raises the question of whether the *original* continuous elevation is to be understood as primary, or whether the resulting *internal* elevations take precedence, or whether (Murray's position) the *perspective*⁴ view is the aspect demanding resolution.

At the Old Sacristy, however, the *buried* pillars contradict the reading of a simple folded elevation. Battisti's diagram (Fig. 20) suggests a more plausible reading. The pilaster is evidence of a pillar conceived to be *within the wall*, in effect as part of a post-and-beam structure or frame filled in with white wall-substance. These pillars, though, like the nave entablatures in the church proper, are only *conceptually* present and complete, for at the corners of the larger space they intersect like phantoms. The apse itself is an *aedicula* formed by four of these phantom pillars. The main space, though, is marked to imply the assembly of four conceptually complete *wall-units* (endowed with a conceptual thickness) whose ends are denoted by pillars. The reason for articulating these spaces differently (considering that their sections are analogous) is not clear; there does not appear to be any systematic relationship with the modular plan grid of the main church (on which the buried pillar first mentioned presumably reads as a simple frame member). It would be desirable to undertake a further analysis of the grid in order to determine whether it is a simple grid on the column and pier centres, or a tartan grid based on the column diameter (as the floor grid suggests). Within the Sacristy itself, though, the



Figure 17.

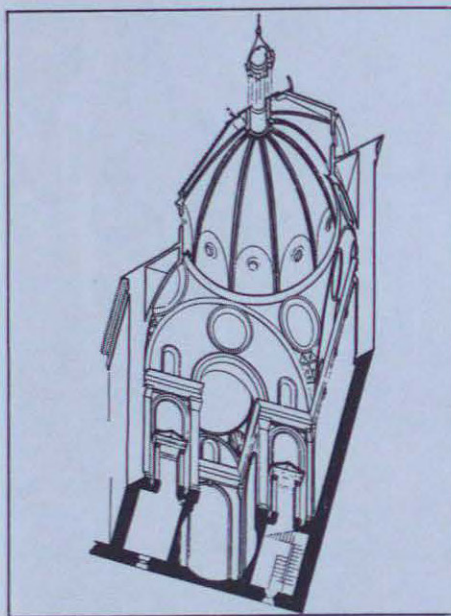


Figure 16.

syntax suggests a metaphorical reading of coalescence and simplification towards a focus. Thus each of the corner pillars of the apse can be read as two pillars occupying the same space. (Benevolo notes the dimensional interdependences distinguishing Renaissance arcuation from Gothic⁵; a close analysis of the dimensional relationship in section of the large and small dome might well reveal that the differing corner treatments are initially generated from concerns with dimensional *concinntas* in the vertical direction. However, this does not affect our reading of the conceptual relationships of elements articulated in this way).

To put it slightly differently: the visual incompleteness of the pilasters implies that the interior of the Sacristy is in effect *plan-generated* (as Benevolo's analyses confirm) rather than being conceived from a point of view that stresses the completeness of an *internal elevation*. Nevertheless, these *piers* have a conceptual immateriality that allows them to occupy the same space at the same time; hence, the column cannot be said to have primacy as an object. Further, though it has more integrity (because of this conceptual, though spectral, completeness) than might at first meet the eye, it is subordinate to the wall insofar as it acts as a notation of the *wall unit*, somewhat like bar divisions in music. That is, the wall is not an infinitely extensible, undifferentiated substance, but something that comes in distinct units; and these units are, further, qualified or notated by the vocabulary of ornament. The simple frame as figure no longer obtains, because greater *representation* of the frame in the main internal

