

**Washington University  
ERes Cover Sheet**

Article Title: Complexity and Contradiction in Architecture Ch.1-5, 10 (Images Part 1)

Author: Robert Venturi

Source Title: Complexity and Contradiction in Architecture

Vol.: \_\_\_\_\_ Issue: \_\_\_\_\_ Date: 1966 Pages: \_\_\_\_\_

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1. Johnson. Wiley House, New Canaan



2. Johnson. Glass House, New Canaan

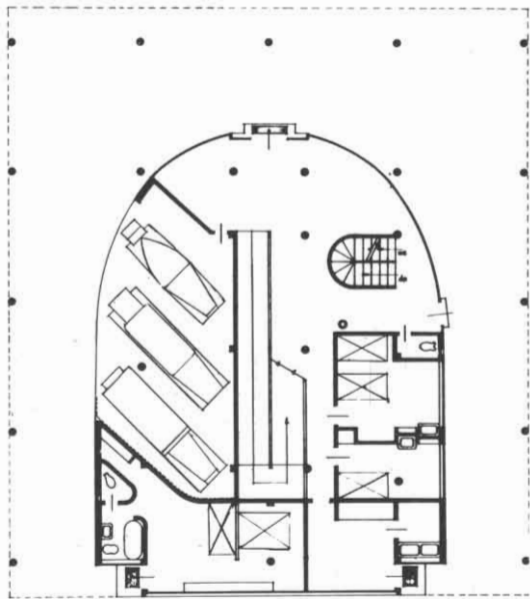


3. Aalto Church, Vuoksenniska, near Imatra



4. Michelucci. Church of the Autostrada, near Florence

5. Le Corbusier, Villa Savoye, Poissy, Plan

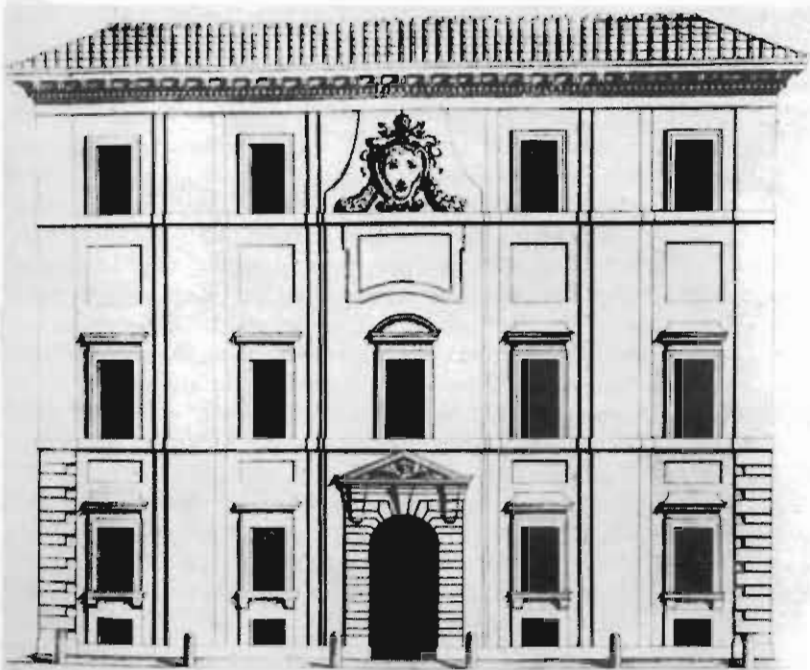




6. Vanbrugh. Grimsthorpe, Lincolnshire



8. Ligorio. Casino di Pio IV, Vatican, Rome



7. Bernini. Façade, Palazzo di Propaganda Fide, Rome. Elevation

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Article Title: Complexity and Contradiction in Architecture Ch.1-5, 10 (Images Part 2)

