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The real and the ideal in Roman architecture

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> Greek soil at the time of the Emperors by the low and deep Italo-Roman stage.[36]

Bieber's conclusions are that the rules set down by Vitruvius, although they coincide to a large degree with existing theatres, are not operative for theatres built after his time. The Hellenistic theatre proved inadequate and to a degree impractical in the light of Roman needs, and a Roman form of theatre developed which could no longer comply with the geometrically derived proportions of the Greek theatre. Vitruvius himself clearly anticipates variations from his standard types which will arise through considerations of utility. He writes:

> It is not possible, however, that in all theatres these rules of symmetry should answer all conditions and purposes, but the architect ought to consider to what extent he must follow the principle of symmetry, and to what extent it may be modified to suit the nature of the site or the size of the work. There are, of course, some things which, for utility's sake, must be made of the same size in a small theatre, and a large one: such as the steps, curved cross-aisles, their parapets, the passages, stairways, stages, tribunals, and any other things that make it necessary to give up symmetry so as not to interfe with utility.[37]

Vitruvius thus states clearly the conflict between formalism and utility, and gives precedence to the practical considerations.

Madame Lepic's investigations into the mathematical basis of the theatres bears out these conclusions. Her findings indicate that "there is a fairly close relationship determined by figures and the geometrical relationship on which Greek and Roman theatres are based in Vitruvius' description."[38] Interesting comparative figures for Greek and Rome set theoretical ratios

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36. Ibid., p.256.

37. Vitruvius, op. cit., V:6:7.

38. Lepic, op.cit.

for depth of stage: diameter of orchestra against actual measurements. These ratios are as follows:

Greece Theoretical: 0.1465 Actual: 0.144 (thirteen theatres measured)

Rome Theoretical: 0.25 Actual: 0.16 → 0.4

These figures indicate a degree of standardized form in the Hellenic theatre, and lack of stabilization of similar ratios in the Roman. Height of stage in relation to distance from the prohedria appear to be directly related; and the height of the successive stories of the Scaenae Frons seems to indicate a geometric progression, unusual in Rome.[39]

The final conclusion, which confirms mathematically what Professor Bieber proves geometrically, and what Vitruvius affirms, is that "the modules for all component parts of the ancient theatre was the diameter of the orchestra."[40]

Certain general comments must be made upon the results of these investigations. It would appear that Vitruvius 'laws were formulated post facto, on the basis of average existing conditions: This codification of experience, and its formulation into a code of practice is characteristic of the Roman approach. It would appear, also, that in Greek theatres there existed a degree of standardization of parts, which enabled a system of proportion to relate part to part, and part to whole, in ratios which remain remarkably stable. Finally, it would appear that practical desiderata led the Romans

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39. However, Vitruvius himself sets a basis for this geometric progression of the scaenae frons. "Let the columns above this parapet be one fourth less in height than the columns below, and the architraves and ornaments of these columns one fifth of their height. If the "scaenae" is to have three stories, let the uppermost parapet be half the height of the intermediate one, the columns at the top one fourth less high than the intermediate, and the architraves and coronae of these columns one fifth of their height as before."
Vitruvius, op. cit., V:6:6

40. Bieber, loc. cit.

to alter these established Greek proportions, in order to achieve a better working solution; and that the relative proportions were fixed from plan to plan, in order to meet the specific problems of individual projects, in an empiric rather than a preconceived or theoretical fashion.

When we turn to the second manifestation of proportional relationship, we see that the Roman theory is basically a modular theory, where standardized proportional relationships in the parts leads directly to parts which are, in the aesthetic sense, standardized components of the whole. We have seen that the fundamental modular unit is the lower diameter of the column, and that all dimensions of columnar architecture derive from this unit.[41] It may be profitable, in order to initiate this discussion, to tabulate the recommendations of Vitruvius, and compare them to actual examples. Let us, for a start, look at Morgan's comparative illustrations.[42]

In table 1 the height of column is compared with the inter-columniation in terms of the diameter of the column at its base, expressed in terms of the unit 'D'.

Table 1.

Vitruvian Example			Actual Example cited by Morgan		
Style	Inter-columniation	Height	Building	Inter-columniation	Height
Picnostyle	1.5D	10D	Smintheum	1.52D	10D
Systyle	2D	9.5D	Temple of Isis	2.165D	9.25D
Diastyle	3D	8.5D	Temple of Apollo at Pnigalia	2.7D	9D
Aerostyle	4D	8D	Ionic Temple at Ephesus	3.932D	8D
Eustyle	2.25D	9.5D	Ideal		

41. As the term 'Module' in later usage, as in Vignola and Palladio, refers to the radius and not the diameter, we shall keep to the Vitruvian term 'Diameter' to express the unit of measure.

42. Vitruvius, op. cit., p.83.

Two points emerge from this table. First, even when looking for correspondences, Morgan can only find approximations. Second, the examples cited are in the main obscure. Once again, we are compelled, in order to make valid general deductions, to expand the investigation.

Table 2 is the result of the examination of the reconstructions or measured drawings of several of the monuments.[43] The results must be regarded as an approximation only, in that information varies from reference to reference; and the only reliable method of investigation, namely the measurement of the monuments themselves, is not now available to the present writer.[44] Nevertheless, bearing in mind the limitations of the method, the results are still considered accurate enough to enable general conclusions to be drawn.

(For Table 2 see the following page).

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43. The three chief sources of information are A. Stratton, The Orders of Architecture, London, Batsford, Ltd., 1931; George Seure, Monuments Antiques, vol. 2., Paris, Ch. Massim, and Brown, op. cit. Banister Fletcher, op. cit., is useful for dimensions which supplement the other, more detailed, studies.

44. The writer, who had carried out such measurements in Rome, suffered an irreparable loss when his drawings, notes and photographs were stolen. The reliance upon literary sources and personal memories has necessarily only inadequately compensated for this misfortune.

Table 2.

Example	Order	Intercolumniation	Height of Column	Height of Entablature	Height of Pediment	Source	Manner of Use	Date
Tabularium	Doric	3.5	6.5	1.5		D	Engaged colmn applied to piers of arcade	78 B.C.
do.	Ionic	4.0	7	1.75		D		
Theatre of Marcellus	Doric	4	8	2		A		13 B.C.
do.	Ionic	5	8.5	2.25		A		
Colosseum	Doric	5.25	8	2.5		D		75-82
do.	Ionic	6	8.5	2.0		D		
do.	Corinth.	6	9	2.0		D		
Temple of Fortuna Virilis	Ionic	2	8.5	2	2.25	B.C.	Free-standing Colonnade	40 B.C.
Maison Carree	Corinth.	2	10.5	2	3.25	A		16 B.C.
Temple of Mars Ultor	Corinth.	1.5	10	2	4.5	D		2 B.C.
Temple of Castor and Pollux	Corinth.	1.5	10.5	2.75	-	B.C.		6
Pantheon (portico)	Corinth.	2		2	5	D		120
Pantheon (interior)	Corinth.	2	9	2	-	D		
Temple of Venus and Rome	Corinth.	1.5	9.5	2	5	D		135
Temple of Antonine and Faustina	Corinth.	1.5	9.5	2	3.25	D		141
Colosseum	Pilaster	7	10	2		D	Pilasters, and engaged or whole columns, articulating wall	?
Arch of Titus	Comp:	3.25	9	2.25		C		82
Pantheon (interior: attic)	Pilaster	4	10	1.5		D		120
Temple of Venus and Rome (interior)	Corinth.	4.5	8.5	1.75		D		135
Arch of Septimus Severus	Comp.	5	9.75	2.25		A.C.		200

NOTES: 1. Unit of measurement is diameter of column at base, given to nearest ¼D.

2. Intercolumniation is here taken to mean clear space between columns.

3. Sources: A: Stratton; B.: Brown; C: Fletcher; D: Saura

It would appear that some examples are very close to Vitruvian dictates: the Doric order of the Theatre of Marcellus is aerostyle, the Pantheon is practically systyle, the Temple of Mars Ultor picnostyle. The remaining examples, while they deviate from the standards of Vitruvius, yet on the whole keep within reasonable limits. They generally conform to the principle that the smaller the intercolumniation, the greater the height of column. The relationship of entablature to column diameter is remarkably constant. Ionic columns are seen to be more slender than Doric, and Corinthian slightly more elegant than Ionic. Free-standing colonnades approximate to the picnostyle and systyle, orders applied to arcades and wall surfaces are generally aerostyle. No example examined shows the ideal proportions of eustyle.

That there is general agreement on the kind of proportions suitable to the various orders in relation to particular applications appears obvious. The range of variations, however, would appear to preclude a rigid compliance with a precise code of proportions such as we find in Vitruvius. It would seem a fair conclusion that the rule of the Order was more inflexible in theory than in practice, and that within the general dictates of a standard code adjustments could take place to suit special circumstances.

When we examine the individual examples, an interesting point emerges. Each example, even if it fails to comply with an overall system, seems to have its own inherent proportional logic. The fundamental relationship of pedestal to column to entablature to pediment is established in a reasonably simple fashion. The logic of the modular system is maintained in each example, and although the exact ratios vary, the system

itself appears to be applicable on a widely-generalized scale. However, when we look at the overall ratios so generated, we see that they lack rationality, for while they make sense in terms of the module, they do not make sense in terms of the whole.

Let us as an example look at the proportions of the Temple of Mars Ultor. We find that there is a simple relationship between the diameter as unit, and the other elements of the facade. However, when we express the proportions of these elements, not in terms of a basic unit, but as ratios of the one against the other, a rather chaotic picture emerges. The following ratios expressed whole numbers are generated:

Diameter to intercolumniation	2:3
height of column	1:10
entablature	1:2
pediment	1:4
Intercolumniation to height of column	3:20
entablature	3:4
pediment	3:8
Height of column to entablature	5:1
pediment	5:2
Entablature to pediment	1:2

No coherent propertional system can be deduced from these ratios. They bear out Scholfield's contention, which we outlined in the previous chapter, that Roman proportions, in that they deal with multiples rather than submultiples, are concerned more with relationships of part to part, than of part to whole. Modular coordination in itself does not necessarily lead to a unifying system of proportion. Unless it is governed by ratios relating to the whole, it remains an aggregation of standardized, but unintegrated, units.

In this case, we get no assistance from the

proportional ratios generated by the facade as a whole. The ratio of column height to length of colonnade is 20:37; if the entablature is added, this ratio becomes 24:37. However, if we take the overall height from bottom of steps to apex of pediment, and compare it to the total length of colonnade, we do get the positive ratio of 1:1. Unfortunately, however, this is the one ratio which in practice cannot be appreciated, for the bold projection of the steps puts the base on a different vertical plane to that of the pediment. Ogden, in discussing Geometrical Design, comes to a conclusion which is fundamental to our understanding of the inherent difficulties of the Roman proportional system. He writes:

> When a part is accepted as a unit, and standardized as one among many, the arithmetical procedure of counting is indicated. Counting leads to addition, subtraction, multiplication, and division. When the unit of mensuration, which to begin with is a natural whole, becomes an arbitrary standard of length, height, or volume, it loses its perceptual significance; for we no longer see it.[45]

The desire to achieve a happy proportional relationship is as universal as it is essential to fine architecture. It becomes pernicious only when it hardens into a inviolate system whose arbitrary ratios conflict seriously with basic functional requirements: that is, when the architect, in making the compromises inherent in the design process, according to his own assessment of relative values, assigns the formal criteria to the upper brackets of the value-hierarchy, and delegates practical values to the lower. The symptoms of such an attitude may be seen in Roman architecture - the too-high balustrade or cill, the underlit room - and indeed, in much architecture since Roman times.

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45. Ogden, op. cit., p.178.

DECORATION

In examining the practical attitude, we noted the tendency for a strictly practical approach to result in a utilitarian aesthetic of a somewhat severe nature. Although Roman examples of this aesthetic may be cited, notably at Ostia, yet it must be emphasized that such austerity was only rarely come across. The decorative instinct intervenes, and plainness and simplicity are replaced by sumptuous richness, as the predominent Roman architectural expression. There is an evident horror vacui in the Roman attitude, which generates an abundance of superficial decoration applied to the surfaces of basic architectural forms.

In that this surface decoration is fundamentally of an inorganic nature, it must be regarded as an efflorescence of the formalist attitude. By inorganic is meant an ornamentation which is extrinsic, in that it does not arise from the techniques of building, and in particular the structural system; the nature of the building materials used; or the necessity to enhance the essential form to be decorated by underlining its inherent expressiveness - the flatness of a wall, the supporting function of a column.

The function performed by this decoration is the satisfaction of a characteristic Roman sensuousness which takes delight in formalistic patterning and a rich plasticity of surface. This visual richness, moreover, has symbolic connotations, in that it testifies to material opulence and a grandiose spirit. Thus Roman decoration, although it is not organically related to Roman building, nevertheless reinforces the symbolic intention of Roman architecture. This application of decoration to Roman building may be considered under two headings: the relationship of art to architecture;

and the derivation of ornament from structural forms.

Let us first consider the relationship of Roman art and architecture. Eugenie Strong writes: "Practically all known Roman painting is mural; this confers upon it a very special character, for being intended as wall decoration its primary function is architectural rather than pictorial."[46] Maiuri also stresses this fundamental relationship of art to architecture, writing:

> All Pompeian painting was conditioned by its function of decorating the walls of rooms in dwelling-houses or public buildings. Thus its value derives from its acceptance of this function and can be appraised in terms of the artist's greater or lesser success in adjusting his work to the structure, the area, the character and the lighting of the place he was called on to decorate.[47]

Those criteria for the evaluation of Roman painting are fundamental to our problem: however, they must be looked at from a somewhat different viewpoint. If this painting is to constitute an organic form of decoration, it must not only adapt itself to the discipline of the architectural framework, but it must creatively and positively reinforce the architectural intention as expressed in the building.

Most authorities seem to imply that the equation between painting and architecture was, to a degree, resolved.[48] The art historian's interest,

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46. E. Strong, Art in Ancient Rome, London, William, Heinemann, 1929, II:1.

47. A. Maiuri, Roman Painting, trans. by Stuart Gilbert, Geneva, Skira, 1953, p.37.

48. Strong, loc. cit., writes that "subjects, patterns, colour are all subordinated to the divisions of the wall space...." Maiuri, op. cit., p.50, offers more limited approval when he comments: "In the essentially decorative compositions the picture was treated as subsidiary to the general layout of the wall."

however, lies patently in the painting, and not in the effect of the painting upon the architecture. It is difficult to concur with the opinion that the effect upon the architecture was salutary. It is only in the first stage of Pompeian wall-decoration that a reasonable degree of integration is attained. This is the style which Maiuri regards as essentially decorative: and his history of Roman painting traces an evolution from "purely decorative painting to spatial (i.e. three-dimensional) composition."[49]

The details of this progression from flat decoration to feigned three-dimensionalism will be discussed in the next chapter, when we consider the problem of Illusionism. At this stage it is necessary, however, to make the point that the greater the emphasis upon the apparent plasticity of three-dimensional form, and the greater the emphasis upon the simulation of space, the more is the inherent plane quality of the wall violated. The entire trend of wall painting towards realistic or fantastic space creations, carries with it the inevitable dissolution of the wall as such.

We have seen, as a result of structural developments in Imperial times, a parallel trend towards the breaking up of the wall. We shall later trace this trend in architecture, and show how, in for, example the theatre of Pompeii, in early Imperial times, the Scaenae frons exhibits all the characteristics of a 'baroque' dissolution of the wall surface. At this stage, we must anticipate the argument, and state as our conclusion the belief that the trend towards greater three-dimensional illusionistic

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49. Maiuri, op. cit., p.38

decoration in painting follows, rather than inspires, the theatre tradition. Maiuri bears out this contention, and, in discussing a scenographic decoration from Herculaneum, states firmly: "For this mural, like other fourth-style Pompeian paintings drew its inspiration quite literally from the theatre."[50] Maiuri sees this development as an abandonment of the more architectonic and organic forms of decoration, and is reminded of the "fantasy of the Baroque decorators."[51]

The illusionistic quality of three-dimensional painting is coupled in Roman art with another important principle, one which in turn had serious consequences in its relation to architecture.

> A new Western and Roman art has risen before our eyes. Developed in orderly succession from the traditional art practice of the Italic peoples, it introduced with illusionism into the antique a final principle which is at work to the present day.... An incessantly active imagination had allied itself to the realistic tendencies of this Western art, and out of the materials that deceptive illusionism offered had created a new kind of narrative, the continuous.[52]

Wickhoff relates this principle of continuity particularly to sculpture, to which we shall turn our attention shortly. However, the same principle is operative in the field of painting. Nowhere is this seen more vividly, or to better effect, than in Great Frieze of the Dionysiac Mysteries, in the Villa of the Mysteries, at Pompeii.[53] Here illusionist techniques of the more flamboyant sort are dispensed with, and the integrity of the wall surface is apparently maintained.

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50. Ibid., p.49.

51. Loc. cit.

52. F. Wickhoff, Roman Art, trans. by Mrs. S. Arthur Strong, London, William Heinemann, 1900, p.114.

53. There is a fine reproduction in colour in Maiuri, op. cit., p.51.

We note, however, that the logic of the picture, and the coherence of the narrative, are accorded precedence over the inherent logic of the architecture.

> Thus the ritual pageantry of the Mysteries unfolds itself as a sequence untrammelled by any plastic element, and the figures move, halt, or form in groups quite independently of any preconceived compositional design or architectural schema.[54]

The junction of two walls forms a natural caesura in the rhythm of a room. The continuity of movement in this narrative picture overrides this necessary articulation of opposing planes. The frieze is divided by black vertical bands, which, together with the figures, constitute the punctuation of the frieze, and establish its essential rhythm. No such band occurs at the corner, only the unbroken wall colour: the eye is thus swept from band to band, and bridges the angle without a sense of interruption. While the painting thus reaches what Maiuri chooses to call "a truly classical unity of time and place,"[55] yet this unity is achieved by negating the space-construction of the room itself.

Thus the principles of Illusionism and Continuity, which Wickhoff demonstrated to be the 'innermost essence' of Roman art, both lead to a form of painting which fails to meet our criteria for an organic ornamentation of building. Wickhoff shows that the other chief medium of art-decoration, namely relief-sculpture, similarly leads to a disruption of the architectural quality of the wall. Of the artist of the reliefs on the Arch of Titus he writes:

> He has worked the heads and fasces of the lictors flat on the background, and by means of the high relief of the front figures produces the illusion

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54. Ibid., pp. 51-3.

55. Loc. cit.

> of a free space intervening between the chariot with its retinue in front and the lictors behind. He makes the chariot drive obliquely out from the right hand corner to the front, and fills the corner up to the extreme edge with figures whose grouping helps to make the oblique direction of the chariot fully intelligible.[56]

This is a tour de force of illusionism, and represents a great step forward in the art of sculpture. But, we must ask, is it a step forward in the art of the decoration of architecture? In seeking an answer, compare it if you will with the Panathenaic frieze of the Parthenon, or the monumental sculpture of the Western portal of Chatres; where the forms of the sculpture heighten and support the architectural intention.

Sculpture is widely used in conjunction with Roman architecture. As in Greek architecture we find it used in friezes and pediments, but not so consistently. Pediments are often devoid of sculptural accent, and friezes are replaced by inscriptions, utilizing fine lettering for both decorative and commemorative purposes, perhaps the most fruitful Roman contribution to the art of ornamentation. Relief sculptures are found in spandrels of arches, on the wall surfaces of monumental arches, spiralling up memorial columns, on altars and sarcophagi. They constitute a profusion of rather indiscriminate decoration, lacking the discipline and control of Greek ornamentation. We see that not only in the concept of Roman sculpture, but in its very placing, sympathy with the architectural forms is lacking.

Sculpture in the round, too, is used frequently in architectural contexts. Statues replace the acroterion; lines of free-standing sculpture soften the juxtaposition of long horizontal lines against the sky, as reconstructions suggest for the porch of the Pantheon, and the Tabularium; a quadriga sur-

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56. Wickhoff, op. cit., p.103.

mounts the monumental arch; memorial columns support heroic sculpture, statues stand in the arches of the great arcades of the Colosseum; and the entablature clocks over the isolated columns of the thermae form pedestals for sculptural enrichment.

This tremendous spate of sculptural decoration transforms Roman Architecture. Surfaces are given plasticity, movement, chiaroscura, textural richness; architectural forms are broken up and their silhouettes modulated by a fringe of sculptures. Basic two dimensional and three dimensional geometric forms, and the materials out of which they are constructed, are submerged in a welter of superficial decoration. In one decorative form only does Rome make a notable contribution, and that is in the field of mosaic. There are picture mosaics of great intricacy, comparable with Roman painting: but it is in the more abstract floor patterning that the greatest advance is made in establishing a truly integrated form of architectural decoration. Talbot Hamlin[57] tells us that the simplest form of mosaic consisted of an over-all geometric pattern in two colours, other floors consisted of a central field, usually of a plain, light colour, with a decorative border. Frets, and the running scroll, in bold silhouette, were frequently used. Another type, we are told, utilized an intricate geometry of abstract patterning. These floors, with the exception of the pictorial types, emphasized the flatness of the floor plane, and exploited the intrinsic nature of the material. Pictorial mosaics such as the famous 'Alexander Mosaic' or the mosaic showing 'Street Musicians' in the house of Cicero[58] are

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57. Talbot Hamlin, "Mosaic," Encyclopaedia Britannica, 14th ed., 15:834.

58. See Maiuri op. cit., p.69 and p. 96, for coloured reproduction of these mosaics.

masterpieces of technique, but the appropriate use of the material is better realized in the broad areas of flat colour and the exploitation of the linear quality of mosaic in such examples as "Silenus and his Ass', from the House of Paquius Proculus, and the beautifully sensitive 'Turtledoves' mosaic from the House of the Forum, Pompeii.[59]

It is these qualities of surface and line which go to make the abstract geometric mosaics the more satisfactory examples of mosaic as a decorative medium. Using larger tesserae, it is possible to extend this principle of floor patterning to larger areas.

> Another type of floor treatment was the large-scale marble mosaic, opus Sectile. In this, large slabs of coloured marbles, circular or square, were used to form magnificent and simple all-over patterns, usually with an alternation in adjacent units, of square and circular forms; there was sometimes, also, an additional alternation in colour. The most famous example..... is the great marble floor of the Pantheon, at Rome (begun 110), where alternating squares and circles have been the inspiration for countless marble floors in modern days.[60]

Here we have perhaps the most organic of all Roman decorative forms.

The art forms of mosaic, painting and sculpture are thus important adjuncts to Roman architecture. However, the Roman architect believed, as Alberti, did centuries later, that the principal form of decoration is the column. The Orders generally used by the Romans were the three classic Greek Orders - Doric, Ionic and Corinthian - with the addition of the Roman-developed Composite Order. The ornate Corinthian Order, as can be inferred from Table 2, was the most frequently adopted; and the other orders, except in cases of the superimposition of orders, fell away

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59. Ibid., p.113 and p. 128.

60. Hamlin, loc. cit.

in later times.

We find columns used extensively - a la Greque - in free standing structural screens, in truly trabeated structures, such as the Roman temples of Jupiter Capitolinus, Venus and Rome, and Castor and Pollux, or the Pompeian temple of Jupiter in the temple of Mars Ultor and the porticoes of the Forum of Augustus; and used internally in the Basilica of Trajan. In addition to this pure use of the column, we find the column being used, either as a representation of the column (i.e. the half or attached column) or as a mere structure-symbol (i.e. the pilaster), in association with non-articulated structures. In conjunction with the wall, we find the use of the orders in such structures as the attic storeys of the Colosseum and the Theatre of Marcellus; and the pseudo-peripteral temples of Maison Carree and Fortuna Virilis. In association with arcuated structures, the orders are used, often superimposed in several storeys, in arenas such as the Colosseum; theatres such as that of Marcellus; stadia such as the Circus Maximum; and arcades such as the Tabularium.

The combination of articulated and non-articulated architectural forms is symptomatic of inherent architectural conflict arising out of opposing architectural attitudes, and prognosticates an attempt at resolving those conflicts. This resolution poses problems of considerable magnitude, and must be left to the following section for fuller development.

CHAPTER SIX

CONFLICT AND RESOLUTION

PROGRAMME, STRUCTURE AND EXPRESSION.

The Roman formalist tradition stems to an important extent from Greek models and Greek theory. Greek classical architecture is strongly formalist, and is dominated by the search for order of a synthetic nature. This Greek attitude, exemplified in their buildings, was codified by Greek authors in writings which influenced later Roman writers such as Varro, Pliny and Vitruvius. Greek philosophy was concerned with systems of order, and the search for apparent order can be seen in the thinking and practice of the Romans. A basic theory of architecture developed, founded on the orderly relationships of an established vocabulary, relying on the compatibility of part to part, and part to whole. The vocabulary of forms which give concreteness to this concept are the architectural orders, the devices for articulating surfaces into clearly demarcated components.

The functional validity of their aesthetic expression depends upon a certain type of structural technique and a certain type of architectural programme, that is, upon a trabeated structural system based upon stone construction, and upon the type of building which, arising out of the limitations of the stone lintel, comprises relatively small, uninterrupted, internal spaces. These functional prerequisites were found in Greece, and underlay the buildings which established the classical grammar; in Rome, however, the requirements of structure, material and purpose differed in fundamental respects. Brick and concrete, the basic Roman building materials, are not materials from which a post and lintel system of construction is logically derived. They are materials eminently suitable for mass construction, and the Roman development

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of walling and vaulting systems are the results of a rational exploitation of the nature of these materials. The amphitheatres, theatres and aqueducts posed structural problems that would have defied solution by conventional trabeated structures of the Greek type: and the spatial requirements of the Thermae, the basilica or the large temple called for new structural systems, and created through them new architectural forms. The complexity of Roman plan types and the novelty of Roman structure and material stem from the Roman materialist concept of life, and their practical attitude to architecture results in purposeful buildings, remote in appearance from the classical prototype.

The prime source of conflict arises when the Romans attempt to apply formalism to their functionally derived architecture: and the particular character of Roman architecture is attributable to the manner in which the resolution of these conflicts is attempted. The practical attitude gives to Roman architecture its superb technical base, and the originality of its basic architectural forms, both in plan and in mass. Formalism brings to Roman architecture its sense of discipline; its orderliness; its scale, unity and proportion; its marked rhythm; and its additive or modular nature - that is, formalism gives Roman architecture those attributes which we call classical. However, out of a superficial application of a formalist aesthetic, based upon precept, structural clarity is sacrificed; a grammar of inorganic ornament develops; emphasis comes to be placed upon externals and appearances rather than realities; facadism develops; structural and planning aberrations occur; and architecture is conceived as an abstract art of pattern-making.

A concomitant of imposed order or formalism,

unrelated to purpose or structure, is a growing rigidity or sterility. In the inevitable reactions which take place, in the romantic, baroque or plastic movements, architecture becomes a protest against order, and thus further divorced from reality. In the cultivation of the aberration as the norm, formalism becomes honoured in the breach as it was in the observance.

It is left to this chapter to examine in detail the trends we have outlined above, and to see in what manner the ancient monuments are fashioned by this clash of the real and the ideal.

THE OVERLAY OF APPARENT STRUCTURE.

When the forms derived from the demands of practical necessity are continuous and unitary, and the forms derived from the theory of aesthetic are compartmentalized and additive, incompatibilities must arise. The structural and material forms having been established prior to the development of the theory of aesthetic, the first evidences of the conflict appear in the tentative marriage of real and apparent structure, that is, in the overlay of a second structural system, which satisfied the aesthetic demands of Roman theory, as a veneer over the primary - and real - structural system. The word "theory" must be used here with caution, however, because it is evident that the initial use of the orders in an applied fashion comes not from the codified laws of theory, but from the visual impact of Greek precept. The Doric temples at Paestum and throughout Sicily, the Hellenistic-Oscan town of Pompeii, these had been potent factors in the Roman landscape for centuries, and were an important element in the growth of a formal aesthetic. However, their greatest influence was to be felt when, with the growth of Roman power the Romans expanded their cultural frame of reference, and became more consciously eclectic.

It is significant in this respect that the earliest usage of the applied orders as an overlay to the native Roman wall and arch, followed shortly after Sulla's capture of Athens and the Piraeus in 86 B.C.; and it is thus obvious that the consequent greater intimacy with the Greek scene at a time when the Romans were aesthetically receptive to foreign ideas had important repercussions stylistically in Rome itself. However, by Augustan times (if we accept the standard dating of Vitruvius) these precepts had been hardened into formal codes of aesthetic theory which perpetuated what might otherwise have been the passing fashion of the applied orders.

The historical precedent for the combination of the wall and column is Greek. The examples cited are generally minor Hellenistic temples of the later period.[1] The earliest non-Hellenistic example generally referred to is the Olympieum at Acragas, and the most important artistically the Choragic Monument of Lysicrates. It is interesting to note, however, that this Greek use of applied columns was rarely capricious, but generally had a sound structural basis.[2]

The Hellenistic use of the applied column closest to Roman practice is the Bouleterion at Miletus, which is described as having, above a plain podium, an

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1. e.g. Temple of Apollo at Bassae; Athena Alea at Tegea; Apollo at Didyma, Miletus.

W.B. Dinsmoor, op. cit.

2. e.g. of the Olypieum; "The order was in so gigantic a scale that the intercolumniations were filled with screen walls, to assist in supporting the entablature" (a); of the Choragic Monument "the shafts of the columns are complete, with screen walls worked in between" (b); and of the Temple of Apollo at Bassae; "We cannot consider the projection of the buttress as odd, as this treatment would obviously shorten the span of the central roofing" (c).