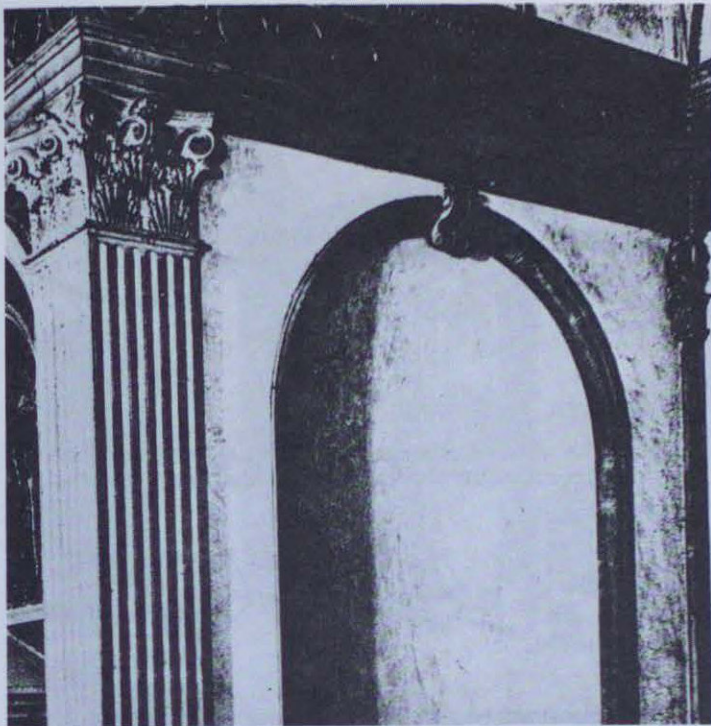


Figure 18.



Figure 19.

corners is required; but we are not yet at the stage of *pure* representation of the frame. Benevolo's dimensional analysis of the Sacristy leads him to an interpretation in terms of planes which does not in essence contradict our hypothesis, but which is less satisfying in relation to the insistent materiality of the nave orders of the main church: "... the architectural orders were not thought of as finishing touches for spaces defined beforehand, but as primary elements, from which the positions of the masonry planes against which they rested were deduced"¹⁶ (author's emphasis).

The foregoing discussion gives some clue as to the dimensionality of Brunelleschi's conception. Already the main body of *San Lorenzo* has begun to appear as a three-dimensional lattice, some of whose members have been dissolved away, as it were, to form spaces larger than the basic spatial unit; in the Old Sacristy, the assembly and transformation of wall-units again indicates a three-dimensional operation. Specifically, the implicit transformations described by the corner articulations tend to undermine or suppress the possibility of regarding each wall as independent and static. (Further, the implied overlap, in three dimensions, of the corner piers, on which implication the reading of the transformation depends, can perhaps be understood as proposing a fourth dimension of conceptualization). Certain anomalous details in the transept of *San Lorenzo* itself will sustain a similar interpretation, though not without the reservations with regard to canonical proportions that Benevolo records⁷. However, in general,

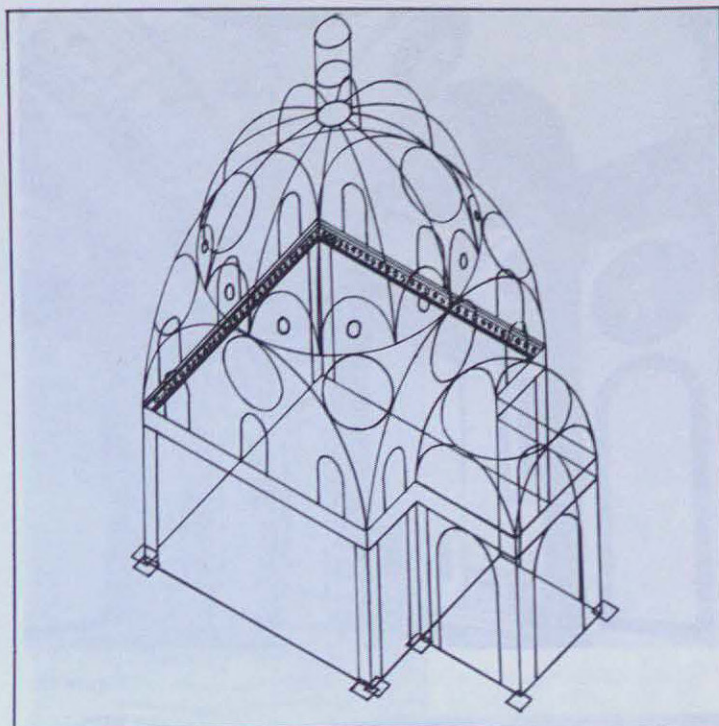


Figure 20.