Author: Robert Venturi

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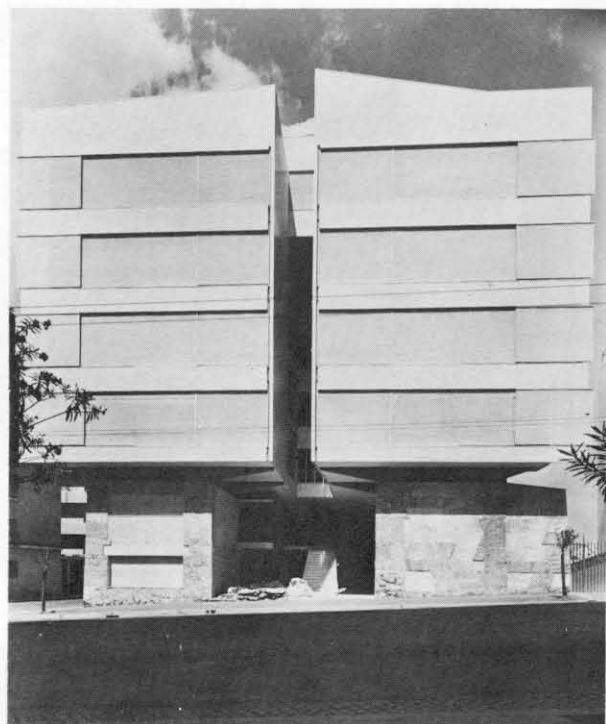
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9. Lutyens. Nashdom, Taplow

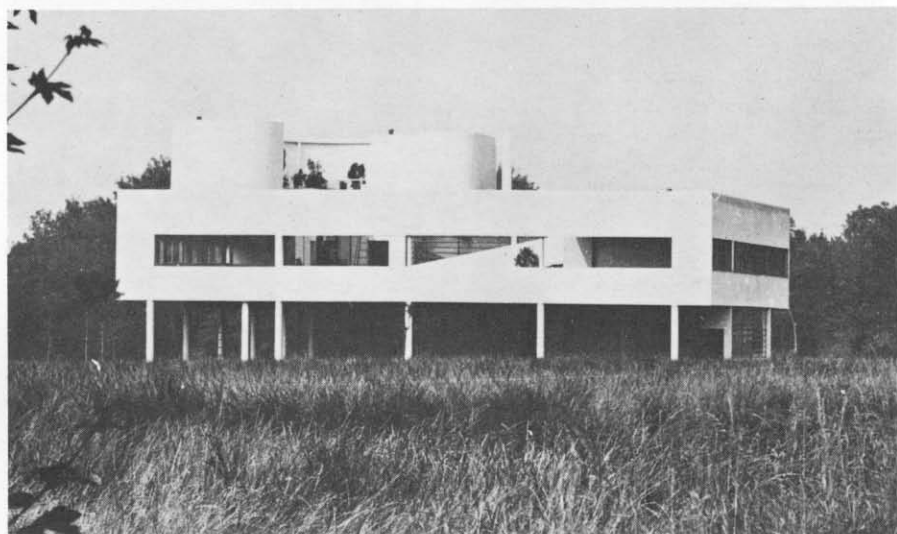


10. Moretti. Apartment Building, Via Parioli, Rome

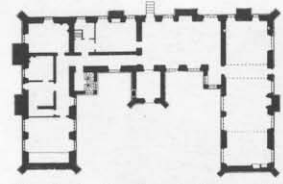




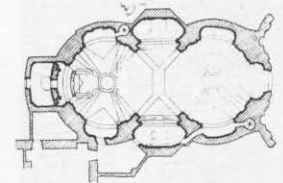
11. Le Corbusier. Shodhan House, Ahmedabad