(a) Ibid., p.101. (b) W.J. Anderson and R.P. Spiers, op. cit., p. 20. (c) T. Fife, Hellenistic Architecture, Cambridge, the University Press, 1936, p.23.

upper floor, treated like a pseudo-peripteral temple, with applied columns.[3] This is, to my knowledge, the earliest large-scale use of this motif in a purely decorative fashion, apart from isolated Egyptian instances.

The Romans, when they came to apply this new-found style, first used the orders in relation to their own structural system, the arch. In pre-Sullan architecture, apart from the stucco-decorated tufa architecture of Pompeii, we have only to deal with plain structural members such as pillars and arches.[4]

In 78 B.C., however, (only eight years after Sulla's successful campaign in Greece) we get in the Tabularium, on the Capitoline hill, a passage opening towards the forum as an arcade, and on the external surface of the arcade there are engaged Doric columns, one to each pier, carrying an engaged entablature;[5] and at a slightly later date, a similar arcade in the lower courtyard of the Temple of Hercules as Tivoli was built. The superficial articulation afforded by the orders was so facile in application that its use readily became extended, not only laterally, but also vertically, in multi-storey arcaded structures such as the theatres of Marcellus or the Colosseum, which, by their use of a vertical and horizontal module, became the prototype of the modern cellular facade. The result was the superimposition of

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3. D.S. Robertson, op. cit., p.180.

4. Vide Anderson, op. cit., p.18. However, Rivoira, op. cit. (Roman Architecture), p.32, gives the pier with the applied column a much more ancient lineage and states "its origin goes back to the 3rd century B.C. when it makes its appearance in the Circus Flaminius (221 B.C.)."

5. Marion Blake would have us believe that this motif arises out of a structural necessity. She writes: "The practice of removing strain from the vaulting by the use of an architrave supported by piers to carry the weight of the wall, first employed in the Tabularium, became a feature of Roman architecture." Op. cit., p.346. The argument here is obscure. The weight of the wall imposes no strain on the vaulting; and the architrave, in the case

the orders, which "virtually became a new Roman order".[6] In the forty years between Sulla and Caesar (who started building the theatre of Marcellus in 44 B.C.) the system of the applied order developed from a rather tentative application to the dominant architectural characteristic of the era.

There is an inherent and basic contradiction in structural expression in the use of the applied order. This general contradiction we shall shortly examine. But in the use of the superimposed orders a more precise and specific contradiction often arises. The proportional relationship between the superimposed orders, especially in the vertical dimension, is frequently at variance with the height scale of the storeys, derived from considerations of purpose. If, for instance, we examine the Colosseum, the nature of the aesthetic problem becomes apparent. Not only is the clumsy device of the pedestal resorted to, to bridge the gap between practical and aesthetic necessity, but even this fictitious coincidence is abandoned in the upper levels, where internal and expressed floor levels no longer correlate. The aesthetic problem is, of course, one which is not amenable to simple solution. It would not have been enough merely to leave the unadorned arches stripped of their articulating ornament. Those inner parts of the Colosseum now revealed, which are not so articulated, and the twentieth century multi-storeyed arcaded structure of the Esposizione Universale di Roma, show the extraordinary clumsi-

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5. (continued) of such a wide spacing between columns, does not span from pier to pier (nor, more correctly, from engaged column to engaged column). Even where, as sometimes was the case, the architrave was in the form of a flat arch, it is not reasonable to assume that this would be better able to support the load than the true arch below. The structural validity of the applied order is not a tenable proposition.

6. Anderson, op. cit., p. 49.

ness of this form of expression. However, I am convinced that a solution could have been found satisfying the demands both of beauty and of structural logic. The facility of the application of the orders, however, stifled the development of a new and more appropriate aesthetic. The inhibiting effect of this ready-made architectural expression cannot be overstressed.

Shortly after the introduction of the applied orders to the piers of the Tabularium arcade, we find the use of engaged columns in relation to the wall. The rectangular temple at Tivoli, and the temple at Rome known as Fortuna Virilis, attributed to the time of Julius Caesar, are perhaps the earliest dated examples of this usage; and by the time of Augustus it has become sufficiently commonplace to be classified by Vitruvius as a standard temple type.[7] The extension of superimposed orders from arcades to wall surfaces does not appear to have been made. There is an obvious inconsistency in the expression of the column and the wall, and this incongruity is intolerable to the structural purist. It has often been claimed that the applied columns are not structurally redundant, for, as Robertson points out, "it should be observed that the Romans usually took care to place engaged columns at points of a wall which required extra strength."[8] There are two arguments to be made against this assumption. Firstly, on a question of fact, it is highly dubious whether the engaged columns do actually

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7. Vitruvius, op. cit., IV: 9: 6.

"Others actually remove the temple walls, transferring them to the intercolumniations and thus, by dispensing with the space needed for a pteroma, greatly increase the extent of the cella. So, while leaving all the rest in the same symmetrical proportions, they appear to have produced a new kind of plan with the new name "pseudo-peripteral."

8. Robertson, op. cit., p.243.

serve a buttressing purpose. An examination of the columns on the Colosseum, the Theatre of Marcellus, and Fortuna Virilis, makes it apparent that the applied columns lend no structural support whatsoever. The degree of projection in proportion to the thickness of wall or pier is too slight to be effective as a counter to outward thrust: and the size of the pseudo-peripteral temples at Rome and Tivoli are of such a nature, that the walls are more than adequate for the loads to which they are subjected, for we are dealing with timber roof trusses here, and not the thrust of the tunnel vault. The second argument is one of structural expression. Even if we were to accept, with Robertson, that applied columns had structural function, yet we must realize with him, that the function was "not always that suggested by their form."[9]

This statement of Robertson's is particularly penetrating, for it illuminates the entire aesthetic problem. Even if the column were to be so placed as to function as a buttress it would be aesthetically non-satisfying, because the whole shape of the classical column - the design of the capital, the shaping of the shaft - is derived from its function of resisting a vertical load. To set an element of vertical support to act - either actually or apparently - as an element resisting horizontal thrust, is to create that conflict of expression which is one of the roots of our dissatisfaction with this device of Roman architecture. Another source of conflict in this unhappy marriage of wall and column is the fact that the column is an expression of a series of isolated supports, while the wall is ostensibly a continuous system. Plastically, too,

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9. Loc. cit.

this combination fails and the feeling of the plane of the wall, its dominant aesthetic characteristic, is violated by the half-round protuberance of the engaged columr.

It may be argued that these are criticisms of the honesty of expression, and therefore deal with questions of ethics rather than aesthetics. Bosanquet's conclusions after a study of Plato counter this argument most effectively. "What we have to bear in mind," he says, "is that moral purity in the purpose of art or beauty does not constitute aesthetic purity, though moral impurity in the purpose of art or beauty does constitute aesthetic impurity."[10]

These boldly projecting columns caused serious practical problems, particularly in relation to the entablature. We must remember that the entablature is the beam of the stone-built structure. Translated into a decorative form in a tufa or concrete structure, the entablature is no longer self-supporting. If it is to cover the projecting engaged order, as grammatically it must, it receives little support from the wall itself, unless corbelled out, as was sometimes done. Two solutions suggested themselves. The first was to try and make the entablature self-supporting: thus we get the series of attempts which start with the flat-arch construction of the Tabularium, and culminate in Vasari's secret joggled arch in the Uffizi. The alternative solution was to set the entablature back into the line of the wall - which thus supports it - and then to let it break forward or project, to cover the heads of the engaged columns. The entablature thus loses not only real, but also apparent, structural validity. In Imperial architecture we get the full development from

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10. Bosanquet, op. cit., p. 54.

the entablature breaking forward over engaged columns (e.g. Arch of Titus) to the projecting entablature over completely isolated piers (as exemplified in the Arch of Septimus Severus) and eventually to the ultimate absurdity, the discontinuous entablature (particularly evident in the Thermae and the Basilica of Constantine).[11]

This violation of apparent structural logic we shall have occasion to investigate further in the next section. There is one aspect of the applied order, however, which needs more immediate attention. It has been stated that - apart from considerations of real and apparent structural expression - the applied column causes certain plastic problems of formal relationship. Long before Alberti, the Romans tackled and solved this thorny aesthetic problem. In the design of the temple, the formal precedent of the Greek temple (as the very phrase "pseudo-peripteral" indicates) was too strong to permit of radical deviation: and thus, we have seen, the applied or engaged column was consistently used.[12]

With the drastic change in context, however, we find that the attic storeys of the theatre of Marcellus

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11. "The Romans terminated the tops of their column capitals, but the projection of the abacus of these capitals supported nothing; it was only an ornament. Accordingly, when the Romans rested a groined vault upon columns, as frequently happened, for example, in the halls of the thermae, the abutment of the vault was in a vertical line with the body of the column. And then a singular fact, for which no one can account, the shaft of the Roman column, bore not only its capital, but the complete entablature of the order.... When the Romanesque (the author talks [illegible] of France) builders placed an arch upon a column, whether free or engaged, the capital is only a corbel destined to receive the abutment of the arch, a projection serving as a link between a cylindrical shaft of the column and the square impost of the abutment. Then the capital is not only an ornament, but a useful member of the structure."

E. Viollet-le-Duc, Rational Architecture, being the article "Construction", in the Dictionnaire Raisonne de l'Architecture Francaise, trans by G.M. Huss, New York, MacMillan and Co., 1895, p.33.

The difference of approach is instructive. The

and the Colosseum abandon the engaged column, and substitute for it the flat, slightly projecting pilaster. The choice of this architectural device - for which Greek and Hellenistic precedent existed,[13] but in isolated instances rather than in repetitive systems - may certainly have been directed by the need for a fourth order in the superimposed tiers, one which of aesthetic necessity was lighter and in a more minor key than the engaged Corinthian order of the topmost storey. The choice, however, was not inevitably limited to the pilaster; and must have been guided by an awareness, probably intuitive, of the manner in which the flat surface of the pilaster, and its small projection, helped to maintain the integrity of the plane and the continuity of the wall surface. The ideal of the flat wall surface was not adhered to at all times in Imperial Roman architecture, as we shall see: but it is a basic Italian form stemming directly from their modes of construction, and appears as a leit-motif in Italian architectural history.[14]

DECORATION AND STRUCTURE.

Once the decorative overlay of the apparent structure is accepted, a whole new range of architectural

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11. (continued) Romans were concerned with the adaptation of the orders as decoration to the arch system, the French with their adaptation as structure.

12. According to Plommer the temple of Fortuna at Praeneste (c80 B.C.) employed the pilaster. The entire shape of the temple, however, is so novel and original, that the inhibiting effect of Greek precedent did not arise. H. Plommer, op. cit.

13. Plommer, ibid., p.262, ascribes the introduction of the true pilaster to Pompeii, where, he says, "one encounters the most striking invention of all, the pilaster, which seems to make its architectural debut here, at the entrances of the tablinum and alae". He cites the House of the Faun as an example.

14. It is interesting to note how, in the tomb of Annia Regilla, not only are pilasters used, but where the applied column is used, it is recessed into the wall surface, just as centuries later, Michelangelo thus treats his columns in the lateral buildings on the Capitoline hill, and in the well-known case of the Laurenziana ante-room.

elements becomes available, and the vocabulary is extended far beyond the functionally-limited Greek sources. Structure thus becomes the principal fount of ornament: and, in order to understand the implications of the new decorative patterns, an analysis of tne relationship of structure to decoration becomes imperative. At least four structure-ornament relationships are discernable, namely decorative structure, decorative pseudo-structure, decorative structure symbol, and structurally-derivod ornament.

Decorative structure is the simple case where the buildings derive decorative quality from the structural elements when they are used functionally as legitimate structure. It is the case of the use in the classic Greek manner of the colonnade, as in the forum and temple of Augustus: or the classic Roman use of the arcade in the great aqueducts. Here, structure itself provides strikingly decorative effects; and it is this constructivist attitude to architecture which also underlies much of Gothic and contemporary ideas of design.

Decorative pseudo-structure sets out to achieve the same aesthetic ends, but with debased means. These ends include the primary values of articulation and proportion of the part, which derives from a structurally articulated building; the plastic quality of vigorous modelling; and the strong interplay of light and shade. Further, the essence of the structural quality, the feeling for support, solidity, stability, is also desired. However the means are not purely structural. The forms used are structural forms, but these elements are actually, although not ostensibly, structurally redundant. In this class fall the isolated piers of the arch of Septimius Severus, and the whole series of engaged orders which we have been discussing above. These free and engaged orders

appear structural, and it takes more than superficial

Fig. 26. examination - in fact, often expert knowledge or structural analysis - to discover that structurally they are superfluous.

Decorative structure symbols are derived from and are reminiscent of structural forms; they are used in structural contexts; but they obviously and patently do not pretend to serve structural purposes. They strive for the articulative ends, sometimes even for the plastic: but they abandon the structural essence. Thus the

Fig. 27. pilaster is reminiscent of the column, the stringcourse of the entablature, and the arcaded gallery of the arcade. If pseudo-structure is structure once removed, then structure-symbol must be regarded as even more distantly related to genuine structure. However, it still calls attention, in diagrammatic fashion, to structure as a basic factor in architecture.

Structurally-derived ornament is ornament whose forms originate in structure, but which have undergone considerable mutation; and it is used in non-structural contexts. Perhaps the best example here is the use of the pediment as a capping to window or niche; or alternatively the use of the bracketed column. Here, structure is the inspiration or generator of forms so decorative, and so acceptable - because of their familiarity - that they can be taken out of structural context, and adapted for use elsewhere, for motives purely ornamental.

This analysis sees the structure-decoration equation from the point of view of the qualities and characteristics of the emerging decoration.

It is equally important, however, to examine the situation in reverse: that is, to analyse the effect of the decoration upon the structural expression. Again, four categories become evident. Decoration may enhance

the structural expression, be structurally neutral; contra-indicate structure; or negate structure.

Decoration which enhances the structural expression accepts that structure is an important - if not the most important - means of achieving architectural expressiveness. It therefore aims at making this expression of structure more vivid. It seizes upon an important characteristic and accentuates it. It tries to make apparent the inherent structural qualities of a system. It emphasises the vertical component of the column, the horizontal continuity of the beam, the stabilizing role of the buttress or the homogeneity of the wall. By underlining the structure, as it were, it enhances its clarity of expression. Hence we get the fluting of a column; the spreading of a capital; the rustication of a plinth; or the console brackets of a cornice. All forms of structural element may be used to this end.

Decoration which is structurally neutral is generally of the structure - derivative category, that is the category where decoration is used in non-structural contexts: or else is entirely non-structural in origin, such as in the use of sculpture. It neither contributes to, nor hinders, the power of the structural expression.

Certain types of decoration contradict the structure they are adorning, by indicating conflicting systems of construction. The system of structure which it makes vivid, and whose features it relies on for structural expressiveness, is not the system of structure upon which the stability of the building actually rests. Both decorative pseudo-structure - the applied column on the real arcades of the Colosseum, or the standing columns of the Maxentian basilica - and decorative structure symbol - the pilasters of the attic storey of the Colosseum - may contribute ornamental forms which contra-indicate

real structure. Enjoyment of this type of architectural decoration depends upon ignorance of the inherent contradictions, or upon over-sophistication, which rationalises them away. The present writer is hesitant to accept any schism between real and apparent structure which involves a dichotomy in both the mental and visual prehension of the design. Leaving aside all Ruskinian concepts of honesty of expression as an ethical question, there are still visual consequences to the dual expression of structure. These consequences are the introduction of ambiguities which destroy the quality of clarity of expression essential to all well-designed architecture. Where pseudo-structure is used, this ambiguity might be deep-seated and utterly confusing: where structure-symbol is used, the conflict is shallow and apparent, and results in a wilful perversity.

The fourth way in which decoration affects the structural expression is by <u>the negation of the structure.</u> In a sense, this is a development of the contra-indicatory system: but where, in that system, there is an unresolved duality between real and decorative structure, here the duality is resolved - albeit most unsatisfactorily to those who, like the author, demand structural logic - by the complete negation of the true structure, and the complete supremacy of the apparent structure. In the Pantheon, for instance, the lines of the coffers on the soffit of the dome, suggest a skeletal system of construction which appears to be completely at variance with the facts, and have misled even serious students of structure and archaeology. This trend of concealing the real structure leads ultimately to the mannerists, to Michelangelo's dome of S. Peter's, and to the floating slab of Fosse Ardeatine. This trend, therefore, may be considered to have two prongs. The first uses a deco-

rative system of construction which completely obscures the real structure; the second, while not suggesting an apparent structure, nevertheless conceals the real structure, and suggests a structureless, almost gravity-defying, creation. Both prongs, however, culminate in the negation of the real structure as a means of architectural expression. It will be seen that the seed of the contemporary search for lightness and weightlessness germinated in this attitude.

In addition to these four structure-decoration relationships, there is one other way in which formal considerations(of which decoration is an aspect) can affect structure. This other relationship cannot be grouped with the first four, which impinge merely upon the expression of structure. This last relationship is of a different genus, because it is not the expression but the actual structural validity which is affected. It is difficult to cite any Roman examples of this attitude - after all, the best examples would be building failures, whose survival value is at a minimum - but we are able to see the consequences of this attitude in succeeding historical periods.[15]

THE USE OF THE NEW DECORATIVE VOCABULARY.

In the section above we have considered some of the decorative consequences of the conflict between the Roman structural system (arising out of their practical attitude) and their applied aesthetic (stemming from their formalist approach). It is here intended to

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15. The failure of the angle column of the arcade of the Palazzo Ducale, Venice, the collapse of the vaulted ceiling of the Libreria Vecchia, in the same city; and the rupturing of the fabric of Michelangelo's dome at St. Peter's; these are some of the more spectacular failures where formalistic intention runs ahead of structural technique.

paint some brief verbal pictures of several buildings, and relate their details to the vocabulary of architectural expression we have catalogued above. For instance we know of the temple of Mars Ultor(14 B.C.) that: "Internally, on each side of the cella were six detached columns raised on a dado, the latter serving as a pedestal for the statues placed between the columns. The columns carried an entablature, but served no purpose beyond that of decoration."[16] This is a clear case of pseudo-structure: and one which has many parallels in Roman architecture, including the Thermae of Trajan, where we have the decoration of the interior of the exedrae by a series of columns, each with its own disconnected entablature and cornice[17] and the Basilica of Maxentius, where "the huge columns which stood in the nave were merely ornamental, and did not support the vault".[18] These columns carry broken and discontinuous entablatures which become structure-derivatives, for they no longer carry structural implications.

One of the consistent patterns of decorative structure comes with the thickening of the cella wall to withstand the thrust of the vaulted roof. Within the thickness of the wall it is possible to carve out deep niches; the plan of the supports is thus a series of rectangular piers, linked along the back by the membrane wall, and joining together above the heads of these piers, so that a plan half-way up the height of the wall would be represented by a solid wall. The vertical component of the structural expression is thus far from clear.

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16. Anderson, op. cit. p. 71.

17. Vide the drawing in the Burlington - Devonshire collection, iv:5.

18. Anderson, op. cit. p.84.

Starting at the floor, there rises a series of independent piers, which at an indeterminate height merge their identity with the solid wall above. Structural necessity is satisfied, but structural vividness is lacking. So to express vividly the vertical component of the structure, a row of free-standing or engaged columns is placed in front of the wall, on the axis of the piers between the niches. These columns, of course, rise up to the full height of the wall, and terminate in an entablature which marks the springing of the vault. Needless to say, just as columns are not necessary to the vertical structure, so entablature is unnecessary to the springing of the vault.

An early example of this system of internal decoration[19] is the temple of Venus and Rome, built by Hadrian. Here, the interior walls of the two back-to-back cellae are deeply indented with niches which in plan are alternately rectangular and semi-circular. The columns rising freely in front of the piers between the niches are great monoliths in porphyry and granite. The growth of this structural ornament seems clear, and can be traced as an ever bolder series of experiments in expressive pseudo-structure, from the applied column of the pseudo-peripteral temple to the free-standing range of columns linked back to pilasters in the temple of Mars Ultor, climaxing in the type of internal elevation we have just examined.[20] The trend is towards

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19. An early external use of the free-standing column as decorative screen to wall may be found in the Forum of Nerva. Von Blanckenhagen, op cit., p.23, writes: "The narrowness of the Forum did not allow for a full colonnade. Pilasters bear an entablature and an attic which themselves project over detached columns paired with the pilasters."

20. There is perhaps an example which falls intermediately between the beginning of the Empire, as represented by the Temple of Mars Ultor, and the fully developed system of Hadrian, as in the Temple of Venus

greater plasticity, a greater emphasis upon the pseudo-structure of the columns, a decreasing value given to the external structure of the wall.

Fig. 29. We find interesting details at Baalbek, where the inside of the cella is decorated with giant Corinthian attached columns, with an entablature breaking forward over them. Between the columns at the lower level are arcades, forming niches, and above are pedimented niches. The dissolution of the wall, as complete as in the Baroque conception, is here accomplished, and an extensive use is made of the grammar of structural ornament. The columns are pseudo-structural decoration, the arcades are structure-symbols, the pediments structure-derivatives. The use of the engaged column is contra-indicatory to the actual load-bearing walls; while the breaking up and hollowing out of the walls, leading to their visual disintegration, is a negation of their structural expression.

A similarly extensive vocabulary in a non-temple context was employed in the hemicycle of the Forum of Trajan. An examination of the drawing by Sangallo in the Vatican[21] and the actual remains in the brick core, which are still clearly visible, indicate a complex interplay of decorative forms. The basic arcaded structure has an overlaid system of pilasters. Pairs of these pilasters are coupled by alternating segmental and triangular pediments applied to the wall surface.

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20. (continued) and Rome. If we can accept Middleton's claim (op. cit., 1:273) that what Ligorio considered to be the Temple of Jupiter Stator is actually the Temple of Augustus, built by Tiberius and completed by Caligula: then we have the transitional stage in the development. Ligorio's drawing in the Bodleian library shows the interior of the Temple, three of its walls lined with relatively shallow niches alternating with deeper semi-circular ones; and all four walls articulated by a range of free-standing Corinthian columns. It is an especially interesting example, for it is very early in the series of this development, and it appears to be unique in the use of niches in a building not vaulted.

Fig. 28.

21. As reproduced in Rivoira, op. cit., (Rom. Arch.)

Similar applied pediments occur over window and door openings. On the end walls, flanking the hemicycle, large segmental pediments bridge three openings. Here we have the decorative structure of the arcades, the structure-symbols of the pilasters, the structure-derivatives in the pediments, (direct derivatives in the case of the triangular pediments, more remote in the case of the segmental).

Fig. 30.

The so-called Temple of Diana, Nimes, is an interesting example of how structural overlay confuses the expression of a rationally disposed structural system, a system which, in its own right, could be rich in formal appeal. The building is roofed by a barrel vault which is not continuous, but consists of a series of stone ribs, rebated to take an infilling of thin stone panels. The vertical component of the thrust of the vault is received by two parallel walls forming the main walls of the main room. The diagonal component is taken by lower barrel vaults over small side rooms, which transfer the thrust to thick outside walls. Thus the walls of the main room have only to receive the vertical load of the vault. As this is not continuously distributed, owing to the ribbed skeletal system of construction, the walls need not be uniformly thick, and are thus lightened, except directly below the ribs, by square recessed niches. This basic structure, which stems from the Roman practical approach, is overlaid with the applied system of column and lintel demanded by the formal canons of the aesthetic theory. Between the niches, tall Corinthian engaged columns are placed. These columns, to preserve correct proportions in relation to intercolumn spacing, would be too high, so they are placed upon pedestals. These engaged columns appear to carry a continuous entablature,

complete with architrave, frieze and cornice: but as several of the engaged columns have come away, and the entablature remains securely attached to the wall above, it is apparent that in fact the columns were structurally redundant even in terms of the ornamental system itself. The niches are crowned with alternating triangular and segmental pediments. What confusion is here created. The first level of confusion is the substitution of the slender columns for the partly discontinuous but massive wall. The discontinuity of support demanded by the ribbed structure and answered by the hollowed-out wall is here seized upon and idealized into a slender colonnade. This colonnade visually replaces the wall as the load-receiving structure, and simultaneously, (through its exaggerated slenderness and its precarious rooting, not upon solid ground, but upon tall pedestals) it proclaims its inability to sustain the thrust. The second level of confusion arises through the interpolation of a continuous entablature between the isolated columns and the isolated beams. A note of doubt arises whether our interpretation of the skeleton structure is a true one, and we hover uncomfortably between continuity and discontinuity. We begin to suspect the hoax, and to realize that we are dealing not with the expression of structure, but with pseudo-structural decoration. Here the third level of confusion emerges. The plane of the vault ribs coincides with the front face of the architrave; and thus relates visually to the whole engaged order. We begin to extend the structural ambiguity of the engaged order to the structural ribs themselves, seeing them all as a part of one aesthetic system; and the outcome is to doubt the validity of the very structural elements upon which the stability of the whole structure depends. Such are the shifting

sands upon which the Roman system of structural expression is built.

When we have become adjusted to the major discrepancies of structural expression, we become conscious of the minor aberrations. In particular we note the manner in which details which have developed throughout the classic era as external forms, and have their very raison d'etre in their function as weather protectors, rain dispersers, are here used internally. The use of the boldly projecting and weathered cornice is a classic example of structure - derivative decoration grossly misused: and the transference of the pediment from its role of gable end to window decoration - which may be rationlized as a protective hood to the window - is transmuted into decorative fantasy when first it abandons the pitch for the curve,[22] then moves from rain-exposed exterior to roofed inferior. Even the purely aesthetic qualities are lost, as shadow-casting mouldings are transferred from sunlight to dim interior.

THE SCENIC TRADITION.

In the town of Aspendos in Asia Minor, is a theatre considered to be the most perfectly preserved example, and one in many ways typical, of the Roman Theatre. We are not concerned here with the elements which are perhaps the hall-mark of Roman theatre construction, its plan and its structure, but we are concerned specifically with the way in which the scaenae - or background to the stage - was decorated. The

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22. The ultimate step is, of course, when the pediment is broken at its crown or apex, that is, at its most vulnerable point, considered as a waterproofing device. According to Rivoira the earliest examples of this invention are the tabernacles or aediculae on the walls of the Columbarium of Pomponius Hylas, which may be as late as Tiberius. The most dramatic Roman use of the broken pediment may be seen at Petra, perhaps a century later.

Ibid., p. 4.

scaenae basically is a wall, a backdrop, a permanent set. It must suggest an architectural background, without representing a specific building: it is the universal scene, suitable for all plays, and its architecture conveys of necessity a generalized atmosphere. It must be recognizably architectural, but not one particular building. It represents architecture without being architecture: it is the symbol, the idealization, backed neither by structure nor purpose. It uses structural elements as decoration and as symbol, for these, being most familiar, evoke immediate recognition. A column, a pediment, are by association architectural, even if used in obviously non-structural ways: their architectural connotations convey the generality of architectural atmosphere which is the function of the permanent stage set.

The combination of architectural forms - pseudo-structure, structure-symbol, structure-derivative - in this specific application need obey no logic other than the logic of abstract patterning. They are motivated by the desire to express the essence of architectural forms rather than their reality.

When analysed against the criteria of sober reality, they must of necessity appear arbitrary and whimsical in the extreme. When we examine the scaenae frons of the theatre at Aspendos, therefore, we must temper our judgment by the knowledge that the context is one of broad architectural expressionism, the creation of an illusion of architecture: and that the theatre is the rightful home of illusion. It is significant that the decoration of the scaenae frons is freestanding, because in this way the illusion of space and depth, of movement within the set, is achieved: and it is upon this sort of illusion that

the realism of the Roman theatre depends.

Fig. 31. Standing several feet clear of the scaenae wall are ten pairs of columns, superimposed in two storeys. Each pair of columns stands on a pedestal projecting from the wall. A free entablature complete with cornice spans each pair, returning at right angles to the wall, and continues between the pairs as an engaged entablature. Up on these entablatures, in the first storey, stand further pairs of columns, again crowned by entablatures as below. Uniting these upper pairs of columns are pediments, starting at the outside with a half-pediment, stopping blind against the wing wall which returns at the end of the scaenae. Then we get a segmental pediment, a triangular pediment, and a segmental pediment. The two central pairs of columns are set more widely apart than the others, and they are joined by a triangular pediment, its apex on the centre axis of the scaenae frons. The centre portion of this pediment breaks right back to the plane of the wall, becoming an engaged pediment, while the outer portions become half-pediments balancing the half-pediments on the flanks. Between the paired columns are doors and niches, the latter being flanked by engaged columns and crowned by entablature and pediments in the form of small aediculae.

The origins of this type of decoration must be examined. One school of thought derives the ornament from the painted decoration of Pompeii, and perhaps through Pompeii back to Hellenistic influences. Anderson has no doubts and states unequivocally: "The origin of the decoration of the scaenae frons is, however, Hellenistic (the back of the stage having large openings in which paintings gave an idea of a distant perspective), as we learn from a study of the paintings of Pompeii".[23]

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23. Anderson, op. cit., footnote p.87

Robertson is more cautious, and admits that "the origin of the columnar scheme is disputed. It has been thought that the columns on the scaenae frons represent the proskenion, pressed back, as it were, against the face of the skene, but it is perhaps applied to the skene itself in late Hellenistic times: such decoration seems to be imitated in some late reliefs and in wall-paintings from Herculaneum and Pompeii."[24]

The theory of the emergence of architectural forms out of painted precedents is most interesting. There is an intimate relationship of painted to real forms in Italian architecture throughout history, and we shall have occasion to study this relationship in more detail, when we deal with the topic of Illusion in Architecture. The contribution of Pompeii will then be further analysed. Here, however, the theory of the precedence of the painted form strikes one as dubious. It is the seeking for visual clues, which are to historians so significant, but which seem to architects so unconvincing. That there may be similar aesthetic trends in painting and architecture is of course demonstrable, as in Giedion's famous comparison of transparency in the work of Picasso and Gropius. However, it is inconceivable that serious architects would attempt the translation of paint into stone, in the form of the columnar screens of the scaenae frons. The reverse seems obviously true, in Maiuri's argument, used of another building, but in a similar context, that this is no mere scenographic painting, but a transcription of reality.