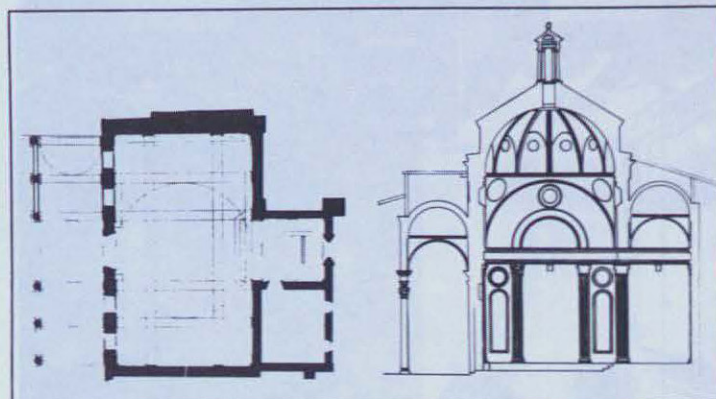


Figure 21.

"Brunelleschi was concerned with studying the consequences of a rigorous method, even if it meant leaving the formal dissonances that resulted from it in evidence, rather than composing the single details in an enforced (purely visual) harmony"¹⁸.

The *Capella Pazzi* at *Santa Croce*, of c. 1430 (Figs. 21-23), appears at first to be virtually identical in typological terms to the *Sagrestia Vecchia*. The important difference is that the latter consists of two centralized (because regular in plan and domed) spaces and is directional only by virtue of their conjunction. The corner syntax of the larger space can be taken as reflecting this centrality: the two pilasters in each corner are revealed to an equal extent. But the *Capella Pazzi* is clearly *frontal*. Whereas the Old Sacristy is entered at a corner in deference to the larger order of the main church, the *Capella Pazzi* has an exterior facade through which the building is entered, and two barrel vaults extend the main space (from its central dome) parallel to this facade. The corner syntax differs from that of the *Sagrestia Vecchia* in marking the orientation of the preferred frontal plane: the phantom pillars in the internal wall parallel to the facade are exposed more than those adjacent in the side walls (Figs. 24, 25). Indeed, the long interior wall can be read (especially in the plan usually published, as in Murray - Fig. 21) as a *projection* of the exterior facade; or alternatively, vice versa. This relationship too can be read in a transformational sense. Further analysis of the interior of the Chapel would again depend on a close dimensional analysis of the actual building and of the site constraints (cf. Benevolo, pp. 66-7).

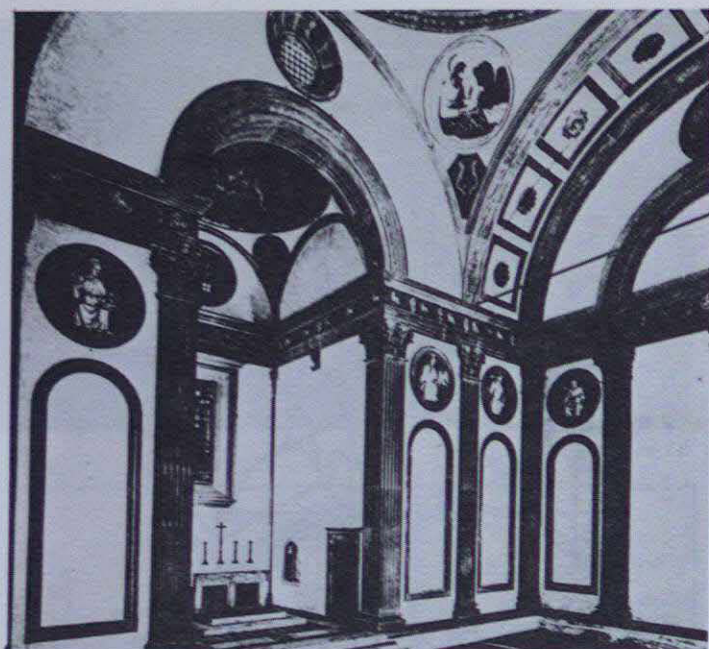


Figure 22.