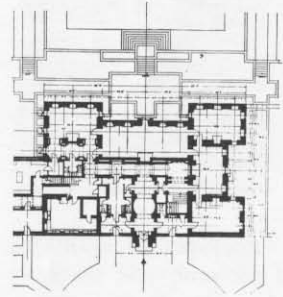
12. Le Corbusier. Villa Savoye, Poissy



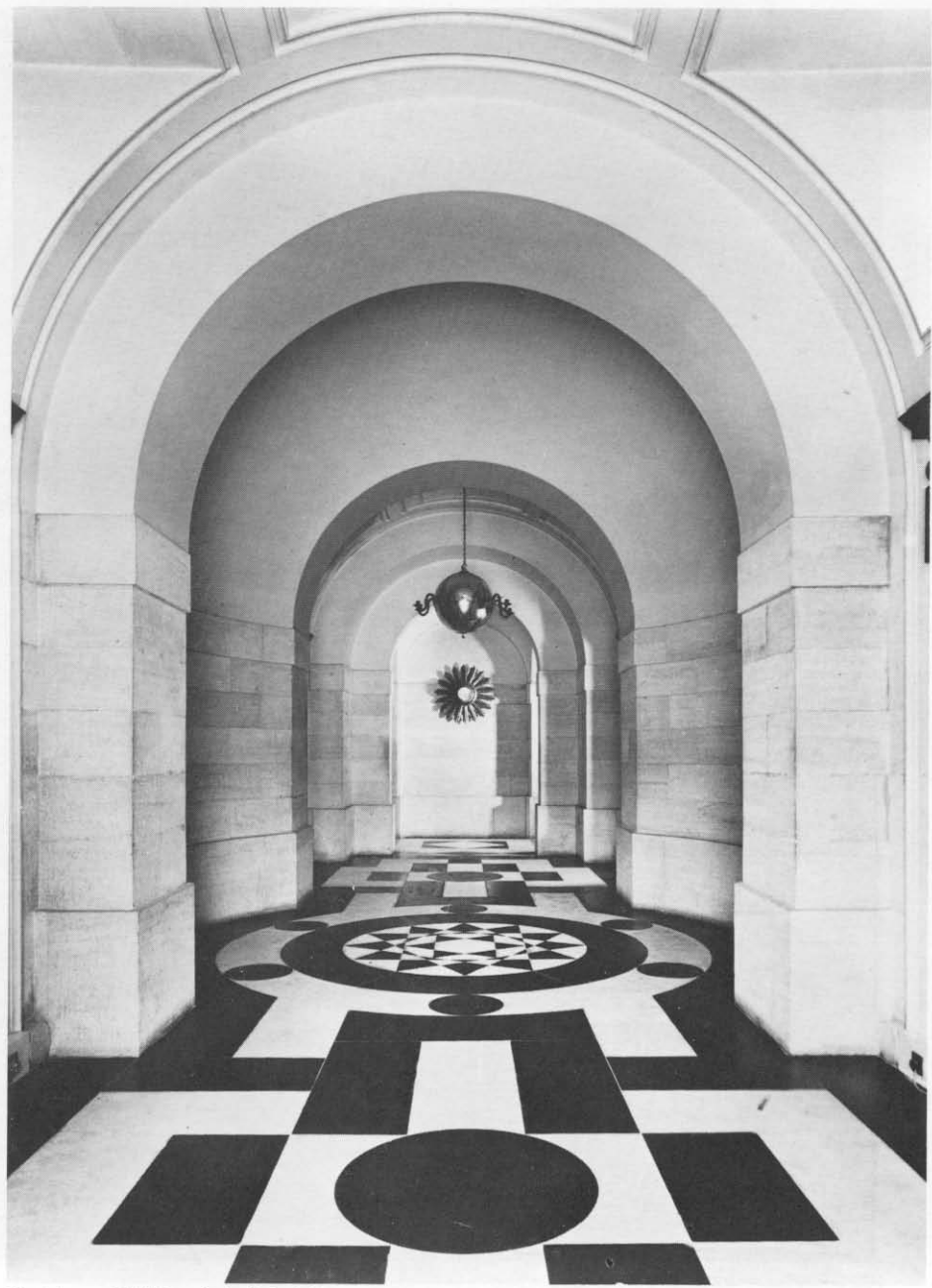
13. Barrington Court, Somerset. Plan



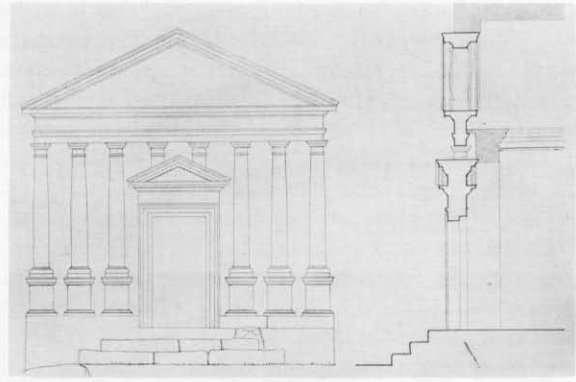
14. Guarini. Church of the Immaculate Conception, Turin. Plan



15. Lutyens. Middleton Park, Oxfordshire. Plan



16. Lutyens. Middleton Park, Oxfordshire