On the other hand we shall not be too hasty in dismissing, as Robertson seems to do, the concept of the "proskenion pressed back, as it were, against the face of the skene." The decoration of the skene would then

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24. Robertson, op. cit., p. 283.

derive from actual structure, and this, as we have exhaustively analysed above, appears to be the way in which the Roman decorative vocabulary was established. It seems logical to expect that the decorative screen grew out of pseudo-structure and structure-symbol, that is, out of the decoration in use on all Roman buildings. The elaborate architectural decoration, according to Lawrence,[25] grew out of the use of the open portico attached to the proskenion. This not only served as permanent scenery, but conformed with the 'florid' architectural taste' of that period. In view of these conflicting opinions, and in view of the importance of the scaenae frons concept to our understanding of the columnar screen in Roman architecture, it becomes necessary to recapitulate the salient features in the history of the development of the skene building.[26]

Perhaps the oldest skene is the 6th century storeroom of the theatre at Athens, whose long blank wall, interruped by one doorway, formed a background to the play. With the shifting in emphasis from chorus to actor, the action centred to an increasing degree at the skene, which was usually the scene building decorated as a palace, home of the chief protagonist of the drama.

Fig. 32. The name skene, temporary building, tent or log house, indicates the custom, kept up for about a century, of erecting a new background building every year. Piechter explains the slits now in the inside of the scene building, but originally on the outside of the skenotheke (that is, at the background wall of the orchestra and the scene of action) as having been cut for the insertion of wooden beams, which served as a skeleton for background buildings.[27]

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25. A.W. Lawrence, Greek Architecture, London, Penguin Books, 1957, p.287.

26. The facts of this account are based largely on the comprehensive history of the Greek and Roman theatre by Margarete Bieber, op. cit. The extrapolation of the development of the scaenae frons, and the conclusions drawn, are wholly the responsibility of the present writer.

27. Bieber, op. cit., p. 109.

Fiechter's reconstructions, based upon an analysis of the slits (and presumably upon Noack's dictum that theatrical scenery buildings cannot have differed in principle from the actual buildings of the time) present several interesting possibilities, often based upon the colonnade theme: and the shallow colonnade, backed by the wall of the skene, presents us with our first hint of the development to come.

Fig. 33. The oldest stone skene proper, at the end of the fifth century, includes in Fiechter's restoration, this colonnade in more permanent form.

In Hellenistic theatres, this colonnade is developed

Fig. 34. further. The theatre at Priene, a new - that is, not remodelled Greek - theatre, indicates this clearly. The stone skene for this theatre, built at the beginning of the third century, consisted of a two-storey structure, solid walled with few openings, fronted by a single-storey gallery, the supports of which were rectangular stone piers fronted by engaged half-columns. Fixings in the pillars indicate that painted panels must have been fastened to them by bolts. "We thus have the pillars as a stone framework and a permanent support, the attached stone columns as a permanent decoration, and interchangeable painted decorations on wooden panels between the supporting posts."[28]

We have at this stage the incorporation of two techniques: that of permanent architectural decoration (in this case the engaged columns, whose function, not being structural, was surely to invoke the spirit of the columnar architecture of the times); and that of the painted scene. In Hellenistic times the development is towards the painted scene, and Margarete Bieber is of the opinion that "the typical form of the late Hellenistic Greek stage is the thyromata stage with wide openings between the pillars for the purpose of introducing painted decora-

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28. Ibid., p. 208.

tions."[29] The Priene theatre, reconstructed in the late Hellenistic period, and the theatre of Oropos, are typical of this development. With this emphasis on the painted scene, the whole development of the colonnade as a permanent architectural setpiece seems side-tracked.

Fig. 35.

Now it is from these painted scenes that Anderson would derive the scaenae frons. However, it would appear that the columnar screen of the colonnade would be a more fertile source of investigation. Although the colonnade seems to have come to the end of its development in the late Hellenistic theatre, it reappears, in a more complex form, in a whole series of theatres which Bieber calls transitional Graeco-Roman, in that they generally appear to be early Roman adaptations of Hellenistic theatres.

> In Pompeii the paraskenia disappeared in the first century B.C. and the rear wall of the logeion was decorated with columns. Such columns in two storeys also ornament the rear wall of the stage at Segesta and Tyndaris..... The paraskenia at Segesta consisted of two-storeyed open galleries.... I consider Segesta, Tundaris, and Pompeii, a transitional form of about 100 B.C., best named Hellenistic-Italian, Roman-Republican, Italian or Graeco-Roman, since they were designed for local plays. The rear wall ornamented with columns is found in the East only in Magnesia, which also I consider early Roman.[30]

Fig. 36.

The Romans, on this evidence, would appear to have favoured development of permanent architectural decoration, and thus taken over the line of development abandoned in Late Hellenistic times. Before we go on to discuss the evolution of this rather tentative columnar screen into the fully-blown decorative scaenae frons, such as we have examined at Aspendos, we must pause to enquire why the Romans made this particular choice.

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29. Ibid., p.243.

30. Loc. cit.

Firstly let us mention a tradition of theatre native to Southern Italy, namely the hilarious tragedies, comic mimes parodying the heroes of mythology or daily life. The actors in these mimes were called phlyakes, or gossips, and they constituted itinerant groups, very much in the tradition of the Renaissance Commedia del' Arte. Their theatres were improvised, and their stages and sets of course were temporary. These wooden structures frequently include a platform, a background wall, often with a richly ornamented door, and thin wooden posts or columns. Bieber tells us that "this simple stage had .... world-wide historical significance. It migrated together with the farce, now become Oscan, to Rome;[31] it became the stage of Plautas; and it combined in the first century B.C. with the Greek theatron to produce the Roman theater structure.."[32] The phlyakes stage must thus be considered an indigenous stage which reinforced in Italy itself the columnar tradition which we have seen as early as the temporary structures of 5th century Athens.

We are told that "decorations which were merely painted, tried out by Claudius Pulcher and Apaturius, did not please the Romans and therefore were replaced by rich plastic and architectural forms ...."[33] This feeling for greater plasticity, greater strength of modelling, is evident in the architecture of the times, as we have seen in the application of the Doric order to the flat surfaces of the Tabulariumarcade: and we must remember that if the theatre of Marcellus was marked

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Fig. 37

31. For the Roman development see the marble relief of a model of a stage, in the Museo delle Terme, as illustrated in Bieber, op. cit., p. 458.

32. Ibid., p. 300.

33. Ibid., p. 353.

by a scaenae frons of some plasticity, so was the arcaded exterior vigorously and plastically modelled by the application of the decorative superimposed orders. This first century B.C. witnessed the desire for luxury beginning to seep into the austere life of republican Rome. Crassus may have been ridiculed for his ostentation in using Hymettian marble for the columns of his house, but this was a sign of the swing of taste towards an increasing richness that was to culminate in the luxuriousness of the theatre of Scaurus, with its vast auditorium, and its innumerable columns of marble, mosaic, and gilded wood.[34]

If there is in Rome a preference for the ornate which manifests itself even in a private individual's home, then how much more can we expect to find it in the theatre; for the theatre is the symbol of the highest plane of living, and drama is concerned with the great of the land. We have seen in the previous chapter an interesting reflection of the richness of the theatre in the wall paintings at Pompeii. The Boscoreale paintings of the structural style in the Metropolitan museum show typical scenes from tragedy, comedy and satire of the last century B.C., while the paintings of the Fourth Style at Pompeii which date from the Early Empire, depict entire scaenae frons of the most elaborate sort, with variations of coupled columns forming niches in a rich aedicular theme. Baldwin Smith would have us look back, to see not only what inspired the wall paintings, but what inspired the decoration, of the scaenae frons itself. In a study of great detail and depth[35] he traces the scaenae frons treatment back to the conventions of the Hellenistic palace tradition.

Fig. 38.

Fig. 39.

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34. Pliny, op. cit., XXXIV., XXXVI.

35. Smith, op. cit., (Arch. Symb.), passim.

> Back of the whole development of the Hellenistic and Roman stage, which the fourth Pompeian style appears to reflect, was the palace... Actually what made the Fourth Style so popular at the beginning of the Empire was not so much the fact of its having been based upon the tragic scenery of the Hellenistic theatre, as that tragic scenery itself presented all the architectural elements, royal symbolism sumptuous and ceremonial provisions of the Hellenistic palaces.[36]

He then makes two general propositions of the first importance: "Throughout the history of architecture it was usually the palace which established the precedents for the elaborate modes of wall decoration;" and "From the beginning of theatre architecture it was the King's house which was the traditional and appropriate setting for the Greek tragedies."[37] He then concludes, with a statement vital for our argument: "It was for this reason, and because theatres had come to represent the munificence of rulers, that the Roman scaenae frons turned into a monumental version of the tragic stage, which Vitruvius (V:6:9) said was 'designed with columns, pediments and statues and other regalibus rebus.'"[38]

Baldwin Smith's thesis is important for several reasons. He points to the symbolic motivation of the richness of the scaenae frons; he points to the links between this richness and that of the royal palace; and he goes beyond these general concepts of symbolism to the particular, for in his examination of Vitruvius' regalibus rebus (Royal elements) he isolates many specific factors, such as the recurrent Porta Regia; which define the whole anatomy of the scaenae frons in symbolic terms. In the light of Professor Smith's analysis, one can go back to a monument such as the Septizonium at Rome, particularly

Fig. 40.

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36. Ibid., p. 120.

37. Loc. cit.

38. Ibid, p. 121.

in Professor Hülsen's restoration, and realize why this adjunct to a palace is discussed by Rushforth in a paragraph dealing with the instinctive Italian capacity for scenic presentation.[39] A comparison between this monument, and the scaenae frons of the theatre of Sabratha, is most instructive. Both, of course, are of the time of Septimius Severus.[40] Lastly, in our list of reasons which may have prompted the Roman development of the scaenae frons, we come to one which at first sight may seem slight. And yet, knowing the importance which Romans ascribed to practical matters, it might well be one of the most potent factors. We recall that in our earlier discussion on the excellent acoustics of the Roman theatre, we mentioned Dr. Canac's researches at Orange and Vaison. Some of his reasons for the high quality of the acoustics were the protection against exterior noises afforded by the high stage wall; the absence of echo due to the scattering of sound by the recesses, columns, niches and statues of the scaenae frons and the continuous pulpitum niches.[41] From our knowledge of the practical attitude of the Romans, it would be unwise to assume that the functional advantage derived from the particular shape of the Roman scaenae frons was not appreciated by their architects.

Fig. 41.

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39. Rushforth, in Bailey, op. cit., pp. 398-9 and fig.35.

40. According to Eugenie Strong, op. cit., II:140, the Septizonium "was in reality a fountain or nymphaeum, rising in three tiers each with its screen of columns, behind which were niches adorned with statuary." It screened the untidy ends of the Polatine structures, and "served at the same time as an ornamental facade fronting the Appian Way as it entered the city." The Septizonium stood until the sixteenth century, and existing illustrations of it, such as Du Perac's well-known engraving, are tantalizingly obscure.

Fig. 42.

41. Canac, op. cit., p. 414.

These reasons, then, we have found for the Roman development of the scaenae frons. The classical development of the colonnade portico, and the native development of the phlyakes stage, are historical reasons of precedent. The plastic advantages of the decorative use of structure indicate a growing demand for richness in both the textural and literal senses. The preference for the ornate is coupled with the historic symbolism of the theatre, linking it with palace conventions and forms. And finally, in the acoustic performance of the scaenae frons we have the functional base for the form. Here is the archtype of the process of conflict and resolution in the determination of architectural forms.

To return to our original argument: We have accounted for the Roman preference for the columnar scaenae frons instead of the late Hellenic thyromata stage, with its painted decoration. Let us now briefly examine the continued development of this type of decoration from the Graeco-Roman examples we have been studying, until we reach the apogee at Aspendus.

Fig. 43. The successive alterations to the large theatre at Pompeii enable us to trace an interesting development. The first version of the stage building, dating back to the second century B.C., presents a stage wall broken only by three doors, and a rather deep, regular colonnade. Alterations probably in the time of Sulla see five doors placed in the back wall, and each door flanked by two pairs of columns standing on pedestals, just clear of the wall. This has the effect of producing a discontinuous colonnade of twenty columns, as a screen just in front of the wall. Projecting pilasters probably decorated this wall, answering to each free column, so that wall and columns became one plastic decorative screen. The final stage in the conversion takes place in the early Empire.

> A deep, low stage with a varied and richly decorated wall in the background was built. This scaenae frons has a large niche in the centre and a rectangular niche on each side, in which are the three doors of the Roman theatre, named by Vitruvius (V, 6;11) aulae regiae and hospitalia, the doors of the royal palace and of the guest chambers. The curves of the rear wall are emphasized by accompanying columns set upon pedestals.[42]

New, purely Roman, theatres built in North Africa in the second century A.D., notably at Djemila, Dugga and Sabratha, perpetuate the type of scaenae frons seen at Pompeii, with the three large niches and the columnar screen. Similarly modelled and decorated are the stage houses at Arles and Orange in France, Merida in Spain, and Palmyra in Syria.

It will be seen that Aspendus, in the light of this progressive development, is not typical, in that its richness of columnar decoration screens a flat wall. Fiechter[43] considers the Aspendus theatre although purely Roman, to be of the Eastern type[44] as against the 'Western type' of which Pompeii is the prototype.

> The Asia Minor theaters are very different. Since many of them are rebuildings of Hellenistic theaters with their straight back wall, the deep receding central hemicycle for the regia was impossible, with the result that the columnar decoration of the scaenae frons is set against a straight flat wall (Aspendus) with, at the most, very shallow niches which do not cut deeply into the original straight back wall (Ephesus and Aizanoi).[45]

Fig. 44.

The architecture of the scaenae frons is pure theatrical fantasy. Its importance for us lies not only in its imaginative use of decorative elements, but in the inspiration which it supplied for other building types.

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42. Bieber, op. cit., p. 337.

43. Cited by Bieber, ibid., p. 339.

44. As Bieber, ibid., pp. 380-1, points out, the terms Western and Eastern are somewhat misleading, as the so-called Western type certainly occurs in Syria, as we have seen at Palmyra, and as we will find at Petra, Baalbek and elsewhere.

45. Ibid., p. 379.

The development of a structurally-derived grammar of ornament, and the example of a structurally and functionally irresponsible building type, led to the extension of the scaenae frons technique to other and more serious buildings. Eventually, even the grandest and most monumental of the Roman buildings, the great thermae, were contaminated by this conglomeration of heterogeneous structurally-derived ornament. Thus in the principle halls and courts, we get superimposed marble columns, supported by corbels, flanking niches. We get entablatures spanning between these columns, and pediments, both segmental and triangular, capping the entablatures. Sometimes we get the incongruous juxtaposition on a corner of two orders of applied columns, and three orders of column-flanked niches. In the thermae
Fig. 45. of Trajan and Caracalla the decoration represented "imaginary courts with porticoes and verandahs, such as may have been derived from the ephemeral decorations of the solaria or terrace roofs of the (Pompeian) houses", while the Stabian baths at Pompeii were decorated "with reliefs in stucco representing those architectural fancies to which Vitruvius (VII:5) takes such great exception."[46]

From the above descriptions it would appear that our point is made. One further building must be analysed, however, not only because it substantiates the pattern we have seen emerging above, but because it introduces us into another important field of aesthetic experience. The
Fig. 46. library at Ephesus was built, towards the end of Trajan's reign, in about 115 A.D.. Roberton[47] shows that, because of the pecularities of its setting (it was hemmed in by other buildings, and partly below ground level), only the facade was important. The restoration of this facade,

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46. Anderson, op. cit., footnote p.112.

47. Robertson, op. cit., pp. 289-90.

which according to Robertson, is quite certain, presents us with a most complex picture. At the top of nine steps of the full width of the building were eight columns, standing on pedestals some four feet clear of the face of the building. In this face were three openings, a large central door and two side doors, above which were marble-screened windows.

> These columns were grouped in four pairs, connected by separate sections of entablature, the spaces between the pairs being in front of the doors. The columns in each pair were about seven and a half feet apart, from axis to axis, but the interaxial measurements between the pairs were about twelve feet opposite the central door, about ten and a half feet opposite the side doors....The sections of entablature were returned to pilasters on the wall, along which they were continued in an engaged form: between the pilasters were rectangular niches, containing statues. Upon each of these four sections of free entablature stood two unfluted Corinthian columns, but by an astonishing scheme the eight upper columns were paired differently from those below. The end columns were left solitary, each being connected with the wall behind by a single block of projecting entablature, and the six central columns were joined in three pairs by three sections of entablature, which ran like bridges above the gaps between the pairs below. The central section, which lay directly over the chief door, carried a rectilinear pediment, but the other two had curved ones: The single columns at the sides had nothing above their horizontal cornices. There were pilasters and a continuous engaged entablature on the upper half of the wall, as on the lower, and between each pair of united columns was a rectangular window.[48]

This extensive description is given because it makes apparent, in a manner perhaps more vivid than an illustration, the arbitrariness of the decorative structural expression. Here is no system which can be traced back to the inherent structure, nor even to the simple peristyle from which it stems. Here is no repetition of a basic modular unit, but the wilful assembly of familiar elements into new and strange groupings, which have no meaning outside their own self-determined patterns. This new and capricious organising of decorative forms, standing thus

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48. Loc. cit.

proud of the real front of the building, forms a second facade in its own right, completely divorced from the dictates of the building itself. Robertson says of the facade that it is "richly and whimsically decorated, in a manner strongly suggestive of a scaenae frons,"[49] and it is the scenic character of Roman decorative facades which we are here examining.

Before we continue to do so, however, we are led by a study of the Library of Ephesus, to a line of chought which strangely diverges from the path we have been following. Let us travel for a moment along this detour, for there is much which is interesting, and relevant to our argument to be found there.

The plan of the library, in Wilberg's restoration[50] shows an interior pattern which is related in character to that of the exterior. It is also strongly reminiscent of many temples we have looked at, such as the Temple of Venus and Rome, where the wall is deeply indented with niches, and is screened by a free-standing columnar screen. If we look at the plan of the library at Timgad[51] we see an almost identical treatment of wall hollowed out, and shallow screening colonnade. Thus it would appear not unusual for libraries to be treated internally much the same way as the thermae, the great temples, or the scaenae frons.

Fig. 47.

However, in this case, the derivation of the decoration is strictly functional, in contradistinction to the arbitrary nature of the columnar screens we have looked at so far. It appears beyond dispute that the niches were recesses to take the books;[52] and that the

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49. Loc. cit.

50. Ibid., fig., 119, p. 288.

51. Jones, op. cit., fig. 27, p. 140.

52. See, for instance, Robertson, op cit., p. 291, and Jones, op. cit., p. 141.

columnar screen carried a gallery which provided access to an upper series of bookcases. The story of the columnar screen is thus complicated by these instances of a purely functional origin. If we knew more of early libraries, we might have been able to conjecture about a functional origin for the columnar screen: on the other hand, it might well be that the functional solution would never have taken this particular form, had it not already been fairly established as a decorative treatment.

Roman scenic design found one other application. In the vast extent of Imperial building, this field is perhaps a minor one, regarded more for its curiosity value than for its significance in architectural history. We refer to the facades built - or more accurately, carved - for chambers hollowed out of hillsides. This has been called, in a most interesting paper, the Architecture of Excavation,[53] and goes back at least as far as Egyptian days, as in the tomb of Beni-Hassan.[54] The immediate proto-typeswere the rock-cut Etruscan tombs of the 4th-2nd century B.C., such as the tomb at Norchia, where a complete portico consisted of four columns pro-style, with pediment, was carved out of the rock[55] and the tombs at San Giuliaro, Blera, Castel d'Asso and Sovana, "sculptured so as to imitate the facades of houses or temples."[56] The most famous of the Roman excavated tombs are undoubtedly those at Petra, where "cut in the vertical sides of a cliff, and rising sometimes to over 100 feet in height, the artist was freed from the trammels of ordinary construction and was able to realize his conceptions much

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53. H. Martienssen, "The Nature of Baroque," S.A. Architectural Record, XXXV:8, 1950, pp.176-182; XXXVII: 8, 1952, pp. 200-205.

54. Vide Robertson, op. cit., p.220, who discusses the Egyptian and Eastern precedents to Petra in some detail.

55. Anderson, op. cit., plate VII.

56. M. Pallottino, op. cit., p.118.

in the same way as a painter produces a theatrical set."[57] Wiegand also was struck by the theatrical quality of these buildings, which he attached to "craftsmen who were primarily scenic artists."[58]

The details at Petra, particularly of the Khazne, show all the arbitrariness of the scaenae frons, and an equal indifference to structural probability. The facade is in two tiers. Of the six columns of the lower order, the centre four are spanned by an entablature covered by an engaged pediment, and the outer two support projecting sections of entablature, complete with cornice. The upper order is even more curious. Here the two outer pairs of columns are linked by entablature supporting half-pediments. The centre portion of the colonnade and its entablature is omitted, a deep recess is formed in the rock-face, and above the apex of the lower engaged pediment stands a remarkable little circular shrine, whose conical roof is crowned with an urn, the top of which forms the apex of the projection of the two flanking half-pediments.

The aesthetic consequences of the non-structural columnar screen are, firstly, an increasing richness resulting from the elaborate modelling and intricate by-play of light and shade: and secondly, an air of unreality resulting from the transparency of the screen, and its patent non-structural quality. As used in the library and the thermae, it is perhaps the earliest form of screen facade, that is, a facade unrelated organically to the building behind it, and whose only discipline is the aesthetic discipline of pleasing formal relationships. It is the facade where practical considerations are not evident, and formal considerations are supreme. Even in non-theatrical contexts, it may be regarded as scenic

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57. Anderson, op. cit., p.130.

58. According to Fife, op. cit., pp. 59 and 87.

design.

THE BAROQUE ELEMENT IN ROMAN DESIGN.

The epithet Baroque is frequently used of these Petra facades, and also of the scaenae frons type of decoration which this chapter analyses. It is usually used as a term of implied censure, and is levelled at the so-called aberrations and grammatical solecism of which many Roman buildings are guilty. As used in the text-books, the term Baroque refers in particular to these departures from the classical norm which the classical purist finds offensive, and which he terms decadent. Alternatively, it is used to describe those Roman buildings whose forms are not in accordance with simple geometric shapes.

The elements in Imperial architecture which are, by classical standards, decadent, include broken and segmental pediments, rusticated piers and columns, broken and discontinuous entablatures, arched entablatures and bracketed columns. The segmental pediment and the broken pediment (the latter dating as far back as the reign of Tiberius), and the broken and discontinuous entablature we have made frequent reference to already. The rusticated column, a classic example of decoration whose structural expression contradicts that of the structural element it adorns, may be seen as early as the first century in the Porta Maggiore, which has been called "forerunner of that daring Baroque style..."[59] The arched entablature is featured, as are many of these aberrations, in the Palace of Diocletion at Spalato, a treasure-house of original thought and non-conformism. It is generally conceded an earlier origin, for, according to an authoritative source, "the arch over a wide

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59. Rivoira, op. cit., p.70.

central intercolumniation dates back to 157 A.D., being found in the Propylaea at Damascus and in the temple at Atil";[60] while, according to other sources, it is more ancient still, being "clearly a Hellenistic feature, possibly taken into classical usage from Assyrian prototypes".[61] Brown, who calls this device the 'Arcuated Lintel,' sets out to prove Weigand's assertion that this motif can be traced to the mid-ninth century B.C. in Northern Syria. An important building in the chain of development is the gateway of the temple of Dushara at Si' in Syria, dated ca. 33-9 B.C. "The vocabulary of this facade is classical, but the grammatical construction is Eastern, if this analogy is permitted".[62] This building demonstrates the first use of the arched entablature for over 600 years. Brown considers that the West favoured this device less than the East.[63] He makes the point, which is substantiated by Baldwin Smith's researches[64] that it is always used in a religious context (extending this usage to the divine emperor, and thus the palace), and that it persists in this context into the mediaeval period." Bracketed columns, that is, columns not resting upon a foundation but upon a corbel bracket - again a prominent feature at Spalato, - can be traced back before the time of Christ, and Rivoira cites such an example in the Porta d'Auguste at Nimes, built c. 15 B.C.[65] Columns carried on corbel brackets also "existed in the Thermae of Trajan, built in the second century A.D., between the

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60. Anderson, op. cit., p.146.

61. Fife, op. cit., p.91.

62. D.F. Brown, "The Arcuated Lintel and its Symbolic Interpretation in late Antique Art," American Journal of Archaeology, 46:1942, p.391.

63. The device comes into the western vocabulary with some force much later, as the Palladian motif.

64. Smith, op. cit., (Arch. Symb.), passim.

65. Rivoira, op. cit., p.54.

niches of the great hemi-cycle on either side of the enclosure"[66]. The bracketed column is a blatantly non-structural decorative form, and arises directly from the engaged column[67].

The second 'text-book' application of the term Baroque is to the use of curved non-geometric shapes, or shapes basically geometric, but which acquire ambiguity due to overlapping and complex inter-relationships. Thus we get the segmental curves of the cornice of the Temple
Fig. 48. of Venus at Baalbek; the vestibule of the Piazza d'Oro
Fig. 49. in Hadrian's villa, which is octagonal, with alternately round and rectangular recesses, and the Hall with the sinuous outline[68] in the same villa; the "thermal structure" at Baiae, which was illustrated by Sangallo[69]; the Tempio di Siepe in the Campus Martius, Rome, of the time of Hadrian;[70] the Temple of Venus at Rome, with its niches and apses expanding the space; the oval rooms and recesses, and the extraordinary multiform courtyards flanking the anteroom to the domed circular room of the thermae of Caracalla; and the domus Augustana, as rebuilt by Domitian, where "the ground plan is very interesting, full as it is of devices for the harmonious and original combination of rooms shaped in every conceivable way."[71]

In these examples an element of plasticity and

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66. Anderson, op. cit., p.146.

67. The derivation of the bracketed column from the pseudo-structural engaged column seems a logical step. A photograph (in Rivoira op. cit., fig. 51) of the Amphitheatrum Castrense in Rome, of c. 200 A.D., seems to bear out the theory. The amphitheatre has the now orthodox applied column attached to arcade pier, typical of Roman arcaded design. The photograph shows the ground to have fallen away at one side, to below plinth level: and there are revealed the bases of the engaged columns, standing on blocks of travertine corbelled from the wall, and appearing identical to the bracketed column.

68. Rivoira, op. cit., figs. 148, 152.

69. Ibid., fig. 151.

70. Ibid., fig. 154.

71. Ibid., p. 107, figs. 119, 120.

movement is introduced very different in character to the static balance of the classical model. This plasticity is heightened by the visual dissolution of the wall, accomplished by the extensive use of niches, recesses and openings, which - masked by a free-standing or engaged columnar screen - suggests the destruction of the structural integrity and visual continuity of the wall. This tendency becomes marked from the time of Sulla, is facilitated by the increasing use of brick-faced concrete, and "in the buildings of Domitian and Hadrian the wall surfaces almost entirely disappear. These tendencies spread to the East under the Empire, and we find them exemplified in the thermae of Miletus and Ephesus, the round temple at Baalbek, and the domed churches of the time of Constantine."[72]

The introduction of a restless, ambiguous ornament based upon structural precedents, and the striving for plasticity and movement, translates architecture from the static to the dynamic. The change in architectural atmosphere must have been extraordinary, and the attitude of the designer vastly different to his truly classic predecessor. As Altman[73] says: "The state of mind which created the monuments of this period is one of positive ecstacy, of intoxication, while the typical manner of its operation is not that of the subordination of distinct and separate elements one to another, as was customary in classic Greek ornament, but rather that of close juxtaposition, so that the actual and unreal are merged in an optical painterly flow....."[74]

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72. Anderson, op. cit., p.33.

73. W. Altman, Die Römischen Grabaltäre der Kaiserzeit, Berlin, 1905, pp. 154. 5.
This extract is cited by E.H. Swift, op. cit., p.184

74. This description is actually of a cippus ascribed to the reign of Domitian, i.e. 81-96 A.D. Not only could it refer - without it being necessary to amend a single word or modify a single concept - to the Imperial buildings which

A most important concept emerges from this statement, and we must devote some time to its analysis.