PARASTA ANGOLARE A LATI DISUGUALI

(CAPPELLA PAZZI)



PARASTA FILIFORME

(SACRESTIA VECCHIA, SCARSELLA-CAPPELLA PAZZI, SCARSELLA S. LORENZO, CAPPELLE TRANSETTO-ROTONDA ANGELI, CAPPELLE)



Figure 24.

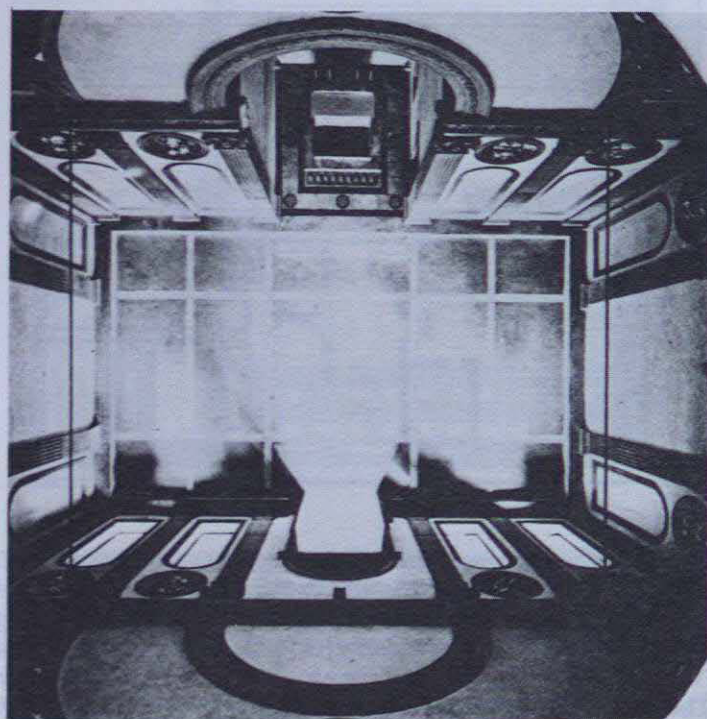


Figure 25.

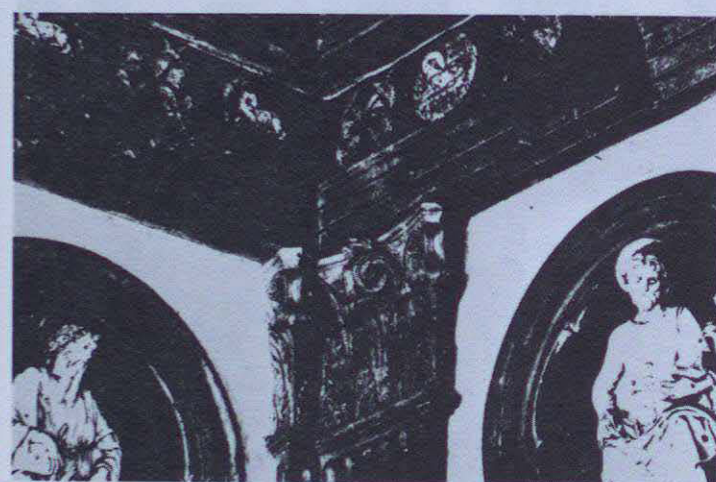


Figure 25.

elevations: they exist beside each other, but in a rather circumstantial manner, comparatively speaking, not participating in any immediately discernible mutual transformation.