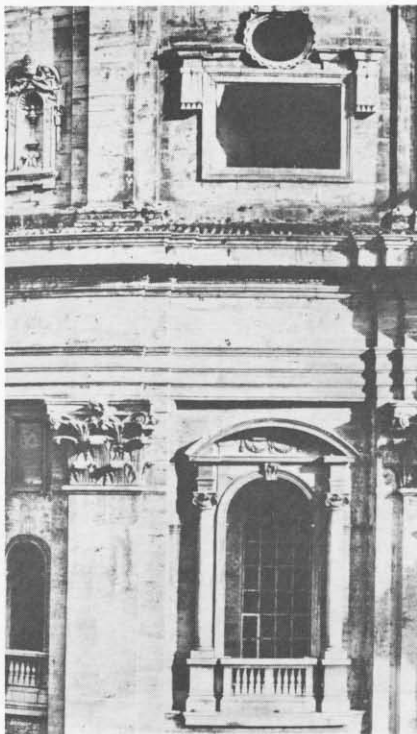
17. Vignola. Pavilion, Bomarzo. Elevation



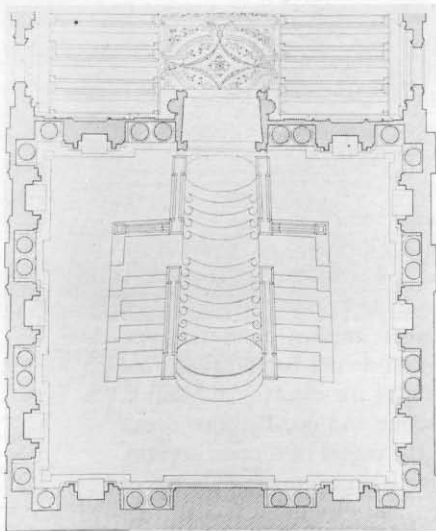
18. Hawksmoor. St. George-in-the-East, London



20. Furness. Pennsylvania Academy of the Fine Arts, Philadelphia



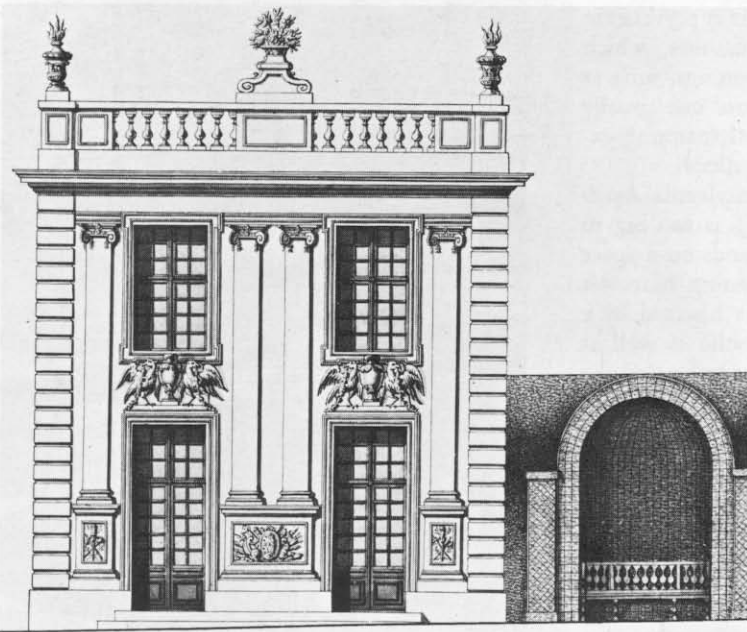
19. Michelangelo. Rear Façade, St. Peter's, Rome