This concept is the one to which we have referred earlier as a 'unitary' concept. There are, as we have seen in our discussion of proportion, two kinds of unity, in an architectural design. There is the <u>additive</u> type of unity, where the whole is the sum of the parts, and is re-analysable into them: and there is the <u>synthetic</u> type of unity, where the resultant unit is not prognosticated by a knowledge of the parts, and where the parts as incorporated in the whole are different to the parts, could they again be separated out by analysis. We have seen, as a simple example, the Greek and Roman peristylar colonnades, the first having a varying inter-columniation depending on the position of the column in relation to the facade, the second having identical intercolumniations, that is, being modular in design. We can draw a typical bay of the front portico of the Maison Carrée, but we cannot of the Parthenon. There is a vital difference in concept, therefore, between the modular additive facade, and the organic synthetic facade. The latter lays greater emphasis on the whole, and less on the parts; and tends, therefore, towards a greater centralization of composition, that is, towards a single-minded central concept to which the parts are subordinate. Now, orthodox Roman building, in so far as it applied a systematized and regularized aesthetic system was of the additive nature. However, with the development of a free aesthetic deriving from the ornamental systems of the structure-ornament equation, and from a more original and virile attitude to structure and planning, Roman architecture

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74. (continued) we have been describing above, but also to that post-Renaissance period of building vitality which we call the Baroque.

begins to take on a more 'unitary', i.e. non-modular, aspect. So far does the Roman architecture develop in this direction that basic Roman characteristics become "variety in the supports and the centralization of the composition".[75] There is a distinction we must be careful to draw. One cannot call Roman architecture as a whole synthetic or organic, because it lacks a basic unity of interior and exterior, form and function, structure and decoration, material and appearance. However, the Roman decorative scheme, the aesthetic system as it relates to the facade only, must be considered unitary; and so, as we shall see when we analyse it later, must the plan, and (that three dimensional projection of the plan) the basic massing. The structurally derived ornament, the pseudo-structure and the structure-symbol do not by themselves make a unitary facade: nor must a unitary design depend upon these ancilliaries - the Pantheon, as it appears today is a magnificent example of a single concept, a centrally composed design. However, in Roman Imperial architecture these decorative a-structural screens must be regarded as one of the catalysts which made the translation from rigid additive classicism to unitary dynamism possible.

The point which has emerged in this study has been the inherent difficulty of finding, within the frame of reference of traditional Greek classicism, an architectural expression appropriate to the new structural and planning forms developed by the Romans.

We have shown the basic conflict in Roman civilization between the materialist attitude of invention and progress, and their innate conservatism and love of tradition. We have seen more than once how, when practical dictates have

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75. Anderson, op. cit., p.33.

necessitated the modification of the spirit of an institution, yet conservatism has retained the outward shell of the form. Thus, when the Romans sought to break the inhibiting influence of the inherited trabeated aesthetic, which would have so circumscribed their structural adventuresomeness, they did so not by abandoning this system of aesthetic - that is repudiating traditional forms - but by modifying the system to a point where these familiar forms are symbolic of new values, a new spirit in architecture. In a sense, therefore, the Roman plastic movement can be regarded as a continuation of the classic tradition, in that it honoured the classic dogmas in the breach rather than the observance. We are obviously still within the orbit of classicism, when every rule is broken assiduously and self-consciously. There may be an inversion of classical values, but, even if we are seeing the obverse of the coin, the currency is the same. In fact it is only within the ambience of a well-established architectural system that such radical changes could take place. A 'baroque' movement could only exist as a coherent architectural development if it utilized elements of architecture which had been thoroughly assimilated and understood. It is significant, that the Roman plastic movement retained the basic forms of the classical orders. The Orders became the common denominator of Roman architecture, no matter how far it deviated from classical normality. They were the only recognizable elements, and facilitated the understanding and acceptance of the many different and radical forms developed. One feels that in the Roman baroque new things are being said, but in a familiar language.

It would seem that the further architecture is divorced from the rationale of structure and purpose, the more it needs the disciplines of formalistic concepts.

The designing of a facade *in vacuo*, without reference to structure and purpose, is a most difficult essay in abstract patterning. Where does one start? How does one proceed? It is not surprising that, in their excursions into free facade designing, Roman architects clung to the orders as a sort of life-belt, an architectural theme - well established and well-loved - upon which they could develop their elaborate fantasies, and around which they could embroider their intricate and remote variations. In short, all Roman decorative concepts are mutations of the classical theme. Hope Bagenal has stated that the Romans deliberately simplified their design problem by limiting the dome to the radial plan. This simplification "was asserted in the face of a technical complication and multiplicity somewhat resembling our own today. It was employed for the sake of a unity and an order in a world that had become both chaotic and cosmopolitan."[76] By a similar process, the retention of the Orders was a deliberate policy of maintaining a link with traditional forms as a stabilizing force in a rapidly changing world. "For every art" wrote Geoffrey Scott, "and architecture more than any, requires a principle of permanence. It needs a theme to vary, a resisting substance to work upon, a form to alter or preserve, a base upon which, when inspiration flags, it may retire."[77] This is a fundamental concept, for it helps to explain the tenacity of the hold which the Orders have maintained upon Italian architecture. The Orders, in an architecture not based upon the intrinsic discipline of purpose and structure, become a practical necessity: they become the discipline applied to the design process.

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76. Bagenal, *op. cit.*, p. 766.

77. Scott, *op. cit.*, p.192.

The difficulty is that the discipline is arbitrary, irrelevant, and external to a living architecture.

THE ILLUSION OF REALITY.

An important concept which emerges from our study of the baroque trend in Roman architecture is contained in Altman's phrase, "the merging of the actual and the unreal". This element in design, which we may call Illusionism, is of interest in the study of Roman art, and of importance in the understanding of all subsequent art on the Italian peninsula. Although in Roman architecture illusionism is, so to speak, in its infancy, it is a trend which leads us to the heart of the problem of the Italian attitude.

We have, in our study of the structure-ornament relations arising out of the conflict of practical and formalist attitudes in Rome, already seen something of the Roman trend towards illusionism - that is, the trend towards the acceptance of the appearance rather than the striving towards the reality.

Decorative pseudo-structure provides us with our first category of illusionism, the category based upon an inherent element of deceit. In pseudo-structure we are expected to believe that the expression is truly structural. Structural vividness is the essence of this system, and to carry conviction it must appear to be structural truth; therefore the representation of structural forms must convince us of the reality and actuality of structural performance.

Our second category of illusionism is illustrated by structure-symbol. Here we are dealing with symbolic representation on a much more subtle level than the pseudo-structure relationship. The essence of the matter simulated is conveyed, without pretending that the impression is actually the genuine article. The symbol

or representation is substituted for the reality; it is hoped that the representation will evoke the essence of the reality, but no attempt is made to convince the observer that the representation is actually the reality. This type of illusionism is the basis of all representational art, other than literal realism.

The third category of illusionism is of a different sort, and we see it best in some of the 'barcque' elements of Roman design. Here illusionism achieves its purpose by confusing our sense of reality. Reality and illusion are skilfully juxtaposed, and purposeful ambiguity is introduced. We are left not knowing the precise boundaries of the shadow and the actuality. This is a two-edged weapon: not only is a false sense of reality given to the fiction, but simultaneously our intuitive reliance upon the truth of the reality is assailed and undermined. No longer knowing falsehood from truth, we are forced to abandon truth as a criterion of judgment, and illusion for its own sake wins the day.

All the categories are represented in Roman art and architecture. Realistic Roman sculpture, particularly in portraiture, is an example of illusion bordering on intent to deceive; but there is another phase of Roman art, where illusion is cultivated upon a much more sophisticated plane. "It can be shown", writes Swift "that the Romans undertook and solved most brilliantly one of the most abstract of all artistic problems, that of the effective representation, by means of new techniques in painting and sculpture, of atmospheric, three dimensional space".[78] Elsewhere, Swift defines illusionism in Roman art as "the effective representation of atmospheric space in art."[79] This interpretation of

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78. Swift, op. cit., p. 142

79. Ibid., p. 145.

illusionism is illustrated firstly by reference to painting, and later to sculpture, where, "the forms are suggested by a play of light and shade rather than by a literal rendering in the round, that is, shadows are so manipulated as to produce the illusion of form."[80] The purpose of this type of illusionism, given by Swift as the production of the optical effect of space and distance, is achieved more in painting and sculpture than in Roman architecture. In architecture these ideas are not, in Roman times, fully worked out, and even in the most developed examples, especially in Pompeii, they are primitive in comparison to later ventures in this field. However, the illusion of space, in a more debased fashion, is attempted at this Hellenized Oscan town: but the techniques adopted are those of sculpture and painting as applied to building, and not genuinely architectural means. By means of both painting and sculptural relief, architectural elements are introduced into the design. Mierson is particularly instructive in his analysis of the early architecture of Pompeii and Rome, and deals especially with the spatial implications of the architectural reliefs.[81] The borderline between these architectural reliefs, and the various categories of structural ornament we have earlier defined (particularly

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80. Swift, ibid., p.148 is discussing a Roman relief of circa 50 A.D. He also draws specific attention to the "Spoils of Jerusalem" on the Arch of Titus, as the apogee of this sculpture trend.

81. "We also find, in Pompeii and near Rome, the imitation of architecture with openings - above the incrustation of the first style in the former we find galleries of small half columns, these imitating architecture with openings in stone by means of relief; and we also get imitations of a whole order, as in the Casa del Centaure. Near Rome, from the second century B.C. onwards, we get similar features - thus, the interior of the apsidal hall of Palestrina, if reconstructed in space, would become a pseudo-basilica;--- and in other cases we get endless arcades represented in relief."
"After Sulla's time we get arches inserted into the sham orders, i.e. if reconstructed spatially, we should have

the structure-symbol) is very fine indeed. Little discusses the structural style of painting, with its realistic representation of architectural elements. He analyzes the structural style in four types, according to period, as follows : "The zone (i.e. a fourfold zone division of the wall) (Hellenic and Hellenistic); the imitative painted and actual plastic incrustation (Hellenistic); the perspective incrustation (late Hellenistic) and the ornamental incrustation (Imperial)".[82]

Little states categorically that the structural style is Greek in origin. We have already seen, in our discussions on symbolism and on the design of the scaenae frons, that a relationship exists between wall decoration and scenic design. Thus, the Boscoreale paintings, now in the Metropolitan Museum, show scenery from the theatre in realistic paintings in perspective; tragic scenery, showing royal palaces, temples, shrines with columns, pediments, statues; comic scenery, depicting private buildings, houses with balconies and windows, views of the city; and satyric settings in landscapes, gardens, mountains, seashores and other romantic situations. Similarly, Fourth Style paintings of the Early Empire show actual scaenae frons, with actors in various scenes. Little cites a cubiculum of the Labyrinth House which "furnishes possibly new evidence for a theatrical origin of these standard fillings";[83] and elsewhere he writes that the breakdown of the wall "was greatly assisted by the analogy of spatial suggestion in scene painting."[84]

See Fig. 38.

See Fig. 39.

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81. (continued) a row of columns in front of, and of the same axis as, a row of barrel vaults." Anderson, op. cit., p.32.

82. A.M.G. Little, "The Decoration of the Hellenistic Peristyle House in South Italy," American Journal of Archaeology, 39:1939, footnote, p.361.

83. Ibid, p.370.

84. Ibid., p.369.

Now it is clear that this wall painting is derived at least partly from the Hellenistic thyromata stage with its realistically painted sets. Margarete Bieber would set the art of scene painting even further back, to the scenery of the classical Greek theatre. She refers to "the reports that Sophokles invented the art of skenographia or scene painting, and that Agatharcos of Samos had painted a scene for Aeschylus, upon which the philosophers Demokritos and Anaxagoras had based their doctrine of linear perspective."[85] Smith, of course, in linking the wall decoration and the stage decoration with the royal palace, also demonstrates the Greek Origins of the style. However, this is a Greek seed which is to fall upon fertile soil in Italy. These illusionist reliefs and paintings serve a dual purpose: not only are they decorative, and function (as do all structure-symbols) as articulators of an otherwise plain wall surface, but they suggest - sometimes realistically, generally symbolically - an extension of the space of the room. That this is a deliberate design intention is demonstrated by Little, who notes that "a growing tridimensional illusion compensates for a gradual reduction in the height of the room."[86] In other words, we can correlate the reduction in actual size with an increase in the intensity of the illusion of space. The introduction of representations of natural scenes heightens the suggestion of space, by linking the room symbolically to the exterior. In the House of Sallust, for example, where the peristyle terminated in a wall, this wall was covered by a mural representing a garden scene, which, while not attempting to delude one into the belief that such a garden actually existed, never-

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85. Bieber, op. cit., p.107.

86. Little, op. cit., p.361.

theless provided a psychological expansion from the space of the room to that of the natural scene beyond. In the Villa of Livia at Prima Porta, this system is fully developed. "Beneath an arched ceiling which covers the whole room, the spectator gazes on all sides into the depths of a garden. Into the living-room has found entrance at last the free air and sunshine of the peristyle."[87] Also, in Pompeian work, "the smaller scenes which are introduced into the architectural setting are, as a rule, intended to be seen through an opening in the wall and are not to be considered as pictures."[88] These scenes lead the eye out and beyond the limiting plane of the wall, and are thus spatially significant. This expansion of space in the Pompeian house is also achieved by a proto-baroque merging of reality and illusion: for instance, in the exedra of the House of the Labyrinth,[89] the real architectural features are so skilfully integrated with frescoes in perspective (or at least simulated three dimensions) that they jointly - and inseparably - create the illusion of space desired.

The intention to deceive does not usually enter into the essays in the illusion of space. Deception, however, is the essence of another aspect of Roman illusionism. We have already seen how from the application of a trabeated aesthetic to a wall structure, there emerged the compromise of the simulated non-structural order. Both in detailing and in scale, this trabeated structure was essentially stone structure. Consequently it was of some architectural importance to give the characteristic Roman wall an appearance of regular masonry construction. Where the masonry was in the form

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87. Ibid., p. 371.

88. Anderson, op. cit., p.157.

89. Swift, op. cit., p. 75.

of random courses, false joints were sometimes used "to give an appearance of regularity".[90] As early as the second century B.C. Pompeian incrustation simulated the appearance of marble facing;[91] the dado of the House of Livia, for instance, is painted to imitate marble and red porphyry,[92] and Anderson asserts that the Curia Julia, and the Basilica of Constantine were finished with fine stucco "which, from its resemblance to marble and its durability, required only the imitation joints of stone to give it a certain monumental character."[93] It is also considered by Paulin in his conjectural restoration, to be the finish of the thermae of Diocletian. Partly, these pseudo-finishes are inherent in the adoption of the trabeated idiom as a decorative device; partly they are the result of a desire to achieve monumentality, both in scale and in splendour of finish. Middleton tells us that the plinth of the Temple of Mars had sham joints sunk into the marble, and comments:

> Nothing dwarfs a building more than it being faced with very large blocks, so additional false joints were added to restore its true scale. This is skilfully done in the fine travertine facing of the Tomb of Caecilia Metella, and in other buildings of a good period, such as the circular Temple in the Forum Boarium.[94]

Sometimes the duplicity was much more bold and impressionistic in character. Wheeler tells us that in Roman Britain,

> the rough walls of the late first-century amphitheatre at Caerlon were smoothed by flush pointing, and regular false joints were painted on the new surface in crimson paint. The town-walls of Caerwent were likewise smoothed by a smear of white mortar, on which false joints were struck.[95]

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90. Anderson, op. cit., p. 28.
91. Ibid., p.157.
92. Middleton, op.cit., 1:179.
93. Anderson, op.cit., p.111. Middleton, op. cit., 1:239,40, also draws attention to this facing of the curia, and mentions that the cornice is in brick, overlaid with mouldings in stucco.
94. Middleton, op. cit., 2:12, n.2.
95. Wheeler, op.cit., p.126.

This facile simulation of materials led to the use of sham materials, even when the real materials were available.[96] The easy illusion of materials in veneers[97] led to a neglect of the nature of basic material. Essays in illusionism are thus to a certain extent limiting and harmful. They result in a rejection of the aesthetic possibilities of such materials as brick, random rubble and unadorned stucco: and in rejecting the aesthetic of their constructional materials, they bring about a schism between the construction and the finish, which accentuates such divisions which - as we have seen - arise out of the structure-decoration equation.

This separation of structure and finish was aggravated by the nature of the Roman building industry, which was compartmentalized to a high degree. Greene draws attention to this important fact when he writes: "The subdivision of the Roman building trade, which gave different guilds the control of different parts, further accentuated the divison of construction from decoration, so that an edifice might be built by one set of workmen, and have a shell of decoration added later by marble facing or columnar facade."[98]

The concept that the separation in actual building of carcase and finish is echoed in a similar division in the building trades between unskilled and skilled

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96. Wheeler, loc. cit., tells us of the use of shaped bricks in the construction of columns and pilasters in regions where freestone was difficult to come by; but notes that even in areas where it was readily accessible, as in Lincoln, the use of a brick substitute was still come across.

97. It is interesting to see that the veneer appears in other aspects of Roman art and industry. Cyril Aldred, in writing of Roman Furniture, notes that veneering seemed to appeal to the Roman taste. Various types of wood were used - citron wood becoming so scarce that its value exceeded that of gold! - While laminae of tortoiseshell, born, ivory, glass and jewels, and plating with gold and silver, were also typical techniques.
C. Aldred, "Furniture: to the end of the Roman Empire," in Singer, op. cit., (Hist. of Tech.), p.227.

98. Greene, op. cit.

labourers,appears to stem from Choisy[99] and, according to Giavannoni, also from the researches of Marquardt[100]. Briggs[101] in his comments on the subject, relies heavily upon Choisy. He considered that the carcase was erected by gangs of unskilled labourers - slaves, conscripted free men, or even soldiers - under supervision. The facing and decorative work, on the other hand, required work of a far higher level of skill - and consequently workmen of a higher class, whose collegia anticipated the later guild structure.

We know from Maxey[102] and other writers[103] that specialization in the Roman building industry was on an advanced level, fine distinctions within one field, such as the mason (lapidarius: the man who dressed stone) and the hewer of stone (lapicidia: the extractor of stone from the quarry), being recognized.[104] Similar specialization in the building industry of today is related to an identical separation of the carcase and finishing operations: and would appear, in the case of the overall grille and the anonymous curtain wall, to be returning to the schism of structure and facade.

Giavannoni, who bases his discussion upon the fundamental data of Choisy and Marquardt, comes to some interesting conclusions about the problem. The most

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99. Choisy, op. cit., passim.

100. Privatleben der Römer, Leipzig 1886. See Giavannoni, in Bailey, op cit., p. 431, n.1, for several references dealing with this problem.

101. Briggs, op.cit., (Short Hist.), p.15.

102. M. Maxey, Occupations of the Lower Classes in Roman Society, University of Chicago Press, 1938, pp. 87-91.

103. There is a discussion on this topic in J. Furmanovsky and G. Herbert, Architecture and Society, unpublished thesis, University of the Witwatersrand, 1946.

104. In addition to the aedificator, or builder-in-charge, there were carpenters, plasterers, decorators, mosaicists; marble workers, clay workers and brickmakers; carriers and tenders, operators of derricks and blocks and tackle.

important of these, from our point of view, is the light which he sheds upon the different pace and quality of development of basic structure and applied ornament.[105] While we cannot agree with his contention that the constructive spirit was purely Roman and therefore flourished, while the art of decoration was alien and therefore, after a brief flowering, decayed rapidly,[106] yet we must concede a separate evolution of technical knowledge as against what he chooses to call the arts of architecture and decoration.

It is inherent in the Orders as we have discussed elsewhere, that they should be governed by rules and precepts: that their proper use is something which can be learnt academically and theoretically. On the other hand, as Giavannoni points out the process of learning in the practical field was not theoretical, but was accomplished "by the transmission of technical knowledge, by the application of the results of experiment to the processes and principles of building, and by empirical formulae, jealously guarded and handed down in mysterious symbolic form."[107]

It will be seen that the schism between structure and decoration runs deep, and has its roots in basic social and economic divisions. The illusion of materials for skin-deep decorative purposes must be considered not only as a contributing cause of the separation of structure and finish, but also as a symptom of a divided Rome.

The full range of illusionism in Rome is perhaps best demonstrated by Pompeian examples, of which the

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105. Giavannoni, in Bailey, op. cit., p. 433.

106. As we have argued throughout this thesis, the decorative urge was not negative Roman, that is merely Greek forms misunderstood and misapplied, but definitely positive Roman, the specific result of certain aspects of the Roman attitude.

107. Giavannoni, loc. cit.

Fig. 50.

Villa dei Misteri is particularly vivid; and while not a-typical, is yet especially instructive. We have in this example an illusion of structure vividly created. Deriving from this illusion of structure is an illusion of high decorative quality. Visual richness is suggested by the interplay of forms, the drama of chiaroscura, the intricacy of texture. Proportional relationships are established by the major articulation achieved by the structural elements, and by the articulation in a more minor key evinced in the panelling of wall and door surfaces. Through the simulation of marble, a feeling of sumptuousness is injected into the room. Because the representation attempts to indicate depth, by painting in relief, a recession of the wall plane is suggested, and an illusion of space is created.

Thus the structural, decorative and spatial essences of the room are all modulated by a device which is not an integral part of the room, as it derives from structural and functional demands. In other words, the major determinants of the architectural character of the room are not intrinsic to it; in fact the means employed are not architectural techniques at all. If the columnar screen facade is divorced from reality, in that the architectural forms it employs are irrelevant to the building it fronts, then the employment of the illusion of these forms takes us yet a further step from reality into the realms of irresponsible fantasy.

This irresponsibility is demonstrated in the grammatical liberties which are taken with the architectural forms depicted. The combination of column, entablature and arch in one supposedly sound structural system, the breaking forward of the entablature, the baseless pediment supported on columns over the painted door, these are all examples of architectural wilfulness,

which we see in many aspects of the structure-decoration equation.

Thus Roman illusionism covers the full range from base deception to skilful manipulation of the legitimate powers of artistic suggestion. It embraces in its scope the illusion of structure, the illusion of materials, the illusion of decoration and the illusion of space. Its importance as an architectural trend lies in its shift of emphasis from the reality to the appearance, from the creation of architecture to the contriving of its semblance. In its positive aspects illusionism increases the architectural vocabulary, and expands the range of architectural expression, by removing the inhibiting effect of the inherent disciplines involved in considerations of purpose and structure. In its negative aspect illusionism undermines standards; encourages the acceptance of approximations in finishes and detail; and substitutes ephemeral and superficial aesthetic satisfaction for more penetrating and enduring values. Illusionism does not make its first appearance in architectural history in Rome: nor does it reach its climax in that period. But as an attitude to design - or more strictly, as the expression of an attitude to design - Roman illusionism is the beginning of a trend which is stamped upon the architecture of the Italian peninsula.

One of the origins of illusionism lies deep in the heart of religious custom. In many ancient religions a man's possessions were buried with him, to ensure him the necessary comforts in the after-life. Sometimes, where perhaps common-sense replaced wilful extravagance, the representation of his worldly wealth replaced the actual objects: that is, the symbol replaced the reality. Certainly in Etruria this

concept was upheld, when the house of death was contrived to simulate the house in life. These Etruscan tombs "imitate the interiors of houses and consist of several rooms, with doors, windows, columns, and pilasters outlined on the walls, beamed or coffered ceilings, and including furniture, armchairs, funerary couches, etc."[108]

The realism of the illusion of architectural detail and the paraphernalia of everyday life in these tombs impresses even such sophisticated observers as Pallottino, who writes of the "uncanny impression" which it made upon him.[109] Its effect upon ancient peoples still under the influence of a primitive and somewhat naive mysticism, cannot be overestimated. Coupled with the mysticism was admiration for the skill shown in the contrivance of the illusion. The miracle of making "what is impalpable appear palpable, flat objects appear in relief, and near objects seem distant," was even to Leonardo[110] a considerable intellectual feat on the part of a painter, and thus much to be admired. This admiration of the simulation of reality does not appear to have been seriously challenged until Milizia; checking his instinctive enthusiasm for some miraculously realistic painting by Titian and Raphael, exclaims sententiously: "The sublimity of painting, however, does not consist in such deceptions."[111]

The motivations of illusionism are many and mixed. Certainly ostentation is an important aspect: many essays in illusion result from a love of display

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108. Pallottino, op. cit., p.112. The pillars of tombs such as that of the Stucchi at Cerveteri are decorated with painted stucco reliefs simulating a variety of everyday objects, including kitchen implements, tools, domesticated animals, all most realistically depicted.

109. Loc. cit.

110. Acording to A. Blunt, Artistic Theory in Italy 1450-1600, Oxford, the Clarendon Press, 1940, p.53.

111. F. Milizia, The Lives of Celebrated Architects, Ancient and Modern, trans. by Mrs. E. Cresy, London, 1826, 1, p.228.

verging on vulgarity; display not satisfiable within normal limits of materials and economics, imitation-luxury where the real thing is not obtainable, or is too expensive. While this explains the more sordid aspects of illusionism, however, it does not cover illusionism on the higher plane of creative art. For this type of illusionism a certain state of mind is necessary, a certain outlook, a certain philosophical approach, which is prepared to equate the ideal and the real, and to accept with Croce that "the distinction between reality and non-reality is extraneous, secondary to the true nature of intuition", and that intuition, upon which aesthetics are based, is "the undifferentiated unity of the perception of the real and of th simple image of the possible." 112

This philosophy makes understandable the Roman acceptance of the inconsistencies of the resolution of the conflict of attitudes which marked their period of civilization. Only by this fusion of the real and the ideal do the compromises of Roman architecture become intellectually palatable. We have seen earlier that many aspects of Roman illusionism such as pseudo-structure and pseudo-materials stem directly from the clash of the practical and formalist attitudes. It is important to realize that illusionism is not only a consequence of that conflict, but also the pre-requisite which makes its resolution feasible.

THE PROBLEM OF THE PLAN.

So far, in our study of the conflict between the practical and formalist attitudes, we have not given much consideration to the question of planning. However, in our separate analyses of these attitudes, we have

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112. B. Croce, Aesthetic, trans. by Douglas Ainslie, London, Macmillan and Co., 1922, pp. 3, 4.

seen both practical tendencies towards functional planning, based upon considerations of orientation, zoning, circulations, and conditions of physical comfort: and, conversely, formalist tendencies towards monumentality, axiality, and symmetry. Now, although these tendencies are far from being mutually exclusive, yet a field of potential conflict certainly exists.

Unselfconscious planning, following only the dictates of function, tends to result in informal, asymmetrical plan patterns. Thus, if we interpret in plan form the sort of villa described by Vitruvius, or the farmhouse outlined by Columella, an asymmetrical but purposeful plan would emerge, probably in appearance very similar to the country house at Boscoreale, whose plan is analysed in Robertson.[113] Unpretentious too, and equally lacking in formality, are the houses of Ostia and the tenements of Rome, where utility (and economic return in relation to investment) is the governing consideration - but not, apparently, to the point of including "recognizable bathrooms, kitchens, chimneys or latrines".[114] These plans, however, are very different to the traditional Roman house as we know it from our studies of Pompeii - highly formal, completely axial and symmetrical. In this ill-fated town, the asymmetrical but balanced axial plan of the Delian house is developed into one of complete symmetry.

The imposition of the formalist concept of symmetry upon a functionally derived plan has several implications. Firstly, the plan may naturally be an axial one - as in the Roman temple - and here there can be no inherent clash between the formalism of the symmetrical expression, and the practical solution of

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113. Robertson, op. cit., pp. 310, 311.

114. Ibid, p. 307.

the planning problem. Conflict begins to emerge when the plan is distorted to achieve symmetry: that is, when spaces are duplicated rather than concentrated, in order to achieve a symmetrical disposition. These spaces might work quite well, but had the plan been derived without consideration of a formal nature, the natural expression would have been a simple rather than a bifurcated space. A typical example of this approach is Trajan's Forum, with its two libraries and its two judges' tribunals. It is difficult for us at this distance in time to establish whether this duplication is functionally unnecessary, but it is apparent that it certainly was not essential. In this type of Roman monumental planning, symmetry does not result from an analysis of the utilitarian aspects of the plan: on the other hand, the utility of the plan does not suffer unnecessary distortion through the introduction of symmetry. Therefore, in order to achieve the formal result desired, symmetry is chosen as a functionally arbitrary but aesthetically necessary architectural expression.

In making the statement that utility does not suffer, the rider must be added that economy certainly does suffer: and while for the Romans extravagance of labour and material may not have been a factor - in fact, conspicuous waste might have been their goal - yet economy of means is an important component of the idea of functionalism. From this point of view, duplication for the sake of symmetry, which at best is extravagant and at worst completely redundant, leads to a breach of the basic concepts of the functional approach. We see this exemplified with great clarity in the various thermae.

Sometimes, however, the Roman architect is

satisfied with a broad symmetry rather than axial identity. Externally, the expression is perfect and identical balance. Internally, the planning is axial, and the massing symmetrical: but the detailed planning is far from symmetrical. The palace of Domitian contains a good example of this type of planning: about the centre axis the smaller lararium and the staircase balance the large basilica. The later palace of Diocletian contains many instances of balanced asymmetry within a framework of an overall symmetry. This is a kind of pseudo-symmetry, where the requirements of practical utility and the demands of aesthetic formalism are resolved in an easy compromise.

The realization that symmetry may at times impede utility is inherent in several passages in Vitruvius, particularly in relation to theatre planning and house design.[115] The need to temper the rigid application of formal symmetry in the light of the demands of utility is clearly stated, when Vitruvius advocates a judicious compromise.

> All the above-mentioned symmetrical relations should be observed, in these kinds of buildings, that can be observed without embarrassment caused by the situation. The windows will be an easy matter to arrange if they are not darkened by high walls; but in cases of confined space, or when there are other unavoidable obstructions, it will be permissible to make diminutions or additions in the symmetrical relations, - with ingenuity and acuteness, however, so that the result may not be unlike the beauty which is due to true symmetry.[116]

The symmetrical facade, behind which lies an asymmetrical plan, introduces us to a new problem, namely the relationship of plan to the external expression, with regard to surface articulation, architectural character, and massing.

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115. Vitruvius, op. cit., V:6:7, VI:7:5.

116. Ibid, VI:3:11.

Let us first postulate that in architecture it is important for there to be an echo in the exterior of the building of its inner subdivisions. Let us further argue, in support of this postulate, that, in the interests of architectural unity, such a rapport between inside and outside can only fortify the cohesion of the building as a work of art. There are various means by which this desirable end can be achieved.