Association of walls versus forming of spatial volumes is a distinction characteristically applied to the Renaissance and Baroque periods. Even in *Santo Spirito* (1434 and later), usually considered somewhat proto-Baroque, where Brunelleschi's concern for volumes causes the back walls of the chapels at *San Lorenzo* in effect now to billow out into the public realm (denying, in the original scheme, the facade even on the entrance front), the entablature never departs from the plane to follow the plan curve of the chapel wall (as it would in a Baroque work). The interior angles of the internal colonnade and of the external chapel windows at *Santo Spirito* (Figs. 27,28) imply an immateriality of conceptually complete elements similar to that observed at *San Lorenzo*, but one can speculate that Brunelleschi resisted a final transformation of the wall into the envelope of a conceptually primary spatial volume: that is, into wall as true membrane, prone to distend under volumetric pressure. Further investigation of this latter hypothesis would demand a close study of his project for *Santa Maria degli Angeli*.

(The nave arcade itself of *San Lorenzo* presents a further problem. Where the *pietra serena* arches of the Foundling Hospital consist only of a fascia and surmounting mouldings

Giuliano da Sangallo's *Santa Maria delle Carceri*, of 1485 and later (Fig. 26), is in the Brunelleschian manner but illuminates an important difference. Two complete pilasters occur in each corner, with no indication that they necessarily stand for a pillar within the wall in the same way as before. The suggested reading is one of a *complete interior elevation* in each axial direction — that is to say, the space does not result from the association of differentially material wall-units as before⁹, but rather exists as an undecorated box to which interior elevations are applied. At one level it is therefore a matter of the *autonomy of the elevation* as distinct from the *autonomy of the wall-unit* (Brunelleschi). But, overall, at *Santa Maria delle Carceri* the denotation or qualification of the wall by the Classical elements (indicating *top*, *base*, *interval*, etc.) seems here to be a surface activity that follows the forming of the raw spatial volume. To imagine a white box to which decoration in a Brunelleschian vocabulary is applied is not *necessarily* to imagine a volumetric approach to architecture, but certainly the handling of the *corner problem* does not explicitly stress the *bringing together* of the discrete

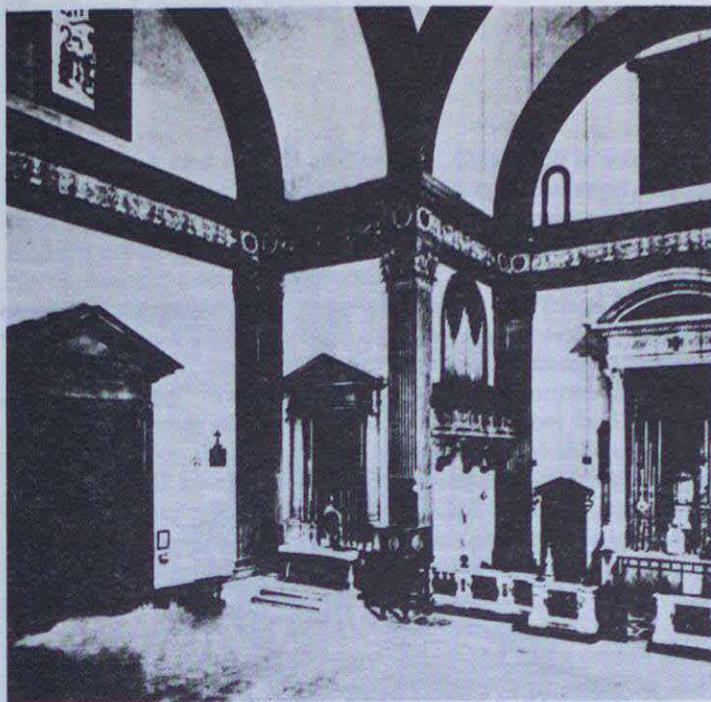


Figure 26.



Figure 27.