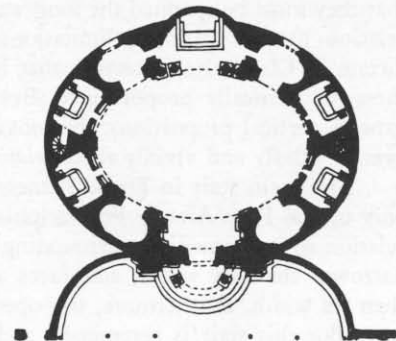
21. Michelangelo. Laurentian Library, Florence. Plan



22. Vanbrugh. Blenheim Palace, Oxfordshire



23. Hardouin-Mansart. Pavillon, Marly. Elevation



24. Bernini. Sant' Andrea al Quirinale, Rome. Plan

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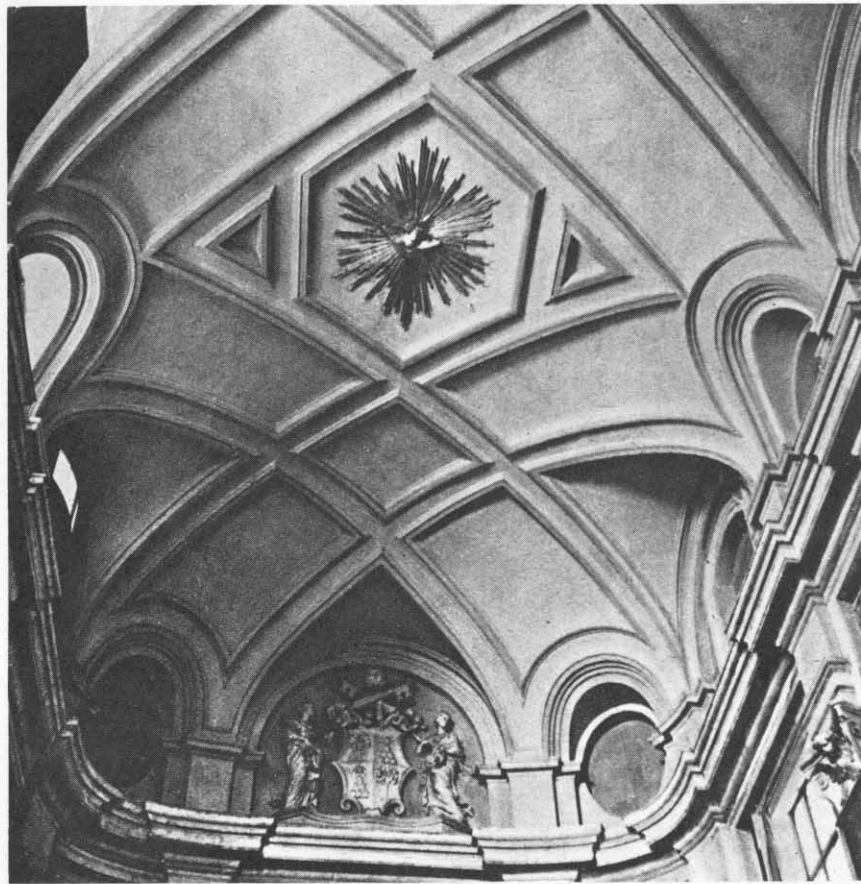
Author: Robert Venturi