The scale and size of the inner spaces may be indicated by articulation of the facade. Now, in Roman architecture the expression is, as we have seen, modular and cellular, related to an abstract proportional system of aesthetics, and indirectly to the expression of structure. The horizontal component of this net of articulation, the cornice or stringcourse, sometimes gives an index of room heights - but in buildings such as the Pantheon these stringcourses suggest a fictitious[117] subdivision into three floors, while in the multi-storeyed Colosseum the stringcourses on the upper floors do not even approximately coincide with the actual floor levels. The vertical components, the applied columns and pilasters, generally gave no indication of the rooms or spaces behind. Fenestration, which is a form of articulation, may also give an indication of internal sub-dvision. Here the question of character emerges: for instance a change in cellular facade, a change in character of openings across a certain number of modular units might imply a room of changed function behind. Such diversification of character, however, is not characteristic of Roman architecture, which we have previously demonstrated as either rigidly cellular, or else whimsically and arbitrarily articulated.

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117. Fictitious, that is, in relation to the inner, contained, space; but not fictitious in relation to the three zones of the wall construction.

The expression externally may be achieved by reflecting in the massing of the building the spaces within. This implies a response between internal and external spaces; and this correspondence arises only within the framework of certain space conceptions. The Egyptians, for example, conceived their buildings as solid geometrical forms standing in space; no hint is given of the spaces within. Internal space in the Egyptian concept, becomes 'excavated' space, carved out of a solidly-conceived building mass. The planning is free, in the sense that there is no responsibility to relate plan to mass. The Greeks, too, conceived their buildings as solids in space. Certain important differences distinguished their space concept from that of the Egyptians. The external spaces are no longer undefined, but, as in the temeni, are clearly stated. The geometrical solids standing in these spaces are defined by planes, which simultaneously give form to the inner space.[118] Thus there is a fairly direct correspondence in Greek architecture between internal and external spaces. The internal spaces, however, lack importance and relevance to the general architectural theme.

In so far as Roman architecture, in some of its aspects, is derivative from the Greek, similar space concepts prevail. This is particularly true of the small circular temples and such free-standing rectangular temples as that of Venus Genetrix in Rome. Gradually, however, new attitudes develop. Buildings are con-

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118. This is, of course, a simplification of the Greek space concept. The peristyle surrounding the peripteral temple introduces an important modification to the conception, without, however, changing its essential nature. The solid is actually defined by discontinuous planes (i.e. colonnades), and thus there is a subtle merging of inner and outer space. This zone of interpenetration is strictly limited in depth, however, as the eye sees beyond the peristylar columns to the unambiguous planes of the cella wall beyond.

ceived primarily as walls enclosing space, surrounding space and defining it, and not as free-standing sculptural entities within the space. Buildings combine with each other and with other architectonic elements, to form the screens defining external space, - as in the fora, with their interrelated basilicas, temples and colonnades.[119] Very large building complexes, such as the palaces and thermae, are much too big to be seen as a whole, and are seen rather as architectural backdrops, curtains walling off the external scene, the streets and squares of the city.

The building which is placed as a unit in space, as a Greek temple in the temenos, is an artefact seen in three dimensions, from many points of view. In consequence, much of its artistic strength lies in its massing. This method of siting becomes alien to Rome, as the Forum of Pompeii demonstrates, Here we see the two common techniques of siting buildings. The buildings which flank the long sides of the forum form walls to the space. They are effective as planes, not masses: they are therefore works of art of two dimensions. The temple, although free-standing, at least on three sides, is so placed that it forms the termination of a long vista. So sited, it is designed to be seen from a point of view, which, although it may vary in distance from the building, does so in such a manner that the locus of the various viewpoints is a line generally normal to the plane of the front facade. A frontal view of the facade is thus always obtained, giving a

Fig. 51.

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119. An interesting example showing this characteristic in an extreme form is the Forum of Vespasian, where the temple on the south-east side is almost completely masked by the colonnade; only a slight projection of the colonnade shows the position of the temple, and, by a process of inflection, its width may be deduced. See Van Blanckenhagen, op. cit., p. 22.

single point perspective of the building.

Both these kinds of siting, the wall to the space, or the termination to the vista, play down the three-dimensional qualities of architecture, and lay extreme emphasis upon the facade. The real problems of architecture are externalized, and epitomized in one ideal statement, the facade, which is considered in relation to external spaces only. Facade and interior tend to become independent problems, each to be solved on its own merits; and the question of the relationship of interior to exterior hardly ever arises - a hiatus in architectural unity which is as true of architectural treatment and expression as it is of space relationships.

Fig. 52. For example, the exterior of the Temple of Venus and Rome is that of a typical classical peripteral temple. It gives no hint of the complexities within. It does not suggest the two temples, back to back, with walls hollowed out and broken by niches, and the two great apses. It gives no expression of the small chambers between the apses. It does not imply the vaulted nature of the construction. There is a schism between the internal space, the space contained by the building, and the external space: there is a schism between the real structure and its external expression. The basic dichotomy of Roman architecture here achieves its ultimate concrete form.

When the plan is thus freed from the responsibility of simultaneously generating the external forms, an amazing freedom of planning results; and consequently, a greater emphasis is placed upon internal space relationships than ever before. From the relatively small-scale, but most effective, space modulations of the Pompeian house - the successive restrictions and expansions of space that mark the progression from

entrance to atrium, through tablinum to peristyle, oecus and then garden, a modulation of space accomplished by variation in room sizes in plan, room heights in section, degrees of enclosure or openness to the sky, and variety of light admitted - to the elaborate sequences of spatial experiences of the thermae - of which we get but a hint from S. Maria degli Angeli today, but which we can relive in the reconstructions of the scholars: the endless vistas through a succession of variously shaped halls; the subtle use of anterooms as preparation for experiencing the space of the great vaulted hall adjoining; the secondary axes, introducing cross vistas across open courts into further halls beyond; the manipulation of space by means of fluctuating size, enclosure and light - in fact, throughout the entire range of Roman architecture, the construction and relationship of spaces is the keynote of Roman planning. Swift makes the point that this concern with space is a major innovation in architectural development. "For the first time in history, Roman architects along with Roman painters and sculptors, learned to use space as a controlling factor in design and came gradually to realize the almost limitless possibilities for aesthetic expression which that mastery implied."[120]

This preconception with space strikes every acute observer of Roman architecture. Thus Giavannoni, primarily concerned with the engineering feats which made the roofing of great spaces possible, sees instantly that the Roman design intention was first and foremost spatial, the "harmony of the relation between empty and filled spaces."[121] While Worringer,

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120. Swift, op. cit., p.197.

121. Giavannoni, in Bailey, op. cit., p.434.

looking at the psychomorphology of architecture, comes to the conclusion that "the Roman will to form, with its Classical complexion, would only allow to space a life which was organically independent, harmoniously and serenely self-contained."[122]

While Worringer's conclusions may be true of many Roman buildings, particularly of the Pantheon, yet they may be said to apply to Roman space concepts as a whole only with an important reservation. As we have seen above, most Roman buildings exhibit an interest not only in the definition of organically independent spaces, but also a vital interest in the inter-relationship of these spaces in controlled and imaginative sequences. Ultimately, with the growing baroque trend, the precision of definition of the individual spaces in the sequences is sacrificed to a deliber[illegible] measure of ambiguity. Boundaries of space are tentatively suggested or become elusive, spaces partially co-extend, merg[illegible]d separate, "The notion of an interior as a finite space bounded by four walls and a roof, each in simple, logical relation to the other, gives place to a studied evasiveness," writes Ward Perkins.[123]

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122. Worringer, op. cit., p.158. The reader is referred to Valentine Muller, "The Roman Basilica", American Journal of Archaelogy, XLI:1937, pp. 250 et. seq., for an interesting discussion on Roman spatial concepts. Muller distinguishes between the two characteristic spatial flows, the cross and the circle (taken to mean a roundabout way leading back to the starting point). "The circle gives to the buildin[illegible]e appearance of unification, it concentrates and clo[illegible]s it. The cross articulates the space in emphasizing some lines as the leading and most important ones." He sees the circle and the cross as antagonistic one to the other, but recognizes that they may both be discoverable in one building.
Muller distinguishes as particularly Roman the closed room, not in open connection with the outer world. It is interesting that this is the characteristic which differentiates the forum from the early agora.

123. Ward Perkins, op. cit., (Ital. Elem.), p.168.

The pivotal building in the maturing of Roman spatial concepts is perhaps not the Pantheon - "the first major monument to be composed entirely as an interior"[124] - but Nero's Golden House. Ward Perkins' work has been fundamental in the understanding of Roman spatial concepts, and their implication upon form and mass.[125] In considering Nero's Golden House, he

Fig. 53.

focuses attention on the half-hexagonal courtyard and the octagonal room of the central wing, non-rectilinear rooms of positive and unusual shape slashed out ruthlessly from a plan of overall rectangularity. He states the importance of these rooms in the history of architectural ideas most forcibly.

> The Golden House reveals a new and, for its day, revolutionary conception of the meaning of architecture. For the first time in recorded history we find evidence of an interest in the shapes of the space contained strong enough to outweigh the functional logic of the masonry masses that contained it..... The significance of the Golden House is that it is the first recorded building (and may very well actually have been the first building) in which these novel ideas were applied on a monumental scale, and in a field that called for a radically new approach to the whole problem. In invading the traditional rectangular simplicity of Roman domestic architecture the architect came squarely up against the problem of interior space, in a context that demanded a solution from the inside outwards rather than from the outside inwards. It is hardly an exaggeration to say that the whole subsequent history of European architectural thought hangs upon this historic event.[126]

Such an epoch-making building does not emerge without antecedents. Circular temples, hemicycles, the great sweep of theatre and amphitheatre, these all played their part in creating a ready climate for the acceptance of non-rectilinear forms. The development of roofing

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124. Ibid., p. 169.

125. Two important works are "The Italian Element in Late Roman and Early Mediaeval Architecture," and "Nero's Golden House", both previously cited.

126. Ward Perkins, op. cit., (Nero's Golden House), p.219.

techniques, particularly in the medium of concrete, gave an added flexibility to the design of room shapes. Symbolism, in the form of the traditional d ned vestib le of the palace, must have stimulated Nero the aspiring sun-king in the choice of this form. And - as Ward Perkins shrewdly reminds us - there must have been a period of experimentation, the results of which we no longer know.[127] But the importance of Nero's Golden House is that, for the first time, in a major building, the plan bec mes the generator.

This form of planning, wherein spaces are clearly articulated in a series of shapes, not necess y recti-linear, is nowhere so clearly demonstrated as in the extensive Villa of Hadrian at Tivoli, "this vast sprawling assemblage of buildings and landscaped features in which for the first time we meet the oft-acclaimed 'modern concept' of architecture as the organization of interior space".[128]

Previously, elaborately shaped non-rectilinear rooms were incorporated within the overall symmetry and rigid formalization of the classical plan. In this sense, the Domus Augustana, despite the freedom of planning of several of the individual rooms, is still "an orderly complex, grouped about a rectangular peristyle with all the symmetry of traditional classical planning."[129] Hadrian's Villa, on the other hand, allows the fre dom of planning to establish the character of the composition as a whole.

This concept of architecture as the product of internal organization brings about certain complications both within and outside the building. If one examines

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127. Loc. cit.
128. Swift, op. cit., p. 198.
129. Ward Perkins, op. cit., (Ital. Elem.), p. 169.

the plan of the Piazza d'Oro, and considers the effect of the 'Hall of the Sinuous Outline' upon the other rooms of the complex; or looks at the plan of the baths of Caracalla, and sees the implications of the oval and circular rooms within the generally rectilinear regularity of the layout: then one realizes that each space divider has repercussions on at least two spaces, that each wall modifies simultaneously the spaces that impinge on either side of it. In terms of modern space concepts, we regard both spaces as positively designed spaces, and we can, from the shape of the room divider predict the shape of the space on the other side. In Roman architecture[130], the two spaces are not both positive, but for each positive space, there is a negative space, the space left over, as it were, after the positive space has been articulated from the general mass of the building. This concept of negative and positive spaces within the building brings to mind the Egyptian "excavated" space, but here, in Roman architecture, the spaces left over in planning are voids rather than solids.

The other complication arising out of the freely articulated plan is the problem of massing. As Swift says of Hadrian's Villa, "it is clear that the exterior design, a bewildering arrangement of vaults, domes and half-domes, was conditioned by and subservient to the studied effect of optical fortuitousness produced by the fantastically shaped and haphazardly arranged interior rooms".[131] Ward Perkins, too, in his closely reasoned

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130. Hadrian's Villa is a possible exception. The positive and negative spaces created by his non-rectilinear rooms do to some extent inter-relate or interpenetrate, so that the negative spaces reflect some of the attributes of the positive. In this, as so many of his buildings, the genius of Hadrian seems to outstrip that of his contemporaries, and his architecture points a way to the future.

131. Swift, op. cit., p. 198.

paper[132] discusses the implications of the free plan upon massing, not only in the deliberately non-conformist Villa of Hadrian, but also in the more controlled compositions of the great thermae. The resolution of the great vaulted cella media, the domed circular calidarium, the low anterooms, the rich variety of shapes and forms called for by the intricate plan, was an architectural problem of the first magnitude. To present-day architects, accustomed to a highly-articulated architecture of plan-derived forms, the thermae solutions appear strangely contemporaneous: as an aerial photograph of the Baths of Diocletian indicates. However, within the ambit of classical architecture, and without adequate precedent for such freely-generated masses, the Romans struggled to establish a new architectural language.

While admitting that the solutions were hardly finite statements, yet we see in the attempted solution of the problem the embryonic shape of an architecture still to come.

There is a kind of back-door solution to the massing problem, a solution which stems from the divorce of inner and outer space. The requirements of inner space may be multi-form: on the other hand, the external space requirements demand a uniformity and overall totality of effect. The building as the consequence of a complicated spatial sequence is not compatible with the building as the backdrop defining external spaces. As a result of this dual pressure - the difficulty of resolving the formal problem of massing, and the considerations of external space definition - the tendency for the independent solution of the two problems, which we have already noted, is aggravated. The exterior of

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132. Ward Perkins, op. cit., (Ital. Elem.)

the building, therefore, tends towards an overall simplified mass, an architecture of rectilinear prisms:[133] as Swift puts it, the variety of spatial effects are contained "within the classic symmetry of an overall rectangular layout".[134] In certain cases this rectangularity results directly from the grid-iron Roman town-plan: but even within the freedom of the boundary wall of the thermae, this overall rectangularity is maintained. The Baths of Caracalla, for instance, accomplish this external simplification of a multitude of variously shaped rooms, all of different heights, into a single rectilinear prism, by means of screen walls sealing off the courtyards, meaningless internal voids between rooms - as if some pieces of the jigsaw puzzle are missing - and high parapet walls to hide the fluctuating roofline.

Thus, in many aspects of the Roman architectural problem, one gets to the parallel stream solution. The plan is solved according to its merits and practical considerations are given full weight: simultaneously, the facade is designed, independently of the plan, according to a rationale which is purely formalist.

ANTITHESIS IN ROMAN ARCHITECTURE.

We have seen, in our analysis, how the conflict of practical and formalist attitudes has tended to reduce the designing of the facade to the status of an independent problem. The various categories of the structure-decoration equation give to the facade a volition independent of

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133. There is, beside the rectangular buildings, a parallel series based upon the circle. In principle they are identical to the class of building which we are discussing - and one of them at least (the Mausoleum of Hadrian) exhibits all the characteristics of 'excavation' architecture as archaic as any Egyptian tomb.

134. Swift, op. cit., p. 198.

structure and purpose: and the development of the decorative columnar screen of the 'scaenae frons' type brings us into the ambit of the screen facade proper. We have seen how the Roman attitude to space has accentuated the schism of plan and facade expression. We have noted also that the Roman concept of town planning - the consideration of external space - is such as to tend to eliminate the free-standing building, seen in the round, and to replace it with the building as wall to the space: and we have noted the consequence of this concept in the isolation of the facade for separate consideration.

Roman conceptions of proportion, dealing as they do with arithmetical relationships of linear dimension, tend to emphasise the single-point, frontal view, and thus accentuate the facade as against the three-dimensional concept of the building as a whole.[135] Ratios of linear dimensions remain valid only when seen, statically, from a single point of view. There are systems of proportion recognizable in elevation, but disappear amongst the changing ratios caused by the multiple viewpoints of the moving spectator. Geometrical proportion, however, based upon the repetition of shapes, retains its validity even when seen in perspective. There is an apparent relationship between the geometric proportional systems of the Greek and Gothic builders, and the sculptural free-standing forms of the architecture, designed to be seen in the round, compared with the Roman frontality, and their analytic, arithmetic proportions.

The facade, therefore, for these various reasons, acquires the nature of an independent design

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135. See particularly P.H. Scholfield, op. cit., G. Vaccaro, "Harmony of Forms in Space and Time," Architects' Year Book, London, Paul Elek, 6:1955, p.12; and R. Wittkower, "Systems of Proportion" Architects' Year Book, London, Paul Elek, 5:1953, pp.15-17; for discussions on this point.

problem, little related to the plan and structural system of the building it clothes.[136] In other words, it becomes an essay in abstract design, a problem in pure formalistics. As Hauser puts it: "The autonomy of art ..... culminates in a highly skilful but irresponsible playing with forms and an experimenting with abstract means of expression".[137] As such it tends to be over-stressed and over-selfconscious. We get the beginning of what has been called 'facadism', the over-emphasis on externals. In an earlier section, we have seen how, in Roman society, respect is paid to the outward form of institutions, even when their inner meaning has been violated. We have also seen how, in the transition from early to late republic, and from republic to Empire, there is an evolving Roman passion for pomp, ceremony, ostentation, display. The Augustus who found Rome a city of brick and left it a city of marble is exemplary of that compulsion for external show. The Roman is in all things an extrovert: he lives outwardly, and is interested in keeping up appearances. The development of illusionism in Roman architecture shows how this regard for externals leads to the acceptance of the shadow for the substance, the appearance for the reality. The emphasis on appearances is at all times present in Roman architecture, and undermines and erodes the tremendous achievement of Roman architects in the practical sphere.

We thus have a picture of parallel progress and decadence, of sterile patterning and purposeful accomplishment. We have sought the causes of these diverse parallelisms, and have found them in a series of antitheses, stemming from the basic conflict of the

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136. For, as Viollet-le-Duc says "One can deceive with Roman architecture, because its decoration is only a garment, not always perfectly adapted to the object it covers." Op cit., p.206.

137. A. Hauser, The Social History of Art, London, Routledge and Kegan Paul, 1957, p.116.

formal and practical attitudes. We have seen that the directions which Roman architecture took have been largely dictated by this dualism in attitude.

Tendencies to such dualism - the practical and the formalist attitudes towards architecture as we have earlier defined them - of course exist in most, if not all, periods of architectural development. Generally, however, the problem is simplified, in that the one aspect is dominant, the other recessive; and the character of architecture, although the outcome of the interplay of the two attitudes, is yet stamped indisputably by the predominant trend. In Rome, the problem is aggravated by the fact that both attitudes exist in force, so to speak. The practical attitude is certainly the dominant attitude, but the formalist attitude is by no means negligible. Consequently the conflict is a serious one extending over the whole range of architectural endeavour: and the resolution of the conflict accordingly becomes more difficult.

This conflict between the two poles of attitude has its roots in history. All civilizations are exposed to external streams of influence, but some to a greater extent than others. Some peoples, because of geographical and historical factors, are more isolated than others from the challenging insemination of foreign ideas. Others are exposed to them only after the critical formative period of their own cultural patterns. The power of Rome grew to cultural maturity while the star of Hellenism still shone bright. Their orbits interwined, and the configuration of the emerging Roman civilization was moulded both by its own native vigour and the alien sophistication of Greece. The Greek component of Roman architecture is generally conceded, even by the most chauvinist of Roman prota-

gonists. Thus Rivoira, after comparing Greek architecture "eminently artistic and decorative", with Roman, which, "was above all things practical, simple, orderly, dignified, majestic, vast in its conceptions, solid, made for eternity; in a word the expression of Roman character and Roman power"[138] - after thus emphasising the difference between the two cultures, admits that Rome still found room for Hellenistic influences, albeit reluctantly. "And though" he says "with Etruscan and Roman motives of ornament there are mingled others of Greek origin - ('and may not' he says, grudging Hellas even this slight advantage 'Greece in its turn have borrowed them from Egypt or Syria or Chaldaea?') - these were intelligently assimilated by the Roman style, and rationally connected with the essential features of the construction."[139] Swift, too, in his strongly argued case for the original and creative character of Roman architecture, admits its assimilative capacity, and notes "the recurrent Greek revivals to which it was subjected through the personal taste of Emperors such as Augustus and Hadrian."[140]

However, Swift takes the argument further, and, relying heavily on Weigand ("Baalbek und Rom") establishes the co-existence rather than the complete assimilation, of the two cultural patterns. He maintains that "during the Roman period two great but distinct

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138. Rivoira, op. cit., p. 86. Unwittingly, in this sentence, Rivoira reveals the internal contradictions which beset Roman architecture. "Practical, simple, orderly, dignified, majestic, vast, solid" -- these are not synonyms, indeed they are not necessarily compatible qualities.

139. Ibid., p.87.

140. Swift. op. cit., p. 220.

Swift does Hadrian a considerable injustice. Margeruite Yourcenar has brilliantly shown that Hadrian's interests were catholic and eclectic, in the best sense of the word. He was devoted to the spirit of Greece, and admired the high plane of its cultural achievement. He sought in Greece the inspiration of new achievement,

and individually homogeneous stylistic groups were represented in the Roman world and that these, existing within and in spite of all separate provincial developments, conclusively exclude the unitary formula of an all-embracing Hellenism." He argues that "the artistic line of division between the two is also that of linguistic differentiation" and that "the ... separation cannot be due to fortuitous or arbitrary factors but must be attributed to a fundamental and deep-seated cleavage between the two cultures themselves."[141] He thus accounts satisfactorily for the origin, historically speaking, of Roman dualism. Its continuation cannot be explained on linguistic grounds, however, but rather on the hardening of this original antithesis into the ... of attitude which we have analysed in this ... s. The perpetuation of the schism is not linguistic, but may be social, as Hauser points out, when he writes: "The development of Roman Art did not, however, by any means run a uniform course. To the very end there are two different tendencies alongside of one another: the Hellenizing, typicalizing, theatrically emotional style of the court aristocracy, on the one hand, and the native, sober, naturalistic style of the more mobile middle class, on the other."[142]

Swift sees the pattern as a progressively

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140. (continued) not the mere source of a vocabulary of traditional form. The buildings for which he was responsible, particularly the Pantheon and his Villa at Tivoli, lift Roman architecture from the path of classical conservatism, and placed it upon the heights of structural and spatial inventiveness. If he sought to preserve the essence of the Greek contribution to civilization, he did so in architecture typical of Rome at its best.

141. Ibid, p. 220.

142. Hauser, op. cit., p.120.

developing creative Roman art, gradually replacing the moribund and conservative provincial Hellenism. He quotes Riegl (Stilfragen) in support of this point, and also Mrs. Strong (Apotheosis and After Life) where she says, "Clive Bell fails to see that what he justly and so eloquently praises in Byzantinism actually begins in the early Empire: is, in fact, the 'ascending line' which makes its appearance in Rome by the side of decadent Hellenism."[143] It is interesting and entirely relevant to note that the late Hellenism which Rome inherited was itself not free from schism and antitheses. If, for example, we examine the frieze of the altar at Pergamum, we see "that the old Greek spirit, no longer self-contained and self-sufficient, had come to a sharp and painful realization of the essential discord between the actual and the ideal, between the perverse material world in which men live and the philosophical world of ideal thought and ethical speculation."[144] This antithesis of aesthetic and practical interest Bosanquet saw as one of the great problems raised by the Greek view of beauty.[145] In part, the schisms that marked the Hellenistic period resulted from a growing eclecticism, which, as Hauser has pointed out,[146] not only encouraged the successive manifestation of different styles, but permitted them to exist alongside one another.

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143. Swift, op. cit., p.220. This is the 'dual aspect' of the Roman Empire discussed by Boethius. "Two trends existed side by side; one is the classic tradition which appears in several 'renaissances' and the other is the new style which comes into full bloom in the Byzantine and Romanesque periods."
Axel Boethius, Roman Architecture, from its Classicist to its Late Imperial Phase, Goteborg, 1941, reviewed by Muller, American Journal of Archaeology, XLVII: 1943, p.141.

144. Swift, op. cit., p.50.

145. Bosanquet, op. cit., p. 112.

146. Hauser, op. cit., p.116.

Thus we have in Rome two streams of attitude. To which do we give priority?

The answer lies in the body of this thesis, which has attempted to demonstrate that they are in practice inseparable. The commonly held view,[147] is that the practical arts were typically and intrinsically Roman, but that fine art and literature, the graces of life, "often seem to be something alien, something added to the main fabric of Roman life."[148] This view we cannot accept. If we regard the formalist component of Roman architecture as an irrelevance, if we say: "What greatness might the Romans have achieved had they not been encumbered by these foreign aesthetic theories," then we are dealing with Roman architecture as it might has been, but not as it actually was. For better or for worse, formalism becomes a part of the Roman attitude, intrinsic, irremovable.

In analysing Roman architecture, it is an interesting intellectual exercise to isolate different features, and label the one Etruscan or Italic, the other Greek or Oriental. These features are like words that we recognize in an alien language. The fact is that although the root of a word may be common to many languages, yet the way in which the word is adapted makes it unmistakably French or Italian or English or Spanish. Etymology is an interesting and valuable science, but it does not necessarily explain why a word of Latin origin is one thing in English, another in French.

In architecture, too, a study of origins does not tell us all: we are equally interested in transmutations. Fine arts, the graces of life, may be Greek

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147. As expressed inter alia by Greene, Rivoira, Giavannoni and Edith Hamilton, op. cit.

148 Greene, op. cit., pp. 148-9.

in origin, but the Romans absorbed them into their own patterns of thinking and feeling, and they became manifestations of the Roman way of life. The Romans may have misunderstood and misapplied Greek forms, as seen in relation to Greek classical standards; but the very manner of misunderstanding, the very distortions given, the changes in emphasis and weight and direction, are governed by, and are typical of the Roman attitude. The patterns of architecture we have been studying are the constantly evolving forms which result from the manifestations of the Roman attitude under the impact of forces both at home and abroad. Roman architectu is a particular manifestation of general forces mod[illegible]y local conditions.

In many fields we see external i[illegible]uences adopted, absorbed and modified, to emerge a[illegible]w creations paradigmatic of the Roman spirit. In the first century B.C., after the widespread introduction of the grammaticus, we are told that "Roman education stands forth transformed on Greek models,"[149] and yet, while the general library culture of Greece made its appearance, practical utility did not vanish from Roman education. P man education was transformed, but it did not become Greek education: it became a new kind of Roman education. In the field of government, "while it was the Greek genius which, in its latter days, rose to conceptions of the unity of humanity, it was the Roman genius which translated those conceptions, in themselves unsubstantial and embodied, into an organized system of life,"[150] and the resultant empire was peculiarly Roman.

In architecture itself we see this same process. The essence of Rome were the Imperial fora yet, in their

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149. Sandys, op. cit., p.229.

150. Barker, in Bailey, op. cit., p. 46.

design, "Italic and Greek are, from the beginnings in the Etruscan and Hellenistic ages, fused in a way which it is impossible to disentangle entirely..." The result of this complexity of origins is "the monumental unity that had become a standardized architectural requisite of the auctoritas of the Roman magistrates,"[151] a veritable symbol of Roman power. We can trace in Roman monumental planning three levels of influence of the Hellenistic Empire and the Orient: in the late Empire; in the time of Caligula, Nero and Domitian; and in the Hellenistic intrusions into Italy in the last centuries of the Republic. The axiality and monumentality of Roman planning, despite this Hellenistic influence, remains the most typical characteristic of their design, because, in Boethius' words, it is not the importation of ready-made forms, but is "deep-rooted by centuries of remoulding."[152]

If the end-product is functional and practical, if it has a sound structure and fabric, that is the expression of the Roman genius. If the end-product is grandiose and wasteful, and has bravado, ostentation, exaggeration, that too is the Roman spirit. Excess is the hall-mark of the romantic, reticence of the classicist; and there is in a sense the same kind of bravura display in the soaring dome as in the columnar screen. They are both conspicuous displays. A classic subject, Edith Hamilton tells us,[153] thinking of the Roman poets, may be treated romantically. The Romans, inveterate romantics in architecture as in literature, took the classic themes of Greece, and recast them in romantic form. In doing so, they created an essentially Roman

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151. A. Boethius, "The Reception Halls of the Roman Emperors," Annual of the British School at Athens, 46: 1951, p.30.

152. Ibid., p.26.

153. Hamilton, op. cit., p. 124.

architecture.

In seeking an understanding of character, we must study the formative influence of heredity and environment. In the last analysis, however, we are concerned not with the influences, but with the emergent personality as an entity in its own right. After analysis comes the final synthesis: we must see architecture as a whole. A study of ancient Rome which is concerned with origins "is all too apt to state the complex relationship between Greece and Rome in terms of an opposition that is fictitious, and to obscure the far more important developing unity of the ancient world." [154] Our present study, in discussing the opposing attitudes, the practical and the formalist, is concerned not only with the elements of conflict, but most essentially with the resolution of the conflict in terms of an architecture considered as one and indivisible.