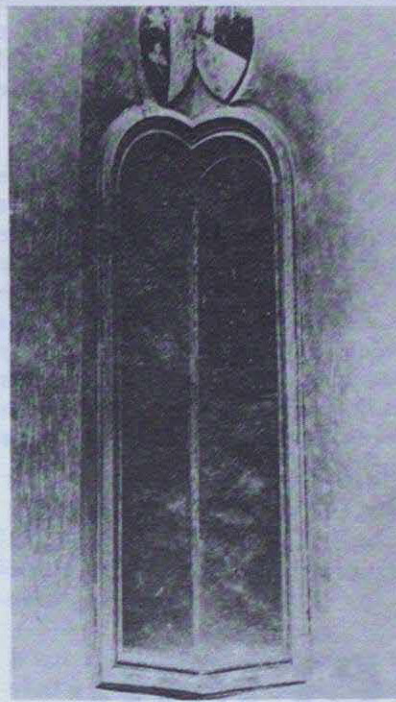


Figure 28.

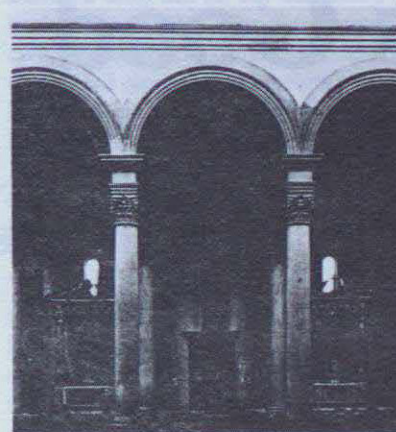


Figure 29.

(Fig. 2), those of *Santo Spirito* include also a blank band that can be interpreted as a frieze (Fig. 29). At the Baptistry (Fig. 4), the nature of the partially defined white semi-circle above the actual arch is ambiguous: figure or ground? At *Santo Spirito*, it appears that the black band is indeed an orthodox frieze, newly introduced but unambiguously presented, and thus sustaining the reading of *intersection*.)

Though the transformations here proposed tend to put into question Wittkower's characterization of Renaissance architecture as *static* where Baroque is *dynamic*¹⁰, they do not, on the other hand, involve the three devices proposed by Wittkower (in the same essay) as characteristic of Mannerist architecture. These devices are *duality of function*, *inversion* and *permutation*. Permutation involves ambiguous readings of what is base wall surface and what is applied layer, a condition which we do not observe as being potential in a major monument until perhaps Alberti's *San Andrea* in Mantua. The other two devices involve ambiguities in the readings of *complete units* of wall articulation. Inversion works vertically, and depends (at least in Wittkower's presentation of the device) largely on the introduction, post-Brunelleschi, of the *pediment* to complete the bay as figure. Duality of function works horizontally. Both devices work not in the space of the frame or lattice, but rather in the shallow, layered space of the facade. In both cases, however, the notion of the complete unit is fundamental, and can be understood as derived from Brunelleschi's work. It is

Brunelleschi's research into the potential *canonical conceptual order* of architecture which are essential to, but different from, the manipulations that constitute the formal concerns of the mid-sixteenth century.

This paper was originally written for a course on Italian Renaissance architecture taught by Larry Richards, whose enthusiasm and encouragement I wish to acknowledge here.

Notes

1. R. Wittkower, *Idea and Image: Studies in the Italian Renaissance*, (London: Thames and Hudson, 1978), p. 66.
2. P. Murray, *The Architecture of the Italian Renaissance*, (New York: Schocken, 1963), p. 32.
3. L. Benevolo, *The Architecture of the Renaissance*, Vol. 1, (London: Routledge and Kegan Paul, 1978), p. 57.
4. Presumably two point. The history of perspective is of course another topic entirely, but one could speculate that conceptual readings dependent upon two point perspective of work before Piranesi's *Vedute* are perhaps premature and misleading.
5. Benevolo, p. 53.
6. *Ibid.*, p. 57.
7. *Ibid.*, p. 65.
8. *Ibid.*, p. 65.
9. Nor, for that matter, from the infilling of a simple frame. For this one would expect a 'buried pier' in the internal angles.
10. Wittkower, p. 66.