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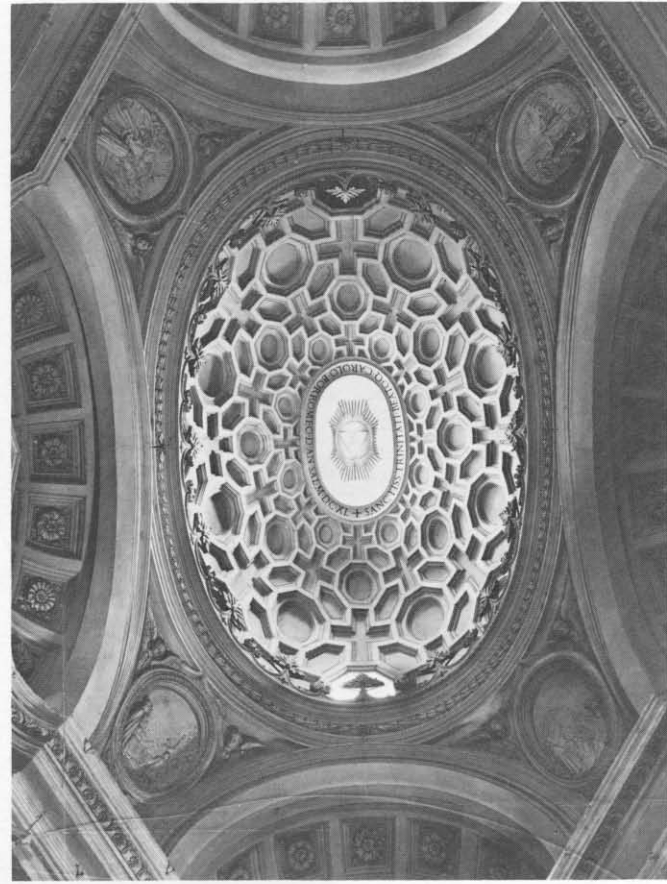
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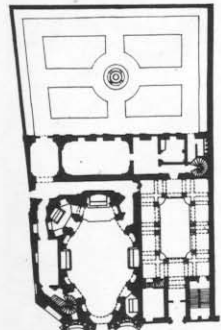
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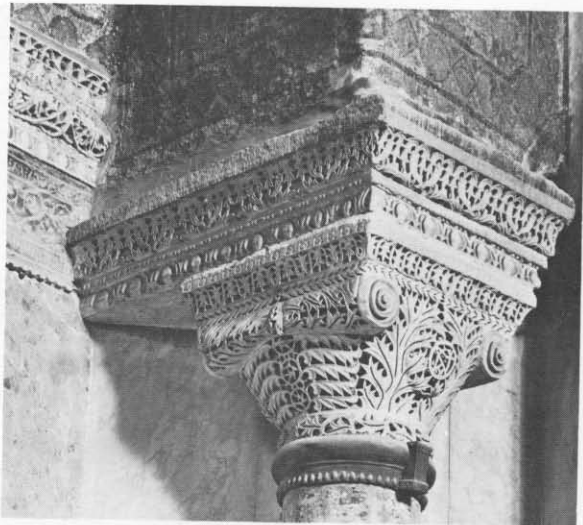
25. Borromini. Church of the Re Magi, Palazzo di Propaganda Fide, Rome



27. Borromini. San Carlo alle Quattro Fontane, Rome



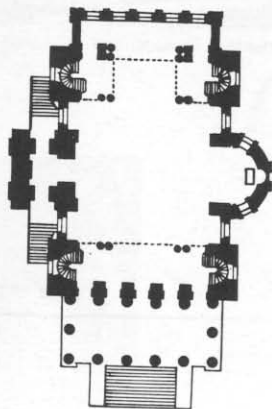
26. Borromini. San Carlo alle Quattro Fontane, Rome. Plan