We can catalogue the qualities of Roman architecture, and say: these result from the formalist approach, these from the practical. That is to say, in defining these approaches, we can list the architectural consequences of the formalist and practical attitude in the light of pure principle. In the confused but rewarding arena of human achievement, however, considerations of function, structure, purpose, form, enrichment, and delight are all irretrievably interwoven. To understand the architecture of a people, it is necessary first to understand the forces involved, and then the process of interaction of these forces. Architecture demands the resolution of the conflicts inherent in the complexities of life. The extent of the resolution

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154. Ward Perkins, op. cit., (Review of Roman and Greek Town Architecture), p. 177.

is the measure of the greatness of the architectural achievement. This thesis has attempted to establish a technique of assessment by developing the concept of architectural attitudes; and as a demonstration has applied the technique to the study and interpretation of the architecture of Rome.

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ILLUSTRATIONS

1. Roman Vaulting. Durm, Baukunst der Etrusker und Römer, fig. 281.





2. Pantheon, Rome, relieving arches. Rivoira, Roman Architecture, fig. 141.



3. Pantheon, Rome, plan. Ashby, R.I.B.A. Journal, 37:1929, pl.6.

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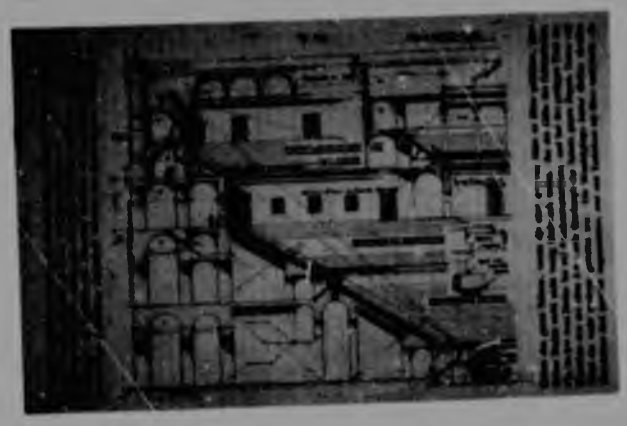




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13. Colosseum, Rome, section. Durm, Baukunst der Etrusker und Römer, fig. 745.





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18. Colosseum, Rome, animal cages. Middleton, Remains of Ancient Rome, fig. 62.

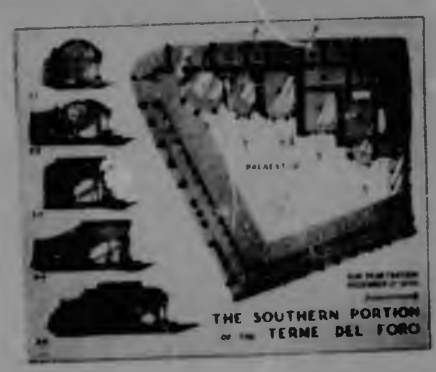


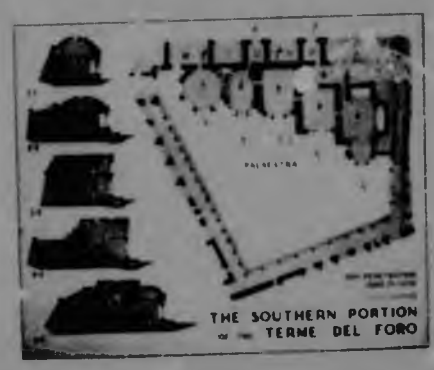


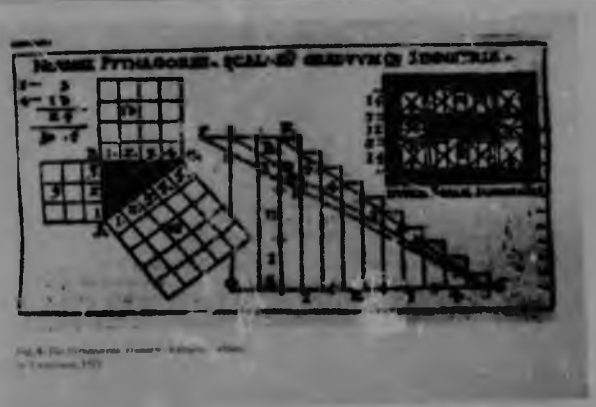
19. Terme del Foro, Ostia, plan. Thatcher, A.I.A. Journal, 29:1958, fig. 1.

20. Terme del Foro, Ostia, [illegible]undiagram. Thatcher, A.I.A. Journal, 29:1959, fig. 5.

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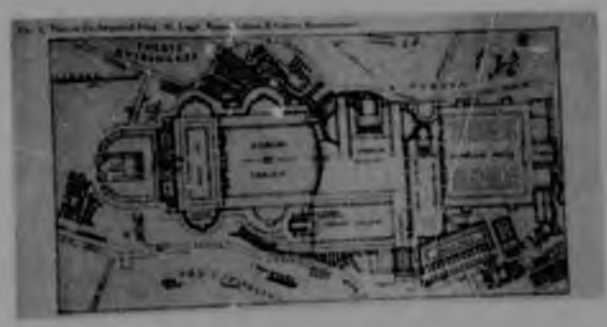


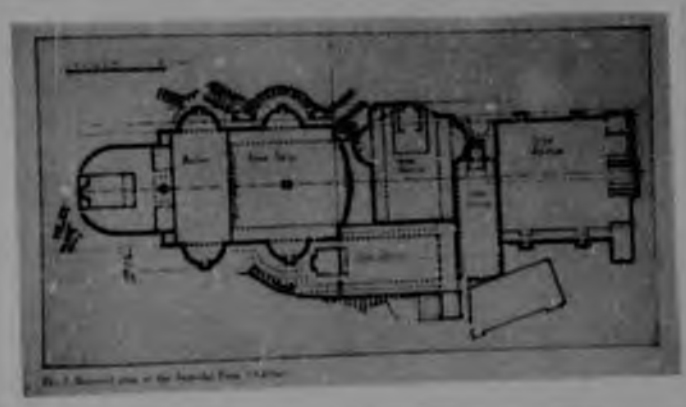




22. The Pythagorean Triangle, Vitruvius, Wittkower, Architects' Year Book, 5:1953, fig. 8.

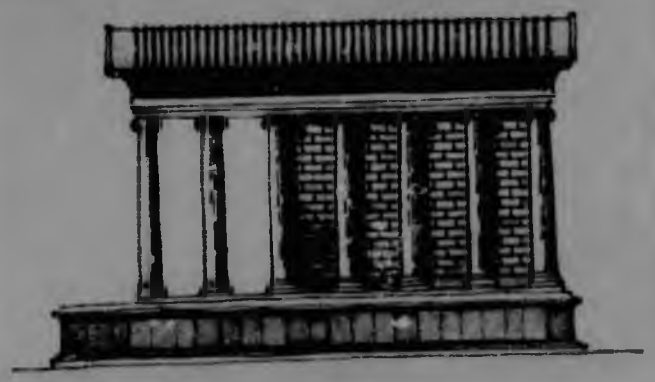
23. Hanging arcades, Spalato and Ravenna. Smith, Architectural Symbolism of Imperial Rome and the Middle Ages, figs. 5, 6.





24. Imperial fora, Rome, plan. Von Blanckenhagen, S.A.H. Journal, XIII, No. 4, 1954, fig. 1.

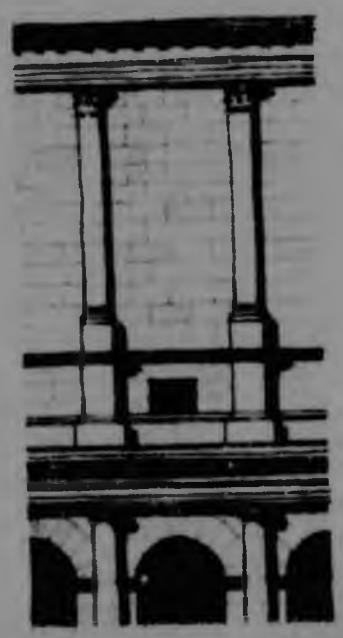
25. Imperial fora, Rome, plan. Von Blanckenhagen, S.A.H. Journal, XIII, No. 4, 1954, fig. 2.



26. Fortuna Virilis, Rome, side elevation. Drawing by G. Herbert, after a photograph in Joseph, Geschichte der Architektur Italiens.

27. Theatre of Marcellus, Rome, elevation. Drawing by G. Herbert, after a reconstruction in Joseph, Geschichte der Architektur Italiens.

28. Temple of Augustus, Rome. Middleton, Remains of Ancient Rome, fig. 35.







29. Temple of Bacchus, Baalbek. Robertson, A Handbook of Greek and Roman Architecture, pl. XIII.

30. Temple of Diana, Nimes. Robertson, A Handbook of Greek and Roman Architecture, pl. XV.





31. Theatre, Aspendos, Robertson, A Handbook of Greek and Roman Architecture, fig. 117.



32. Theatre, Athens, 5th century Bieber, The History of the Greek and Roman Theater, fig. 155.



33. Theatre, Athens, oldest stone skene. Bieber, The History of the Greek and Roman Theater, fig. 173.

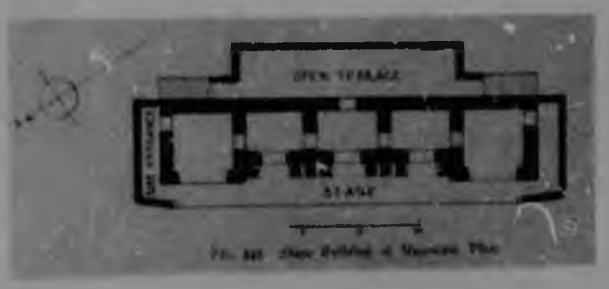




34. Theatre, Priene. Bieber, The History of the Greek and Roman Theater, fig. 294.

35. Theatre, Oropos. Bieber, The History of the Greek and Roman Theater, fig. 305.

36. Theatre, Magnesia. Bieber, The History of the Greek and Roman Theater fig. 340.
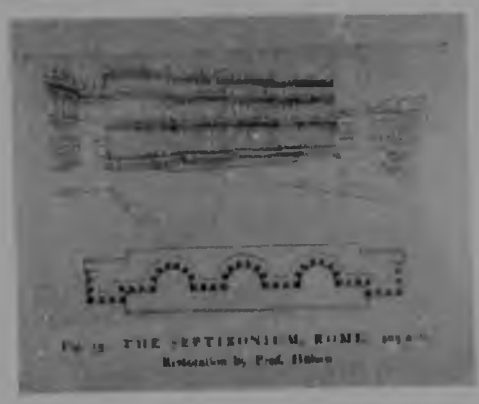




37. Model of a Stage, Museo del Terme. Bieber, The History of the Greek and Roman Theater, fig. 458.

38. Tragic scenery, wall painting, Boscoreale. Bieber, The History of the Greek and Roman Theater, fig. 344.

39. Painted scaenae frons, Pompeii. Bieber, The History of the Greek and Roman Theater, fig. 446.







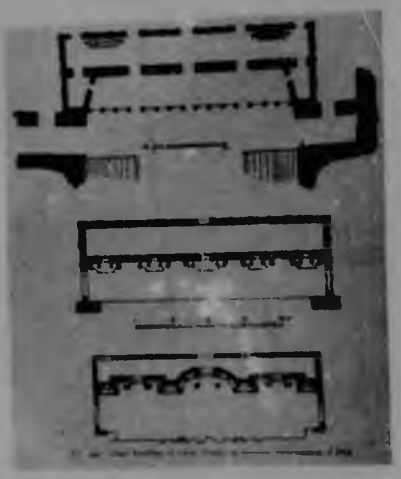
Septizonium, Rome. Hulsen's restoration in Bailey, The Legacy of Rome, fig. 35.



41. Theatre, Sabratha. Bieber, The History of the Greek and Roman Theater, fig. 478.



42. Septizonium, Rome. Du Perac's engraving in Gaunt, Rome Past and Present, pl. XIII.



43. Theatre, Pompeii, plans. Bieber, The History of the Greek and Roman Theater, fig. 440.

44. Theatre, Ephesus. Bieber, The History of the Greek and Roman Theater, fig. 487.

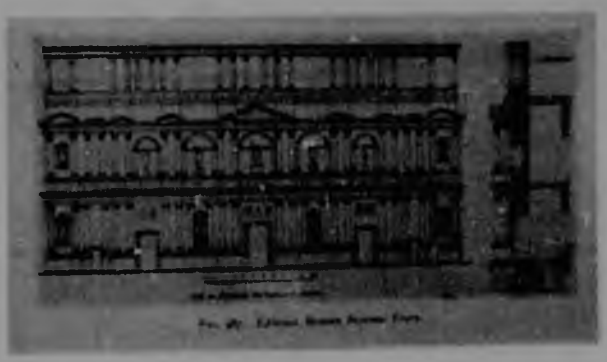




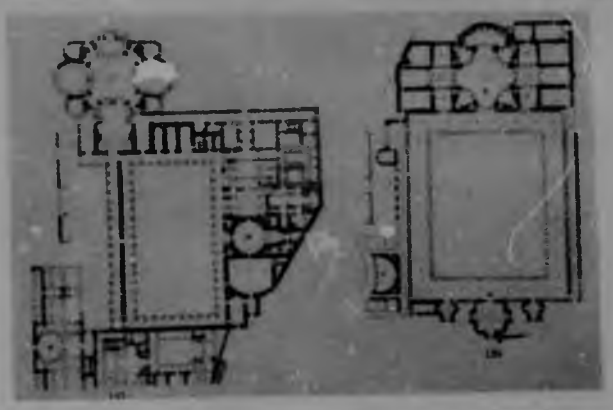
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45. Baths of Caracalla, Rome. Sangallo's drawing in Rivoira, Roman Architecture, fig. 216.

46. Library, Ephesus. Drawing by G. Herbert, after a reconstruction in Robertson, A Handbook of Greek and Roman Architecture.







47. Library, Timgad. Jones, Companion to Roman History, fig. 27.

48. Two examples of curvilinear plans. Smith, Architectural Symbolism of Imperial Rome and the Middle Ages, figs. 117, 118.

49. Two examples of curvilinear plans. Smith, Architectural Symbolism of Imperial Rome and the Middle Ages, figs. 131, 134.





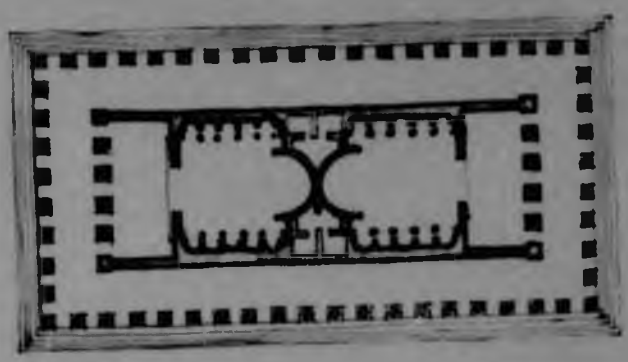


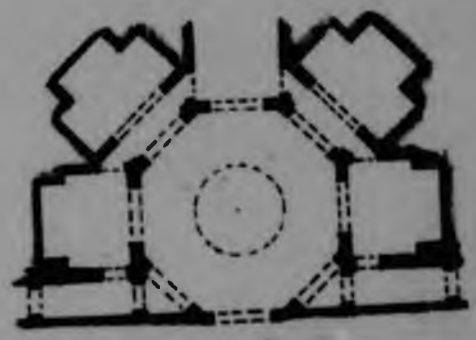
50. Villa dei Misteri, Pompeii. Maiuri, Pompeii, pl. 121.

51. Forum, Pompeii, Sitte, The Art of Building Cities, fig. 1.

52. Temple of Venus and Rome. Rome. Drawing by G. Herbert, after Joseph, Geschichte der Architektur Italiens.

53. Nero's Golden House. Rome. Drawing by G. Herbert, after a plan in Antiquity, 30:1956.





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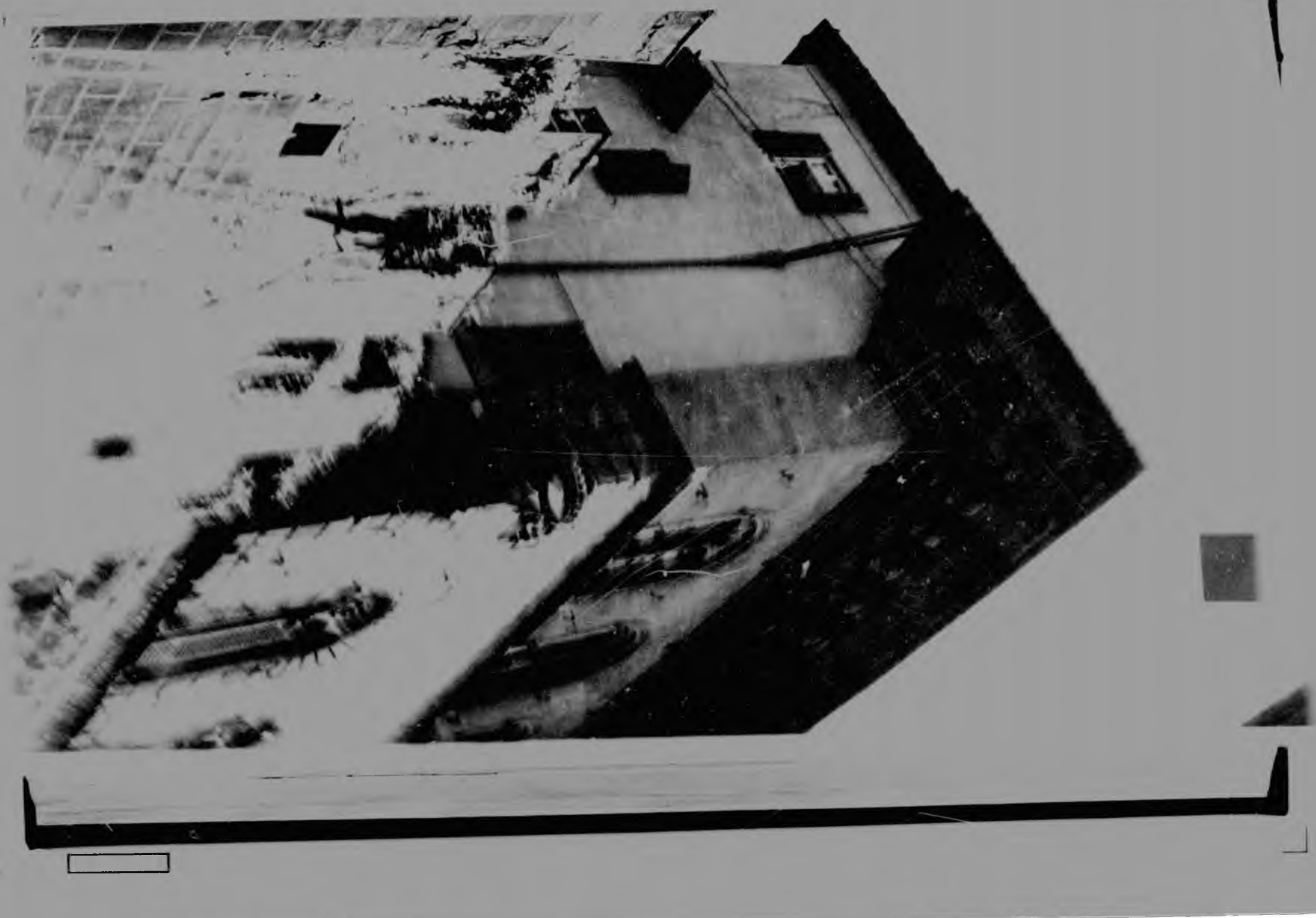
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APPENDIX ONE.

THE CONTINUITY OF ITALIAN DESIGN.

THE CONTINUITY OF ITALIAN DESIGN.

The studies which constitute this appendix and those that follow examine some manifestations of Italian architecture throughout the entire period of architectural history subsequent to Rome. The characteristics here analyzed are those which we have seen as typical of Roman architecture; and they testify to the perpetuation of the Roman tradition in Italy. We have noted, in Chapter One, the importance of Rome as a generating force in regard to later architectural development, and have discussed the tenacity of the Roman tradition, despite the natural mutations of an evolving history.

In this discussion of the continuity of Italian design, we are confronted with the central question: Is there an Italian architecture, a character of the architecture, irrespective of date and style, which stamps it as typically Italian?

That there is an Italian architecture, Italian architects intuitively believe. To the question: "Is there a typically Italian Architecture? Ernesto Rogers responds "Intuition answers before analytic demonstration, so that a firm, immediate reply is at once necessary. 'Naturally, it exists!" Rogers looks at a cross section of the Italian heritage-S.Ambrogio, S. Marco, the dome of S. Pietro, the work of Borromini and Bernini, Terragni's Casa del Popolo - and concludes:
"Each of the buildings would have an Italian passport to represent architecture at an international exhibition, and any one of them would be enough to interpret our culture unmistakably." 1

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1. G.E. Kidder Smith, Italy Builds - l'Italia Construisce, London, Architectural Press, 1955, p.9. From the

Minoletti reiterates these views, with a most emphatic affirmation of national character: "One may indeed affirm," he writes, "that Italian architecture, in its best expressions, can always and very easily be distinguished from any contemporary or previous foreign architecture, not that Italian architects have fallen into any blameworthy desire for nationalism..... But precisely because it is not the copying of others' work but their own intellect and their own Latin, Italian sensibility which guides them and their magnificent tradition in all their works....." [2]

If we regard this testimony as suspect, on chauvinistic grounds, it is yet indicative of a field of opinion worth investigating. And it is not only Italians who respond to this idea of a native character. As sensitive a critic as Furneaux-Jordan writes, in specific relation to Italian architecture, of a kind of inevitability about national expression in architecture. "Do what you may" he says "it is something that will out". [3]

The causes of this living tradition, this Italianness of architecture, are variously given as the tenacity of the classical tradition which, at any given time, seemed to represent both glorious past and confident future as well

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1. (Contd.) foreword by Ernesto Rogers. However, in "The Evolution of Present Day Italian Architecture," Architects' Year Book, 4, 1952, p.43, Rogers admits defeat in isolating by analysis this essence of Italianness. "Difficult it is to tie down ancient architecture - with its rich and contradictory medley of styles - to a general definition," he says, "..neither do I wish to see it forced into a nationalistic mould."

2. Minoletti, Mariani and Perogalli, "New Work in Italy", Architects' Year Book, 3, 1949, p.115.

3. R. Furneaux-Jordan "An English Comment", Italian Contemporary Architecture, London, R.I.B.A., 1952.

as forceful present; the unbroken pattern of Mediterranean living, within its stable framework of eternal land, sea and sky; the effect of climate both indirectly on the way of life, and directly upon the architecture itself; a deep rooted tradition of craftmanship and skill; a limited and relatively unchanging range of building materials; and the continuity of a traditional building technique. The chief attribute of this tradition as expressed concretely in architecture is generally a question of scale and form. [4]

It would appear from the foregoing that there is at least a prima facie case for considering the question of continuity in Italian design tradition. This conviction is reinforced intuitively, once one has made a survey of the monuments of Italian architecture: but perhaps the most convincing argument - before undertaking serious analysis - in favour of this hypothesis, is to glance at the indigenous buildings of Italy, the native and natural buildings of an unselfconscious people, which somehow sit so inevitably and timelessly in the Italian landscape.

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4. Vide Furneaux-Jordan, answering his own question - "What makes the buildings (at the R.I.B.A. exhibition of Italian architecture) always Latin, generally Italian?" He says that it is "partly a tremendous clarity and definition of form - everything clear-cut; partly, sometimes, of an almost Roman scale..." and elsewhere he writes of the Italian architect -" in accordance with tradition he is ever in love with form, as such." This architect considers:"contemporary architectural problems in terms of almost pure form - the one thing in the world with which the Italian is always in love. And it is that sort of love - and not a specific style - that is the essence of a national tradition." In strikingly similar terms, Guarnati says, "In Ponti's language, style is not an aesthetic or historical classification, but a pledge to the essence of forms."

R. Furneaux-Jordan ibid., and D. Guarnati, "Espressione di Gio Ponti," Aria d'Italia, 8, 1954, p.9.

APPENDIX TWO.

SOME PRACTICAL ASPECTS OF RENAISSANCE ARCHITECTURAL THEORY.

SOME PRACTICAL ASPECTS OF RENAISSANCE ARCHITECTURAL THEORY.

Architectural Theory may be divided into two major components, the formalist component dealing with venustas and the practical component dealing with utilitas and firmitas. This paper looks at the practical component of the architectural writings of Alberti and Palladio during the Italian Renaissance.

"From the beginning," Hume says, "the Renaissance drew its inspiration from two sharply differentiated, although parallel, threads of influence, the one practical, the other literary...." [1].

The importance of Roman literary sources as an influence both upon Renaissance architecture and on Renaissance theory was considerable. Alberti makes frequent reference to Roman sources in his "Ten Books" [2]. He mentions inter alia Caesar, Pliny, Livy, Varro, Strabo, Plutarch, Tully, Frontinus, Cato, Ovid, Theophrastus; while his philosophical background lies also in the classical world and stems mainly from Aristotle and Plato. The most significant influence, however, is that of Vitruvius. As Rykwert points out, Vitruvius's importance derives from the fact that his was the only systematic treatise on architecture to survive from Roman times. "Manuscripts of the Ten Books were constantly re-copied during the Middle Ages, and about 1415 the whole text was thoroughly revised after Poggio's famous visit to the monastery of St. Gall." [3]

Alberti did not always follow Vitruvius closely, and in many respects, notably in his dislike of Greek terminology, he differed sharply from the Roman. [4]

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1. B. Hume, Form and Reform in Architecture, London, Halcyon Press, 1954, p.187.

2. L.B. Alberti, Ten Books on Architecture, trans. by James Leoni, Ed. by J. Rykwert, London, Tiranti, 1955.

It is true, as Rykwert indicates, that "he appealed over the authority of one technician, to the whole body of classical writing. And beyond the writing, to the practice of ancient builders." [5]

However, it cannot be denied that Alberti made frequent reference to comments by Vitruvius, and acknowledged his ideas liberally. Moreover, it is fair comment that the form and content of Alberti's writing stemmed largely from the example of the Roman theorist. Like Vitruvius, Alberti was concerned with both practical and formalist matters. According to Blunt [6] "Alberti was not primarily interested in abstract aesthetic speculation, and when he comes to discuss these very general qualities he often takes over traditional theories from the ancients. He himself (in V:5) distinguishes the laws governing the beauty of buildings as a whole which are derived from philosophy, from those dealing with the parts of the building which, based on experience, are the proper business of the architect and the real foundation of architecture." Blunt here does Alberti's formalist theories much less than justice, for the formalist component of Alberti's writing was negligible neither in weight nor in

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3. Ibid., p. V.

4. Alberti writes thus of Vitruvius: "A writer indeed of universal knowledge, but so maimed by age, that in many places there are great chasms, and many things imperfect in others. Besides this, his style is absolutely void of all ornaments, and he wrote in such a manner, that to the Latins he seemed to write Greek, and to the Greeks, Latin: but indeed it is plain from the book itself, that he wrote neither Greek nor Latin, and he might almost as well have never wrote at all, at least with regard to us, since we cannot understand him." Ibid., VI:I.

5. Ibid., p.V.

6. A. Blunt, Artistic Theory in Italy 1450 - 1600, Oxford, Clarendon Press, 1940, pp. 19-20.

orginality, and indeed constitutes an important contribution to the architectural concepts of his time.

His contribution to the literature of the practical aspect of architecture, however, is much more derivative and bears the stamp of his indebtedness to Pliny and Vitruvius. This comparative weakness in practical matters is hardly surprising when it is remembered that the publication of his book preceded Alberti's active career as an architectural practitioner, and that he could therefore not draw upon his own practical experience for these chapters. However, even if not altogether, original, his comments on practical matters shows his patent concern with considerations of utility and strength. In his discussions on materials and techniques he is following not only in the classical footsteps of Pliny and Vitruvius, but also the more immediate example of the authors of the transition from Mediaevalism, such as Cennino Cennini [7] and Ghiberti.[8]

An analysis of the content of the Ten Books reveals the extent of Alberti's concern with the practical basis of Architecture. At the outset he states his belief in the Utilitarian origins of building, which he considered as rooted in the need for protection from the elements (I:2): and later he states the general proposition that "all building in general, if you consider it well, owes its birth to Necessity, was nursed by Convenience, and embellished by Use....' (I:9).

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7. Cennini, deals with techniques and not with aesthetic theories. For instance, in discussing painting, he devotes all his attention to the pigments and other materials used by the artist. Cennino Cennini, Treatise on Painting, trans. by Mrs. Merrifield from the Tambroni edition, London, 1844.

8. Ghiberti shows a development from the Mediaeval standpoint of Cennini. While he deals with theory,

He is obviously much concerned with realities, and affirms that the architect should work "as one that would have his work valued, not by the apparent prespective, but by the real compartments founded upon reason." (II:1).

He deals with the region and its climatic implications, as they affect building [9]; and examines the components of building - foundations, columns, roof coverings, fenestration, staircases [10] from the point of view of structural atability and convenience (Bk.I). He deals exhaustively with the selection of building materials, and examines their properties (Bk.II); and thereafter extends his analysis to the techniques of construction (Bk.III). When he analyses town planning, he is concerned with the aspects of convenience and security [11] and in this light discusses streets, fortifications, bridges, sewers, canals, and harbours (Bk.IV). He then passes on to an analysis of the planning of various building types according to use, with an emphasis upon the function of the buildings, the way of life of the occupants, and their behaviour patterns. Some of his planning desiderata are formalist, but much of what he has to say is sound practical common sense. [12] (Bk. V).

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8. (Contd.)
his interest, however, is still predominantly technical. "Everything", he writes, "and sculpture in particular, has to be regarded from the standpoint of that which is expressed and that which expresses: therefore a sculptor must be thoroughly grounded in his craft for theory will not make him perfect if he has not mastered his technique." L. Ghiberti, The Commentaries, trans. by Courtauld Institute of Art, unpublished, I:2.

9. For instance, Alberti, op. cit., deals with rooms for summer and winter use, and their relation to sun and air. (I:9). He discusses the size of windows in relation to sun and wind, and examines the problem of light angles to obtain "a free sight of the sky" (I:12).

10. Alberti here deals with doors, which should be placed in "such a manner that they may lead to as many parts

An interesting caesura occurs at the end of Book V. Rykwert draws attention to Theuer's view,[13] that Alberti's comments in the first chapter of Book VI would appear to indicate a lengthy interruption between the completion of Books I to V, and the resumption of the epic in Book VI. Rykwert appears to agree with this supposition, and in an editorial note (No. 113) considers a further sentence in this chapter, which, he claims, would seem to support Theuer's contention. Even if this hypothesis is not conclusively established, yet one can detect a subtle change in tone in the latter books. The formalist element becomes more noticable, and the structure of the work more confused.

It is as if the conflict of attitudes is being fought out in Alberti's mind, and their lack of resolution - which may be seen, particularly in his earlier works of architecture - stamps the literary conflict too. However, Alberti's stature as a thinker is such that, at this stage, he cannot be satisfied with the confusion, and struggles to establish order by defining the elements of conflict more closely. His definition of beauty, and his contribution to formalist theory have been analysed, particularly by Wittkower [14]: but Alberti's justification of the

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10.(Contd.) of the edifice as possible." Ibid.(I:12). In discussing staircases, he comments on gradients, number of steps between landings, and other design criteria. (I:13) This 'data sheet' information leads Rykwert to comment editorially: "This empirical advice directly belies the commonly accepted idea about the quattrocento architects' 'academic' attitude to design."

11. "Thus should be the ways out of the city; short, straight and secure...." Ibid., (IV:5).

12. As an example of this empirical approach, we may site his analysis of the plan dispositions of various rooms in a country house, where he argues on lines such as these: "The kitchen ought to be neither just under the noses of the guests, nor at too great a distance; but so that the victuals may be brought in neither too

rational and practical approach has not been adequately dealt with. He states: "The whole composition of the members therefore should seem to be made and directed entirely by Necessity and Conveniency; so that you may not be so much pleased that there are such and such parts in a building, as they are disposed and laid out in such a situation, order and connection.... We may be satisfied there is nothing throughout the whole fabric, but was contrived for some use or convenience, and with the handsomest compactness of all the parts." (VI:5).

It is precisely in this statement of principle that Alberti makes an advance upon his classical prototypes. In his analysis of materials, techniques and planning requirements, his dependency upon Vitruvius and other classical sources is obvious. His "handsomest compactness of all the parts" is a well-phrased description of Vitruvius's principle of economy. But in his insistence upon the importance of necessity and convenience as the most valid determinants of form, he takes Vitrivius's conviction that "the matter wrought will fully suit the purpose" [15] a step nearer to Sullavan's "Form follow Function".

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12. (Contd.)
hot nor too cold, and that the noise of the scullions, with the clatter of their pans, dishes, and other utensils, may not be troublesome." Ibid., V:17. Here is a model functional analysis, which takes into consideration man's sense of sight, smell, hearing and taste.

13. Rykwert refers here to the German translation from the Latin text by Max Theuer. Ibid., preface and editorial note 113.

14. R. Wittkower, Architectural Principles in the Age of Humanism, London, Tiranti, 1952.

15. Vitruvius, Architecture, in Ten Books, trans. by: J. Gwilt, London, 1826, I:1.

It is in this clear-sighted and unambiguous statement of principle that those attributes typical of the early Humanist - "his width of knowledge, as well as his rational and scientific approach" [16] - are most apparent.

The continuity in the literature of architectural theory is pronounced. Andrea Palladio, principal theorist of the High Renaissance, consciously adopts the traditional line. In his Preface, he ascribes his comments to three sources, namely archaeological research, literary precedent and practical experience, and refers specifically to his indebtedness to Vitruvius and Alberti. [17] Palladio believed in the Vitruvian concept that the value of building consisted in three interdependent attributes, conveniency, solidity and beauty. "For", he contended, "no edifice can be allow'd to be perfect, if it be commodious and not durable; or, if being durable, it be subject to many inconveniences; or, if having both solidity and conveniency, it has no beauty nor uniformity." [18] Subscribing thus to Vitruvius's basic tenet, of the interaction of formalist and practical considerations, it is understandable that we find in Palladio the same ambivalence which marks Vitruvius and Alberti. Again we have the elements of conflict, again we lack an adequate resolution.

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16. Blunt, op. cit., p.3.

17. A. Palladio, Architecture in Four Books, English translation from the first Italian edition, 1570, ed. Hoppus, London, 1736.

    Palladio says that his book is based upon "the observations I have made upon the said edifices, and from what I have read in Vitruvius, in Leo Baptista Alberti, and other excellent writers since Vitruvius's time, as well as buildings of my own performance...." (preface).

18. Ibid.

In dealing with the practical aspect of architecture, Palladio follows the tradition[al] pattern. He discusses building materials in the time-honoured fashion, but from his own comments one gathers the impression that this section is included less from interest than from a sense of duty of doing the accepted thing.[19] This is obviously for Palladio the unglamorous necessity, and it would appear that his heart was not in it. Hence, there is little that is fresh, much that is derivative, in the sections dealing with materials and techniques. He shows a sense of obligation to perpetuate Vitruvius, which transforms Vitruvius from a source into an authority, a metamorphosis most understandable in this, the 'academic' phase of the Roman revival.[20]

Half-way through Book I, Palladio seems to tire of these practicalities. "Having spoken hitherto of mere walls", he says, thus summarily disposing of the practical aspects of materials and techniques, "'tis now time we should pass to their ornaments, the greatest of all which are the columns....." (I:12). He then proceeds to a study of the Orders, where he no longer slavishly follows Vitruvian precedent, but has many original thoughts to contribute.[21]

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19. "And tho' Vitruvius, Leo Baptista Alberti, and other excellent masters, have given us their opinion of the choice of materials; yet that nothing be wanting in this book, I shall subjoin my own observations to the most necessary of theirs." Ibid., I:1.

    It is a curious commentary on the inertia of the building world, from a technical and scientific viewpoint, that Vitruvius's personal assessment of building materials, mainly subjective and arbitrary, could be taken over almost unquestioningly 1½ millenia later.

20. For instance, in dealing with walling, Palladio follows Vitruvius closely in his description of opus reticulatum, and makes this most curious apologia: "The net (reticulatum) or chequerwork is no more in use at this time; but because Vitruvius relates that it was common in his time, I would not omit to give here the design of it." Ibid., I:9.

Palladio, it would appear, has a compulsion to give quasi-rational explanations for many of his arbitrary assumptions. In his chapter on "Errors and Abuses", for instance, we get a lengthy denunciation of the cartouche as an architectural form.[22] This denunciation is a rational criticism based upon the irrational premise that all stone detailing should demonstrate what it would have been had the building been in timber. It is followed by an analysis of the structural shortcomings of the cartouche, which on the face of it appears to indicate a deep concern with practical matters.

On examination, however, it becomes clear that Palladio's struggle is not to preserve the purity of structure per se, but to preserve the purity of structural expression. It is not support, but the appearance of support, which counts; not structural validity but structural vividness. Palladio's diatribe is, in fact, aimed at the Mannerists. This concern with structural symbolism, masked by practical terminology, can be seen again in his comment: "The more solid and whole the columns seem to the eye, the better they answer the end for which they were raised, which is to make the whole building more strong and secure." (I:20). Here we find the typical confusion between structure and the appearance of structure; but the context in which this criticism appears is revealing, for it follows a statement critical of the accentuation - but not the use - of the joints of non-monolithic columns. Once again, his concern is really

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21. "I shall set down the measures and proportions of each of these orders, not so much according to Vitruvius, as to my own observations on the ancient buildings." Ibid., I:12.

22. "Wherefore we must not, instead of pilasters or columns which are to sustain any weight, place cartouches, which are certain scrolls that strike the eyes of judges very disagreeably.....None of

to maintain the appearance of stability.

At heart a formalist, Palladio strove to present a reasoned case, believing as he did that "though variety and novelty naturally pleases all mankind, yet they are not to be introduced in direct opposition to the rule of art, and the dictates of Reason." (I:20). His practical writing is shot through with the consequences of this dual pull. For instance, he analyses the design of windows from the point of view of room size, light, ventilation, and heat insulation. Into this sound functional analysis he introduces such arbitrary formalist concepts as the ideal ratio of window height to width, the proportional reduction of window heights for upper floors, the symmetrical disposition of windows, and so on. He acknowledges the possible clash between practical and formalist requirements, but despite his lengthy **apologia** for functionalism, he abandons it completely in the conflict, when he writes: "In a house altho' it consists of various apartments (some large, some small, and others neither one nor the other) we are not withstanding obliged to make the several windows in the same story equal." (I:25).

It is his theory of symmetry, however, that becomes paradigmatic of the confusion of formal and practical issues. He discusses symmetry in these terms: "The rooms must be distributed equally on each side of the entry and the hall; and care must be taken that those on the right hand answer to, and be of equal largeness with those on the left,

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22. (Contd.)
these cartouches should come out of the cornice; for it being necessary that each part thereof shou'd be made to some end....." - here we have the rational postulate, closely akin to Alberti's demand that each part be "contrived for some use" -- "and demonstrate, as it were, what it would be if the whole building had been composed of timber;" -- a most illogical premise. Palladio continues; ".... and as it also is natural that a great burden should be supported by

whereby there will be a just harmony and proportion in the several parts of the edifice...." -- this is the formal part of the theory, time-honoured - "...and the walls will be in equal proportion pressed by the roof"-- here we get the functional, structural necessity for symmetry, a new note in architectural theory. Palladio continues: "For if the apartments are bigger on the one side of the edifice than on the other, in the former case they will resist the weight with ease, because of the solidity and thickness of the walls; but in the latter they will be too weak...." (I:21). This functional analysis of symmetry may be questionable, and its conjunction in one sentence with the formalist concepts of harmony and proportion confusing; but it is an advance in thinking over the purely formalistic concepts, or anthropomorphic analogies such as Vasari's with the symmetry of the human face.

It is in the books subsequent to the first that Palladio breaks with the Vitruvian- Albertian tradition, for here he leaves theory in the abstract, and devotes much of his attention to factual descriptions of his own works. Vitruvius, apart from his military experience and his basilica at Fano, has little of his own designs to report upon; Alberti's book was written principally

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22. (Contd.)
some thing solid and substantial enough to sustain it, these cartouches would doubtless be altogether superfluous, since neither joists, nor any timber whatever, can perform the effect the cartouches represent; and as they are supposed to be slender and weak, I cannot imagine how they can be put under anything gross and weighty, with the least show of reason". Ibid., I:20.

before his practical career developed. Palladio, however, wrote to sum up a long and active professional life; and the literal and factual reporting upon his own buildings helps to give his latter writing an air of reality lacking in the earlier theorists.

When we try to penetrate beneath this veneer of practicality, we find many of the same sort of well-meaning generalities of planning procedure as typified his predecessors, but disappointingly little direct analysis of his own plans in the light of these general principles. [23] Again we are struck by the predominance of the formalistic content, and we are forced to the conclusion that although practical matters receive considerable attention yet the practical attitude is fundamentally little advanced beyond that of Vitruvius.

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23. In his first book Palladio discusses, as did his Roman & Renaissance predecessors, the effect of climate upon architecture. His conclusions generally are sound and unstartling, as for instance his comments on the regional variation in roof design; "These roofs must be either more or less shelving, according as the climate is either hot or cold; for which reason, in Germany, where the snow falls in great quantities, the roofs are made very sharp....for otherwise the weight of snow would crush them. But those who live in gentle and moderate climates, should raise their roofs with grace and politeness and to such an altitude as that the rain may easily roll off." Ibid. I:29.

This broad approach, dealing with principles rather than their application, is perpetuated in the second book. In his analysis of house plans, he follows very closely on Vitruvius. He discusses zoning the principal rooms and the service areas: "We must order and dispose an edifice in such a manner, "he advises, "as that the most noble and beautiful parts of it be the most exposed to all spectators, and the less agreeable thrown into by-places." Ibid., II:2. For instance, he recommends that the kitchen should be in the cellar, thus ignoring the kitchen-dining room relationship in a way that would have distressed Alberti. Similarly, his treatment of aspect and orientation tends to the perfunctory.

APPENDIX THREE.

STRUCTURALLY DERIVED ORNAMENT.

NOTE: This paper has been accepted for publication in the South African Architectural Record, and will appear in the issue of June 1960.

STRUCTURALLY DERIVED ORNAMENT.

Decorative pseudo-structure is a technique of decoration aimed at certain ends. These are to a large measure the same ends as are achieved by the valid use of real structure for decorative purposes. One of the primary functions of pseudo-structure is articulation; another is the retention of the essence of structural quality, which we have noted as a feeling for support, stability and solidity; and yet a third is the purely ornamental function of imparting surface richness by modelling, the interplay of light and shade, achieving plasticity of surface. The means of decorative pseudo-structure are by definition not truly structural. The forms used are structural, the contexts in which they are used are structural; but fundamentally the elements are redundant when considered as structure for the building they ornament - although they may be structurally necessary to the system of ornamentation.

Pseudo-structure was developed in Rome when the actual system of construction failed to produce the aesthetic ends desired. Throughout Italian history we find the wall as a basic unit of construction: that is, structure is essentially mass construction. Aesthetic expression, on the other hand, is almost invariably compartmentalized: articulation of the wall surface is a primary aesthetic gambit. The schism between actual structure and structural expression, first seriously noted in Rome, is one of the trends which marks Italian architecture throughout its development.

Of the various facets of pseudo-structure, we will leave the questions of articulation and ornamentation to the next section, but must deal with the problems of

structural expression here. Accepting for the moment, that a system of ornamentation and articulation is a valid architectural objective, the question still remains: Why should this system of ornamentation be a structurally-derived and structural-significant one? Geoffrey Scott, in The Architecture of Humanism,[1] discusses the importance of constructive vividness, in contrast to constructive integrity, as a source of architectural enjoyment, and goes on to say: "If we grant their architectural pleasure is based essentially upon our sympathy with constructive (or, as we have agreed, apparently constructive) form, then no kind of decoration could be more suitable to architecture than one which, so to say, re-echoes the main theme with which all building is concerned. In Renaissance architecture, one might say, the wall becomes articulate and expresses its ideal properties through its decoration. A wall is based on one thing, supports another, and forms a transition between the two, and the classic orders, when applied decoratively represented, for the Renaissance builders, an ideal expression of these qualities, stated as generalities."

This concept of the orders, and in fact all applied columns, as the idealized quintessence of the structural function of the wall is the philosophical base for the historical development of structural overlay. However, it contains an inherent fallacy, for the column cannot rightly be regarded as symbolic of the wall structure. The essential difference between the continuous support of the wall, and the system of isolated point

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1. Geoffrey Scott, The Architecture of Humanism, London, Constable and Co., 1914, pp. 113, 114.

supports of the column, must be accounted for. Similarly, the combination of trabeated decoration and arcuated construction, a typical Italian device in all periods from Rome to the Baroque, cannot be explained by the concept of the column as generalized symbol of the arch.

The basic conflict between wall and column was never completely resolved, either in theory or practice, least of all during the Roman and Renaissance periods; the confusion is also evident in Tuscan and Lombardic work, and is not absent from contemporary Italian development. When Scott says that we fail to see "in the architecture of the Renaissance, an art where structure is raised to the ideal," he highlights the essential problem of Italian architecture, for it is this seeking of the Ideal as something separate from, and outside Reality, that is the prime characteristic of the Italian architect.

Decorative structure-symbols are derived from and are reminiscent of structural forms. They are generally used in structural contexts, but they make no pretence at serving structural ends. They call attention in diagrammatic fashion to structure as a basic factor in architecture, but they no longer evoke the structural essence. Their main purpose is decorative and articulative.

We have seen previously that decoration and articulation are important motives for the application of structural overlay: and it is perhaps necessary to add some comments on these aspects at this juncture. The use of the blind arcade, the lesena, the corbel gallery, in mediaeval Italian work, is largely a question of surface enrichment, of subtle modelling in clear sunshine. The deeper engaged arcades are equally matters of surface modulation. The theoreticians of the Renaissance,

in their use of free columns, engaged orders, and pilasters, readily admit to their ornamental character. Alberti's description of half columns and pilasters as Low Relieve (as against the Whole Relieve of free-standing columns) [2] shows a sculptural rather than a structural vision. His abhorrence of the plain surface is shown clearly when he writes deprecatingly of the building in great want of ornament,

> as if all you consulted in raising your wall was to sustain the roof, not leaving any space where you can afterwards conveniently or distinctly add either the dignity of columns, the embellishment of statues, the majesty of pictures, or the delicacy of any incrustation. [3]

The association of columns, statues, pictures and incrustation as means of ornamentation, is most revealing of the Italian attitude.

The ornamental nature of the applied column and its derivatives becomes most pronounced during the Baroque, and to describe the facade of a baroque church such as S. Maria Maddelena, we have to recourse to such terms as pilasters, semi-pilasters, pilaster strips, pilaster strips related to free-standing columns, compound pilasters, and so on. This verbal confusion - typical of many a description in Fokker - results from the use of a terminology of structure and structure-derivative to describe a process which is essentially one of modelling of surfaces. The semantic difficulty arises (as does the visual) from the obstinate retention of the capital, which is irrelevant to the process of modulation, but has significance only in a structural context.

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2. L.B. Alberti, Ten Books on Architecture, trans. by James Leoni, London, Tiranti, 1955, VI: 13.

3. Ibid., IX:9.

I believe that the articulation of the wall surface during the Middle Ages is primarily a matter of decoration, in the sense in which we have been discussing the question above. Structure-derivatives are used, singly or in conjunction, because they are the most obvious source of decoration of buildings of an unsophisticated sort. They then develop grammatical systems of ornamentation of growing complication and subtlety. The wall surfaces are articulated into regular modular units, because in so doing rhythms are established, and a system of order imposed. Although there are no generally applicable mediaeval theories of architecture, such a search for order would be compatible with neo-Platonism, the central pillar of mediaeval aesthetic philosophy.

During the Renaissance, the question of articulation becomes complicated by considerations of proportion. A coherent theory of proportion is developed by Alberti, Palladio and other writers, which is based upon a clear relation of part to whole. The reduction of a continuous wall surface (which remains the true structural expression of Renaissance buildings) into a series of identifiable compartments, becomes the major function of the articulating elements. The clearest expression of this fact is contained in the work of that most clear-thinking of commentators, Milizia. He analyses facades with and without applied orders, and makes explicit the hitherto only implied relationship between the orders and proportion. However, it is in dealing with the problem of the sans-order facade that the most revealing statement is made: "In the facade devoid of orders, a just relation of the parts with the whole is required. To

regulate this relation, it is easy to suppose an order to each storey...[4] and then Milizia proceeds with the analysis as if the order actually exists. Even in absentia, the order imposes its discipline. Zevi considered the Renaissance applied decoration as "an act of profound coherency" [5] in that the early Renaissance facade articulation set up rhythms which corresponded with the rhythmic, modular nature of the plan. Another contemporary historian, Summerson, has related the applied order to the question of monumental scale, and makes the highly pertinent observation that "classical architecture, with its system of applied and interrelated orders, offers the most facile means for the enlargement of scale in a building applied to specific human purposes."[6]

The nature of Baroque is very different from the classical renaissance out of which it sprung: and the nature of the articulation is correspondingly different. The baroque artefact was " a fused gigantic organism" and therefore " a lack of individual distinctness in the parts - a lack of intellectural differentiation which Bramante, for example, might have given them - was thus not a negative neglect, but a positive demand." [7] Scott puts the case of "additive" architecture - the architecture of the Renaissance - very well. "Individual distinctness of the parts" and

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4. F. Milizia, The Lives of the Celebrated Architects, Ancient and Modern, trans. by Mrs. E. Cresy, London, 1826, V.1, p. XLI.

5. B. Zevi, Architecture as Space, trans. by Milton Gendel, New York, Horizon Press, 1957, p.132.

6. John Summerson, Heavenly Mansions, London, Cresset Press, 1949, p. 204.

7. Geoffrey Scott, op. cit., p.140.

"intellectual differentiation" are the very attributes of classical architecture, and it is the essential nature of the orders - wholes based upon an additive theory of composition, and demanding an individuation of separate and recognizable parts. Roman and Renaissance theories of proport[illegible] are both based upon this concept of the identifia[illegible] part within the whole [illegible]he technique of individuation is articulation, and the orders are its classic instrument. The Baroque is noteworthy in that the additive process is replaced by one of true synthesis, where the combination of parts produces the indivisible whole. The orders and their secondary derivatives, pseudo-structure and structure-symbol, play a new role in the baroque. They constitute a punctuation in time - that is - movement, - rather than providing a means of surface articulation or analysis into components.

In modern Italian architecture, articulation is once more resorted to, both as a means of symbolizing the basic cellular or stratified nature of concrete construction, and as a scale-giving element; not however, to expand into monumentality, but rather to reduce the oversized giants of twentieth century technology back to the human scale.

Structurally-derived ornament is architectural decoration whose forms have originated in structure, pseudo-structure or structure-symbol. These structurally-derived forms have often undergone considerable mutation, particularly of scale; and the context in which they are used are generally non-structural.

We have already noted that structure forms a ready reservoir of decorative forms. These forms, once employed

only in structural contexts, become so familiar that they can eventually be taken right out of context, and used again, like quotations, in new circumstances. If the quotation at first has the piquancy of unexpectedness, then it is met with the resistance and admiration which greets all innovation and novelty. Eventually, because it lacks inner meaning and fundamental logic of form and position, it becomes a cliché of style. As illustration of the essential arbitrariness of structurally-derived ornament, let us follow Milizia's account of Baccio d'Agnolo's innovation of the pedimented window. "This (the Palazzo Bartolini, in Florence) was the first palace with windows ornamented by pediments, and columns to the doors, bearing an architrave, frieze and cornice; a novelty which, like all others, was first blamed, then passionately admired ... those who ridiculed the building did not understand the subject, nor the reason for placing pediments over the windows: perhaps ....," Milizia insinuates slyly, "Baccio could not sufficiently account for them himself." 8

In age structurally-derived ornament is as old as architecture itself; its ramifications are wide-spread. It ranges from the familiar pediment, misplaced and abused in form, to the transference of an entire triumphal arch to grace a central window, as in Ammanati's Palazzo Governo at Lucca. At times, as in the twentieth century block of flats in Rome's Via Nemorense, which has a skeleton outline of pediment, pilasters and triumphal arch to grace its barren facade, it descends to the ludicrous.

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9. F. Milizia, op. cit., 1:222.

APPENDIX 3 - ILLUSTRATIONS.

PSEUDO - STRUCTURE.

1. S. Pietro, Toscanella; engaged arcade. Rivoira, Lombardic Architecture, Fig. 186 (8th and 12th centuries).
2. S. Maria in Valle Porolaneta, Rosciolo; engaged columns. Ricci, Romanesque Architecture in Italy, p. 172 (13th Century).
3. P. Uguccioni, Florence; engaged columns. Drawing by G. Herbert, after Gromort, l'Architecture de la Renaissance en Italia.
4. P. Pitti, Florence; project by Pietro Berretini for the application of engaged columns to the facade. Brogi, Disegni di Architettura: Galleria degli Uffizi, 2: pl. CXX.
5. S. Carlo alle Quattro Fontane, Rome; engaged columns. Drawing by G. Herbert. after Joseph, Geschichte der Architektur Italiens.

STRUCTURE - SYMBOL.

6. S. Apollinare in Classis, Ravenna; arcades. Photograph by G. Herbert, (6th century).
7. S. Pietro, Civate; pilaster strips. Drawing by G. Herbert, after Ricci, Romanesque Architecture in Italy.
8. S. Ambrogio, Milan; ribbon shafts. Photograph by G. Herbert. (12th century).
9. S. Maria Novella, Florence, L.B. Alberti; pilasters and arcades. Photograph by G. Herbert. (1456-70).
10. P. Cancellaria, Rome, Bramante; pilasters. Drawing by G. Herbert, after Gromort, l'Architecture de la Renaissance en Italia. (15th Century).
11. P. della Consulta, Rome, F. Fuga; panelling. Pane, Ferdinando Fuga, pl. 19. (1739).
12. Torre Medoacense, Padua; string courses. Photograph by G. Herbert. (1956).

STRUCTURALLY - DERIVED ORNAMENT.

13. Palace of Theodoric, Ravenna, Guardhouse; bracketed columns. Photograph by G. Herbert. (6th century).

14. S. Pietro in Ciel d'Oro, Pavia; primitive pediment. Photograph by G. Herbert. (12th century).

15. S. Spirito, Florence, project by Brunelleschi; applied triangular and segmental pediments. Scott, Brunelleschi, pl. XXIV (15th Century)

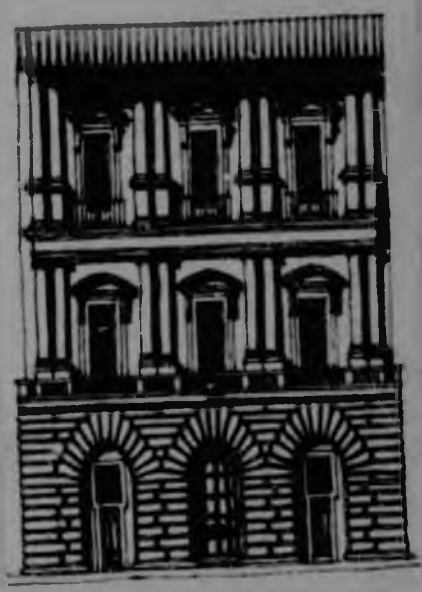
16. Top: Building in construction, Agrigentum; applied broken pediments. Drawing by G. Herbert (1957). Bottom: S. Giovanni Bosco, Milan; applied arcade. Drawing by G. Herbert of a project by A. Pica. (20th. Century).



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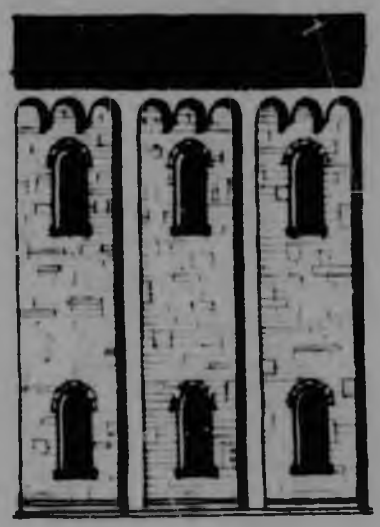
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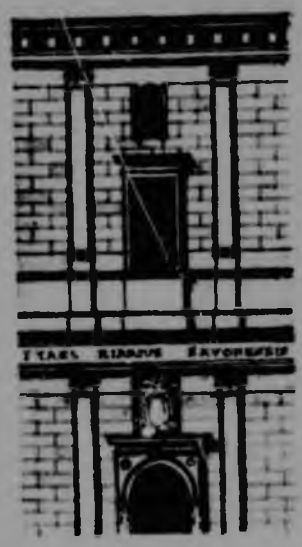
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APPENDIX FOUR.

ILLUSIONISM IN ITALIAN ARCHITECTURE.

ILLUSIONISM IN ITALIAN ARCHITECTURE

By Gilbert Herbert

On entering Italy from France, one crosses the Ponte S. Luigi, and proceeds along the Riviera di Ponente, sweeping past ancient olive groves, fine flower gardens, and innumerable small, picturesque seaside resorts. At the first halt for the day, one sees the town square: decrepit villas and tenements of disputable age, stuccoed and colourwashed, with tall rectangular windows marching in even rhythm across the facade, each window framed by a pair of shutters, painted with great care and verisimilitude upon the plaster. Opposite, upon the sea front, stands the pavilion, perhaps twenty-five years old. It resembles conservative municipal beachfront architecture everywhere, styleless and undistinguished, except that its main entrance is flanked by low relief carving, and that the facade is articulated by fluted pilasters. One approaches closer, and is forced to marvel at the scenographic skill with which these building elements have been rendered upon the flat surface, the technical achievement of creating a sense of depth and perspective in two-dimensional painting.

All along the Ligurian coast, from Ventimiglia to Genoa, and from Genoa to the south, one passes countless examples such as these. In Ancona, the modern Hotel de la Ville has one wall, one entire facade, whose every window has been carefully painted on: in Florence, the three-hundred year old Pensione Stagi has an apprently moulded ceiling so realistic that only after repeated examination does it reveal its secret. The illusion is masterly.

One's introduction to the art of illusion in Italy is immediate: its scope is widespread, being restricted neither regionally, nor to any specific period of history. It is still a living art, and it has a tradition going back to Pompeii. In range it covers the simulation of materials, the simulation of decoration and the simulation of building elements. (It also includes the illusion of space, but that is so complex a problem that it must be considered as a topic in its own right.) There is as considerable a variation in the technique of illusion as in its scope. It embraces painting and relief, and a combination of both; the simulation of stone and brick in moulded or textured stucco; the concealment of real joints in stonework, and the incising of false joints; the creation of dummy building elements; and many other skilled misrepresentations.

The 17th century is perhaps the most notorious for its preoccupation with illusion. Geoffrey Scott, in his ruthless analysis of the Renaissance approach, showed that falsification of architecture in all its manifestations, was not a purely Baroque phenomenon. He writes: "It is useless to minimize the extent to which such practices were typical of the renaissance. Although it is only in Italy, and in the seventeenth century, that the most glaring examples are to be found, yet the principles which then reached their climax were later, and even, in many cases, visible from its ealiest periods. They are inherent in the point of view from which the Renaissance approached the question of aesthetics."[1] However, it is a question of even broader implications than that of Renaissance aesthetics. It had its roots in Pompeian decoration and Roman stucco-moulded structural elements. It can be found in Romanesque S. Miniato al Monte, where the clerestorey window surrounds are so patterned in marble veneer that they fictitiously suggest a deeply splayed reveal. The Gothic Palazzo Davanzati has frescoes which include painted draperies, a painted gallery including columns and cornice, and a painted corbel gallery in relief, indicating in primitive three-dimensional drawing the depth of projection, and the cast shadows. In the post-baroque period the trend continued. In the 19th century, according to Perotti[2] the stucco of Borromini's S. Ivo della Sapienza was painted to resemble polychrome marble; and we find similar treatment in other buildings of the 19th century, such as the Palazzo dell' Esposizione in Rome. Even in our own time the tradition is maintained: and in the postwar block of flats in which the author lived in Rome the travertine of the exterior was simulated in plaster, down to the very pitting of the surface.

What is the motive for this illusionism? Augustus found Rome a city of brick, and left it a city of marble — by which is meant brick structures covered with a veneer of marble. In the Baroque, rich and costly materials such as marbles and gilding were introduced, and older buildings were redecorated with these materials. Fokker considers that these costly materials "were not introduced for aesthetic reasons, and still less with the purpose of adding a picturesque touch to the architecture. It was merely a question of displaying wealth or using rare curiosities."[3] It is doubtless true that in Rome of the Emperors, and in Rome of the Baroque Popes, display, ostentation, conspicuous expenditure and extravagance were the outward manifestations of decaying values, the



PALAZZO FESTA, VICENZA Palladio 1552

Palladio's normal conception was of masonry buildings. There can be no doubt that, had stone been available to him, he would have used the genuine article. Did he not, after all, carefully advise the husbanding of one's masonry resources, when he wrote: "If the building is to be ornamented with columns and pilasters, the bases, capitals and architraves may be of stone, and the other parts may consist of brick." However, faced with the absence of this ideal material, he chose to simulate it with the materials at hand, namely brick and stucco. To have chosen otherwise, and have modified his concept to suit the nature of the material available, would not only have been inconsistent with his whole attitude to aesthetics, but would have been an outlandish decision in the light of Italian design tradition, based as it is upon the paramountcy of the formal conception



BUILDING IN VIA SAN GALLO, FLORENCE
The blank window is a device so widespread that it demands study in itself. These blank windows are illustrated here for their additional finesse, the replica of the wooden shutters with which they are decorated. These additional painted details are fascinating. For example, in the courtyard of the Palazzo Massimo alle Colonna there is a painted door, on the wall belonging to the adjoining property. Over the door is a whole series of blank windows, painted to represent real windows, complete with barred gratings, casements, and the interior of the room beyond

symbols of a new order of aggrandizement and luxury replacing Republican simplicity or Christian modesty. If vulgar ostentation is the motive for the use of rich and rare materials, then it is a likely motive for their simulation in paint and stucco.

However, can the aesthetic implications be discounted, as Fokker implies? Scott believed not, considering that in rich materials, apart from the scarcity value, their greater charm was to be found residing in their material beauty. So, he argued, even when they had to forgo the scarcity value aspect, "they sought to secure the last (i.e. the residual intrinsic charm) by brilliant imitation. . . . Nor was the imitation, like many that are modern, sordid and commercial — a meticulous forgery. It was a brave impressionism, fit to satisfy the eye. The mind was deluded, if at all, then merrily, and for a moment."[4] There are inconsistencies in this argument which we must debate — but they do not conceal the obvious truth that no architect could ignore the aesthetic implications of rich materials, whose visual impact was so dominant and positive, and that therefore the aesthetic motive for simulating these materials must have been an important one.

We must accept, therefore, that materials are simulated both for their symbolic connotations, in that they create an illusion of opulence or power or wealth; and for their aesthetic implications, in that they create an illusion of visual richness. Do these illusions succeed in their purpose? Considering the symbolic aspect first the answer must be yes in certain cases. The false jointing of the stonework of the Palazzo Strozzi is not obvious, and the desired impression of rugged strength is achieved: but the ruled joints in the plaster of the Palazzo Odescalchi suggests nothing of the strength or dignity of stonework. Scott's sneer at the meticulous forgery would appear to rule out the symbolic motive completely, because the only convincing examples are the undetectable ones. Similarly, in respect of aesthetic success, Scott's analysis appears confused. If it is the intrinsic beauty of the material that is desired, then obviously the meticulous imitation should be aimed at, particularly where, as Scott insists, the moral condemnation of deceit is fallacious or irrelevant. The brave impressionism of illusionism appears to be aesthetically disastrous. Variegated and lack-lustre 'marbles' are no delight to the eye; neither can a painted hanging hope to achieve the textural delight of richly woven cloth. Often, instead of bold impressionism we are confronted with shoddy deceit.

We are faced with the perverse fact that, although it is the undetectable forgery which best achieves the aesthetic and symbolic aims of illusionism, yet this technique is not often adopted; and that the illusion is usually attempted broadly, *con brio*, and with the impressionism of the stage set. Perhaps here is the key to the dilemma. Imitation stage jewellery, seen across the footlights, can give a vivid impression of dazzling beauty and wealth: that is, it fulfils most adequately the symbolic and aesthetic functions of illusionism. The same jewellery, seen across the dining table, would appear cheap and tawdry representing neither opulence nor good taste. Now the fundamental difficulty is that we usually see buildings across the dining table, whereas their architects had designed them to be seen over the footlights. We see the buildings as empty shells, not as peopled and living organisms. Corrado Ricci has written of the refulgent Baroque theatres, "but if for the audience of today . . . it were possible to substitute the resplendent public of the days when the Bibiena designed the theatres, the damasks, jabots, laces, embroideries, ribbons, feathers and flowing wigs . . . would the architecture seem as heavy as it does now."[5]

This is true of most buildings, and it is especially true of Italian buildings, whose interiors are generally designed as great stage sets, upon which the drama of life is acted out by the Italian people. The Italian's attitude to life is in the main theatrical, and he believes, and acts in the belief, that 'all the world's a stage,' for which his buildings are the sets, and for which he must be properly costumed. "In no country of Europe since the fall of the Roman Empire," writes Burckhardt,[6] "was so much trouble taken to modify the face, the colour of the skin and the growth of the hair, as in Italy at this time (c. 1500). All tended to the formation of a conventional type, at the cost of the most striking and transparent deceptions. . . . No ornament was more in use than false hair, often made of white or yellow silk. . . . We meet with an endless list of beautyfying waters, plasters and paints for every single part of the face. . . ." Here we have not people concerned with dress, but characters concerned with costumes. It is no coincidence that Italy today leads the world of *haute couture* in modishness and caprice; and that there are more uniforms to be seen in Italy (for everyone down to the street cleaner) than anywhere else in Europe.



St. GIOVANNI E PAOLO, VENICE
Here is illusion of brickwork on a bold impressionist scale. From the nave, the aisle walls are undoubtedly of warm, richly textured red bricks, a most unusual and effective finish. At close range, in the dimly lit aisles, the trickery is revealed, and the red and white paint, now fading, is peeling, to reveal the plaster underneath. Mock brickwork is a rarity in Italy, but we find it again on the Senatorial Palace on the Campidoglio, now peeling and disfigured

PALAZZO RUCELLAI, FLORENCE L. B. Alberti 1446-1451
An effect of random rustication is desired, and a pattern of jointing is imposed completely independently of the real joint lines. It is interesting to see that the pilasters are the result of this illusionist technique, and that the channels which define them are perhaps only ¼ in. deeper than those which demarcate the pseudo-stones



Photographs and Sketch by the Author

Considered in this light, the decorating of architectural interiors with broad sweeps of the brush, so to speak, becomes more explicable. Much Italian design is not contemplative but impressionistic, in the sense that it aims at the broad effect, the immediate impact. The wall of travertine, the polychromy of marble, these make an impression of material and visual richness as a subconsciously apprehended background to life. And if observation reveals them to be sham, their effect, in Italian eyes and to Italian minds, is undiminished. If one enters willingly in to the spirit of the thing and wants to believe, one can believe anything. The child's attitude to makebelieve, the adult's participation in the fantasy of the theatre, that is the Italian's attitude to life. It has been called the conscious suspension of disbelief. Italian vision is ruthlessly selective: it sees only what it wants to see, and believes only what it wants to comprehend. Such a narrowing of range makes for great intensity, and it is this intensity and passion which is the hallmark of Italian art. It is also the explanation of the blind spots, the abberations and inconsistancies which make the Italian design attitude difficult to enter into, or to accept fully.

NOTES
[1]Geoffrey Scott, *The Architecture of Humanism*, London, Constable & Co., 1914, p. 99.
[2]M. V. Perotti, *Borromini*, Milan, Astra-Arengarium, 1951.
[3]T. H. Fokker, *Roman Baroque Art*, Oxford, University Press, 1938, vl., p. 144.
[4]Scott, *op cit.*, p. 154.
[5]C. Ricci, *Baroque Architecture and Sculpture in Italy*, London, Heinemann, 1912, p. vi.
[6]J. Burckhardt, *The Civilization of the Renaissance in Italy*, trans. by S. G. C. Middlemore, Vienna, Phaidon Press, p. 192.

APPENDIX FIVE.

FACADISM IN ITALIAN ARCHITECTURE.

NOTE: This paper, "Facadism in Italian Architecture," has been accepted for publication in the Journal of the Royal Institute of British Architects. For publication dates, etc., see letter overleaf.

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ROYAL INSTITUTE OF BRITISH ARCHITECTS

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66 PORTLAND PLACE, LONDON W.1

NM/JEG

9th March 1960.

Gilbert Herbert, Esq.,
Department of Architecture,
University of the Witwatersrand,
Johannesburg.

Dear Sir,

Thank you for offering your paper on 'Facadism in Italian Architecture' to the Journal. If you are prepared to wait for publication until space is available - this is usually in the August, September or October issues - I would like to print it in two parts.

I note that you have illustrations, and the addition of these will of course increase the space required to an extent I cannot yet judge. I would suggest, however, that you divide these into those absolutely necessary, and those to be included if there is space.

The R.I.B.A. has been left a large collection of photographs by Mr. Kersting, a well known architectural photographer. It occurs to me that some of these might illustrate your points, and could be used if they are better prints than those you have in mind. Accordingly I enclose a few of them so that you may judge whether this is so, and you are free to include any of them if you wish.

Yours faithfully,

Noel Musgrave

Noel Musgrave,
Editor, R.I.B.A. Journal.

COLUMNAR SCREEN FACADES.

In a study of Roman architecture we see how, out of the use of structural forms for decorative purposes, there develops a second facade, consisting of structural elements arbitrarily disposed, generally free-standing as a screen to the true facade behind. We note as typical examples of this development the scaenae frons and the treatment of the thermae.

During the Middle Ages we have a parallel development of the arcaded gallery facade from the blank arcades and corbel galleries which we have earlier examined under the head of structure-symbol. Rivoira [1] traces the development in the following steps. Arched recessed niches, divided into groups by lesenae, as in the 9th century apse of S. Ambrogio, is the first step. Next comes the application of the motif to circular buildings, such as the baptistery at Agliate, also in the 9th century. An important step in the chain is the external open galleries in the chapel of S. Aquilino attached to S. Lorenzo Maggiore at Milan, in the 11th century. "In their ennobled and elaborated form the galleries were employed with a new intention by the architect Lanfrancus, in the form of wholly or partially communicating galleries encircling the Cathedral of Modena (1099 - 1106)." [2] Applied to church fronts, and stepped to follow the line of the gable, we find these arcaded galleries in S. Michele Maggiore, Pavia. In the twelfth century its use spread throughout northern and central Italy -- Lucca, Bergamo

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1. G.T. Rivoira, Lombardic Architecture, trans. by G. McN. Rushforth, London, William Heinemann, 1910. v.1.

2. Ibid., p.240.

Como, Parma, Piacenza, Rome and Venice. Its use at Lucca was followed by others in Tuscany, notably at Pisa.[3] The fully developed arcaded front forms a columnar screen in front of the real facade of the building, a delicate, almost transparent, decorative grille.

The arcaded gallery is not completely discarded in the brief phase of Italian Gothic. The facades to such buildings as the cathedrals of Orvieto and Siena are in themselves screen facades proper, as we shall discuss in a later section. Part of their decorative system is the use of the arcaded gallery, which emphasises the hollowness behind the masonry, and defines the plane of the facade as being somewhat in front of the main body of the church. Thus, in a most subtle way, the screen nature of the facade is reitereated in its decorative details.

The columnar screen facade may be seen as a climax in an evolving process of structure-ornament relationships. It is a climax, of a vigorous, even exuberant, sort. It is not surprising, therefore, that during the Renaissance the columnar-screen does not appear as an important manifestation in the somewhat austere early stages, and is characteristic only of that most exuberant period, the Baraque. Thus it is possible to say of SS. Vincenzo ed Anastasia, that "the real front of the church is a plain wall; columns, entablatures, and pediments cover it with a second ornamental facade."[4] and of S. Giovanni

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3. Rivoira claimed that the first use of the motif north of the Alps was in the cathedrals of Speyer (1137 - 1146)and Bonn (1130 - 1169). Pevsner, however says: "The connections between Lombardy and the Rhine are still controversial. Nobody can deny them; but priority in types and motifs can never be established beyond doubt."
Rivoira, Ibid., p.244.
N. Pevsner, An Outline of European Architecture, London, Penguin Books, 1953, p.57.

4. T.H. Fokker. Roman Baroque Art, Oxford University Press, 1938, v.1, p.175.

Laterano that "Galilei attached a second decorative facade to the organic structure of the first." [5]

An interesting chain of development may be traced. In our study of Roman architecture, a certain similarity emerges between what we have called scaenae frons decoration, and Pompeian decoration simulating fantastic building elements, Ricci [6] sees a decided link between Romanesque architecture and the Roman columnar screen tradition. He writes:

> Romanesque architecture adopted from Rome .... the motif of the various colonnades surmounted by architraves, as for instance in the Baptistery of Parma and the Parish Church of Arezzo. And the whole of the Middle Ages as well as the Renaissance have admired these on the Truimphal Arch of Septimus Severus (built 203 and destroyed towards the end of the 6th century). For the rest, the Porta Appia in Rome, the Arch of Augustus in Fano and innumerable other Roman edifices had graceful colonnades.

It is interesting that Ricci compares colonnading with the free-column decoration of the triumphal arches. That decoration in many respects resembles the columnar decoration of the thermae and the scaenae frons; and the relationship of the latter to the arcaded Lombardic and Tuscan facades is striking. It is here not a matter of superficial resemblance but of fundamental principle: both in Roman and Romanesque work, the movement is towards creating facades in depth, by erecting in front of the plane of the wall a semi-transparent screen of structural ornament. Summerson closes the circle of relationship between Rome and Romanesque. He sees the arcaded west fronts of Lombardy as "aedicular fantasies," and relates them directly to the fanciful decorations of Pompeii,

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5. Ibid., p.301.

6. C. Ricci, Romanesque Architecture in Italy, London, William Heinemann, 1925, p.XXIV.

"completely open and incredibly thin -- a mere scaffold architecture.... (which) consists of irrational and purposeless buildings -- colonnades, pergolas and paper-thin walls which enclose nothing." 7

This most interesting relationship upon an aedicular theme may be extended further, into the sphere of the Renaissance and the Baroque. The framing members become much more substantial, being in fact the classical orders put to new use, but the aedicular principle is maintained. "It is in north Italy...." writes Wittkower "that one finds first the fully developed aedicular facade." 8 He is, of course, dealing with north Italy of the Renaissance, and cites the work of Ricchini in the 17th century in Milan as an example: he does not refer back to Lombardic precedent. But the hypothesis is not far-fetched that the re-emergence of the aedicular facade in Lombardy is more than just coincidence, and that the visual impact of the Romanesque monuments cannot be neglected as a contributory influence. Wittkower takes the discussion further, and relates his concept of the aedicule to the Baroque period, as in his analysis of S. Maria in Campitelli where "an aedicule extending through the two storeys is enclosed in a still larger aedicule." 9 The concept of the aedicular facade is thus seen to cover the same range as our development of the theory of the columnar screen.

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7. John Summerson, Heavenly Mansions, London, Cresset Press, 1949, pp. 6, 8.

8. R. Wittkower, "Carlo Rainaldi and the Roman Architecture of the Full Baroque," The Art Bulletin, v. XIX, 1937, p.294.

9. Ibid., p.290.

Contemporary Italian architecture is still engrossed in its own version of the aedicular fantasy: it is still constructing its own columnar screens. These may be functional or quasi-functional, as in the case of balconies, but what has been called the outrigging of modern Italian buildings, the complex balcony fronts, the projecting columns and beams, the trellises and pergolas, the fins, pipes, flower boxes, glass panels, slats and hoods, serve the same purpose as the historical columnar screen, namely the erection of a second and purely decorative facade suspended in front of the real face of the building.

There is one final point to be made about the columnar screen facade. In so far as it is not related to the structural forms of the building proper, the columnar screen facade becomes an essay in abstract aesthetics. It is an independent problem in design to be solved on its own terms. Moreover, as it frankly states its free-standing nature, it emphasizes its separation and independence, and proclaims itself honestly to be no more and no less than a frontispiece. It reveals the Italian mastery in handling abstract problems of form: and simultaneously underlines the Italian characteristic of externalization, which I have elsewhere called their facade-complex.

FACADISM AND THE SCREEN FACADE.

Facadism denotes the conception of a main elevation to a building, that is, a frontispiece, where there is "a concentration of emphasis at the expense of the flanks and rear .....", as Cordingley [10] has put it.

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10. R.A. Cordingley, "Originality in Italian Renaissance Architecture," The Builder, London, Dec., 1947, p.706.

The screen facade implies such a frontispiece divorced in some way from the building it fronts, sometimes because it constitutes a free plane in front of the real facade -- as in the columnar screen facades which we analyzed in the last section -- and more generally because it fails to coincide in dimension with the building behind it. It may be smaller, as in the case of S. Andrea at Mantua, or Il Redentore at Venice; but more commonly it is larger, and frequently of different silhouette, so that it masks -- or screens -- the building of which it is the facade.

To an architect schooled in the belief that the plan is the generator, and reared on the philosophy of honesty of expression, facadism and the screen facade are alien concepts. Yet, throughout the entire history of architecture of the Italian peninsula, they are regarded as a normal and legitimate expression. We must enquire how this came to be so.

The underlying tenets of facadism are that form is independent of content, and that formal requirements are self-determinant, in terms of absolute standards of beauty. This is an outlook completely in accordance with the formalist attitude to design. The artist, intuitively, digests the nature of the problem, and preconceives its formal solution: this preconception of form becomes the over-riding discipline of artistic creation. The situation may arise, where this formalist procedure is adopted, that the formal facade solution is incompatible, even irreconcilable, with the building itself. The logical process of design is compromise, but where the bias towards formalism is overwhelming, such compromise is prohibited. The only other solution is complete separation of the facade as an independent design problem, and this separation is the Italian way.

This concept of the facade as an independent design problem is facilitated by the historical development of structurally-derived ornament, which, as we have seen, tends to acquire a meaning and a volition of its own. The logical outcome of a dual concept of aesthetic construction and material construction -- the philosophy underlying the establishment of a grammar of structurally derived ornament as the genesis of facade forms -- is the development of the facade as an exercise in abstract aesthetics.

The undue emphasis on the facade is aggravated by Italian town planning concepts, which from Roman times to the present-day, sees the building either as wall to the external space, or as terminal to the vista. In either case, the building as a complete mass seen from many points of view is less important than the building as a single plane. The arithemetical nature of proportion in Roman and Renaissance times helps to accentuate the single viewpoint, and perpetuate frontalism of design.

These considerations of site-planning and proportion will be dealt with in more detail in later sections, but are mentioned here for their implications upon facadism. Other contributory factors, to be further expanded, must be recorded here. They are the tendency towards exhibition which is present in so many aspects of Italian life, past and present; the element of theatricality in the Italian character; the tendency towards illusion, and the readiness to accept the shadow for the substance. The sum effect of these latter aspects is the over-emphasis on externals and appearances, and a concern with superficialities at the expense of profundities.

There appears, as a thread running through Italian history, a dichotomy of vision which sees the interior and

exterior of buildings as two separate problems, and accepts their separate solution as artistically satisfying. The theory of unity, which re-appears in each classical phase of Italian architectural development, is somehow never extended to embrace the unity of interior and exterior. Alberti gets to the fringe of the problem, when he says that the architect should work "as one that would have his work valued, not by the apparent perspective, but by the real compartments founded upon reason." [11] In S. Andrea, he attempts to unify interior and exterior by the repetition of the basic 'monumental arch' motif; but the monumental arch cum temple front of the facade, which is the generator of the inner decorative forms, is itself ill-adjusted in form and dimensions to the body of the church. It is as if Alberti has erected an argument of logic upon a wholly illogical basic premise.

Of all the theorists, Milizia gets closest to the heart of the matter, stating "the exterior must have the same order as the interior, because the latter must be announced by the former and an exterior story cannot be of a different character from that within. [12] Elsewhere he gives a comprehensive theory of interior-exterior unity.

> The facade is to an edifice what the physiognomy is to man; and it is most unfortunate when, in either case, the exterior is enigmatical, or contradicts the quality of the interior. Facades may be considered perfect, when in their decoration, symmetry, and eurythmia, they adequately express the internal distribution and construction, suitable to the nature of the edifice. Various facades should express the various purposes of the interiors of buildings. [13]

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11. L.B. Alberti, Ten Books on Architecture, trans. by James Leoni, London, Tiranti, 1955, II.1.

12. F. Milizia, The Lives of Celebrated Architects, Ancient and Modern, trans. by Mrs. E. Cresy, London, 1826, v.1, p. XLVIII.

13. Ibid., p. LXIII

A most important thesis is here developed, that the facade should express the character ("the nature of the edifice"), function ("various purposes"), planning ("internal distribution"), and structure ("construction") of the building. However, Milizia is in this, as in so many other things, a lone voice in the wilderness, out of step with current practice, and of no important influence in the immediate future. It is ironical that his thesis, today a basic tenet of the new architecture, is still honoured more in the breach than the observance in his native Italy.

ABSTRACT FACADES.

The decorative application of the orders, the columnar screen facade, and the theatrical frontispiece, are all essays in abstract design. The design of the facade becomes an art of pattern-making upon a surface, or, in the case of the"outrigging", an abstract form of surface sculpture. This section takes the question further, and looks at two aspects which do not fall into the categories previously analyzed.

The first of these two manifestations of abstract design is where an abstract pattern is superimposed upon a facade otherwise rationally disposed. Changes of surface textures and materials, lines drawn upon the wall surface, panelling -- these are the devices which are arbitrarily employed to give the facade a surface richness, a liveliness, which cannot be, or has not been, distilled from the more legitimate articulation of wall, window and structure. This type of surface patterning tends to leave the plan undisturbed.

Hilberseimer sees it as a distinct trend in a contemporary architecture, which "sometimes appears to neglect the structure architecturally, and hide it behind a decorative facade." [14]. He ascribes it to individualism and romanticism; and certainly it is a trend which flourishes in periods of intense competition for originality at all costs.

Abstract patterning of the second sort has even more serious implications, in that the plan is compromised in order to achieve the abstract composition envisaged. Here the very basic architectural elements -- the walls, windows, balconies -- are juggled, arranged and composed in terms of a preconceived vision; and the plan is distorted and violated to permit this facade designing full scope. If the first type of abstract design offends the rational desire for honesty of expression, the second type strikes deep at the functional validity of the architecture. It is, moreover, becoming increasingly evident as a gambit for originality in contemporary Italian work. It is interesting to note that it is as apparent in the work of a classicist like Gio Ponti (e.g. in his hotel at Forli) as it is in that of confirmed romanticists like Monaco and Luccichenti, rationalists like Lingeri, or mannerists like Moretti.

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14. R. Carpanelli, Come Si Construisce Oggi Nel Mondo, introduction by Ludwig Hilberseimer, Milan, Hoepli, 1955. p. XII.

THE RULE OF PROPORTION.

A work of architecture derives its form from an interaction of the formalist and practical components of the architect's attitude. Even where the practical attitude is dominant, practical desiderata alone cannot completely define the building form. 'Form follows function' is a misleading aphorism, for even the creator of pure structure such as Nervi finds that mathematical calculus and strength of materials do not "constitute a sufficient guide in the projection of plastic or elastic structures " 15 but that a hypothesis of form is required within the dictates of utilitarian disciplines, a number of choices must be made which are critical aesthetic choices. As the emphasis swings away from the practical attitude towards the formalist, so the range of aesthetic choice widens. The very shape and form of the building and its components, as they become independent of practical considerations, become matters to be established with reference only to the architect's intuition.

Throughout history, with varying intensity, architects have sought to bolster and reinforce their intuitive approach by aesthetic systems and laws, some of them based upon empirical reasoning, but most depending upon philosophical analogies or rationalizations of one sort or another. The most enduring and the most fruitful aspect of these laws has been the rule of proportion, for it has helped to determine the overall plan size of the building, and its compartments; the overall dimensions of the facade; the size of window and door openings; and the nature of the decorative articulation of the facade, particularly in respect of the Orders.

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15. G.C. Argan, "The Architecture of Nervi," trans. by D. Wilson, Architects Year Book:6, London, Paul Elek, 1955, p.45.

Italy has played a key role in the development of theories of proportion in relation to architecture: in this the Italians are the true heirs of Vitruvius. However, the decline of the Roman Empire brought with it a simplification of the patterns of civilization; and proportion, together with the rest of what was rather a sophisticated aesthetic theory, found no place in the basic realities of the emerging new world. Ghiberti [16] in dealing with the early Christian period, overstates his case when he writes: " and thus ended the arts of painting and sculpture and all theory concerning them," but it is true, as Scholfield [17] points out, that there is little direct literary evidence of mediaeval theories of proportion, and we have to go to the buildings themselves or the documents referring to them, as Wittkower [18] and Frankl [19] have done, to attempt to deduce a general theory.

Bosanquet explains the absence of detailed aesthetic research in the Middle Ages thus:

> It was owing not to a lack of art-consciousness, but to the very directness of the art-impulse, combined with the pressure of those other needs and problems which belong to the youth of a new civilization, and which invariably hinder the mind of such an age from reflecting systematically upon its own productions." [20]

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16. Lorenzo Ghiberti, The Commentaries, trans. by Courtauld Institute of Art, unpublished, II:1.

17. P.H. Scholfield, The Theory of Proportion in Architecture, Cambridge, University Press, 1958, p. 85.

18. R. Wittkower, "Systems of Proportion", Architects Year Book: 5, London, Paul Elek, 1953.

19. P. Frankl, "The Secret of the Mediaeval Masons," Art Bulletin, 1949.

20. B. Bosanquet, A History of Aesthetic, London, George Allen and Unwin, 1922 ed. p.167.

The information which we do have about mediaeval proportional theory, although not extensive, is sufficient for two broad principles to be drawn. Firstly the nature of the proportional system was undoubtedly geometrical and incommensurable. We can sum up the evidence by agreeing with Wittkower that "the equilateral triangles, the square and pentagon and derivative figures like the octagon and decagon formed the basis of mediaeval aesthetics." [21] Secondly, there was much in the mediaeval theory which was of a distinctly utilitarian cast. Frankl has made this point particularly vividly, and Scholfield talks of the proportional system providing convenient if arbitrary rules for setting out.

The Renaissance theorists discarded mediaeval developments in proportional theory, and returned to Vitrivius, from whom they derived the basic proposition of proportion being the relationship of the parts to each other and to the whole. Upon a foundation of Vitruvius, neo-Platonist philosophy, the mathematics of Euclid, Boethius' work on arithmetic and music, and the Byzantine tradition implicit in the writing of Cennino Cennini [22] writers such as Alberti, Palladio, Vignola and the many other theorists of the Renaissance built an imposing edifice, whose essential characteristics were arithmetical, analytic and commensurable relationships. This structure of proportional theory was not altogether consistent.

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21. Wittkower, op. cit., p.12.

22. Scholfield, op. cit., pp. 35-37.

and although "it is probably true that neither Palladio nor any other Renaissance architect ever in practice used irrational proportions," [23] yet we find reference to the $\sqrt{2}$ rectangle in Alberti, Palladio and Pacioli, and in the geometric studies of Scamozzi. The golden section, it is interesting to note, found little or no place in the practice of the time, although the intricacies of its mathematical properties appealed to minds imbued with the magic of the Pythagorean concept that 'All is number.'

Although there are empirical elements in Renaissance theory, it is fundamentally an intellectual construction, an abstract discipline based upon philosophical speculation and literary precedent. In fact, its epitome might well be Ghiberti's axiom that in the arts "one can make no mark without the discipline of letters and a grasp of theoretical principles." [24]

The Renaissance and Mediaeval proportional systems reveal a fundamental divergence of attitude, which Wittkower has clearly defined. The importance of his conclusions, and the clarity of its expression, prompts me to quote some of the salient points:

> While to the organic, metrical Renaissance view of the world rational measure was a sine qua non, for the logical, predominantly Aristotelian mediaeval approach to the world the problem of metrical measure hardly ever arose..... on the contrary: the mediaeval quest for ultimate truth behind appearances was perfectly answered by geometrical configuration of a decisively fundamental nature. [25]

23. R. Wittkower, Architectural Principles in the Age of Humanism, London, Tiranti Ltd., 1952, p.95.

24. Ghiberti, op. cit., II:18.

25. Wittkower, op. cit., (Systems of Proportion), p.17.

25. Wittkower, op. cit., (Systems of Proportion), p.17.

Author Herbert G
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