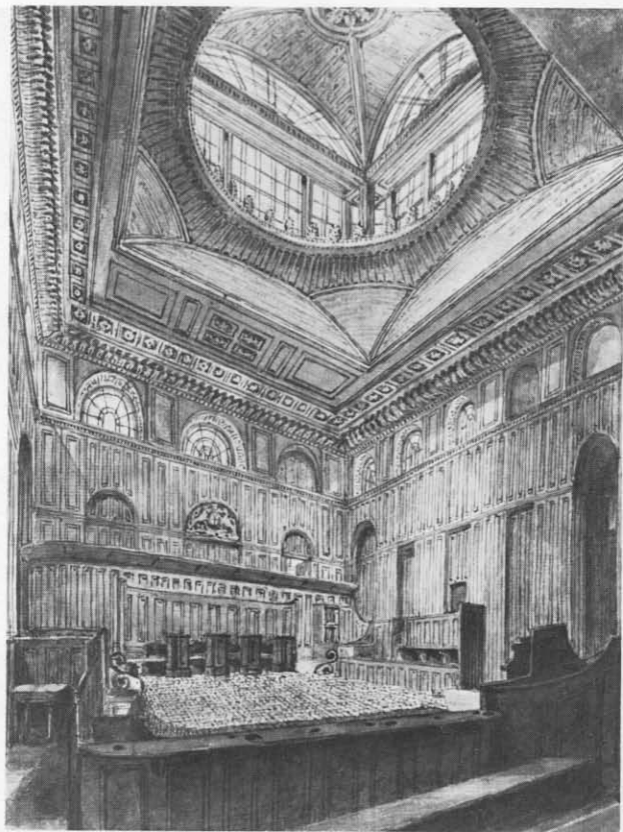
28. Capital, Hagia Sophia, Istanbul



29. Hawksmoor. St. George, Bloomsbury



30. Hawksmoor. St. George, Bloomsbury. Plan



35. Soane. Court of Exchequer, Palace of Westminster, London.  
Interior perspective



36. Soane. Soane House and Museum, Lincoln's Inn Fields, London.  
Interior perspective





37. Murcia Cathedral

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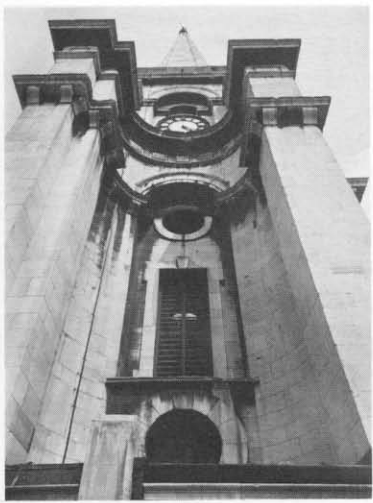
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38. Hawksmoor, Christ Church, Spitalfields



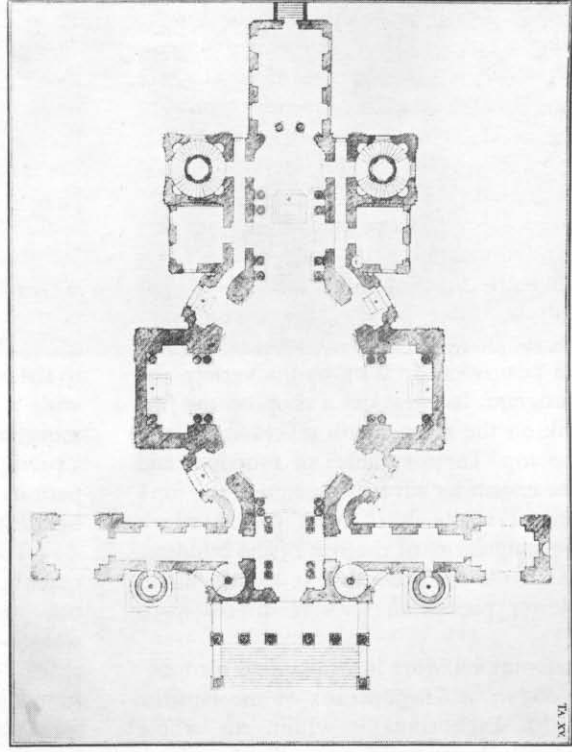
39. Hawksmoor. Christ Church, Spitalfields



41. Howe and Lescaze. Philadelphia Savings Fund Society Building



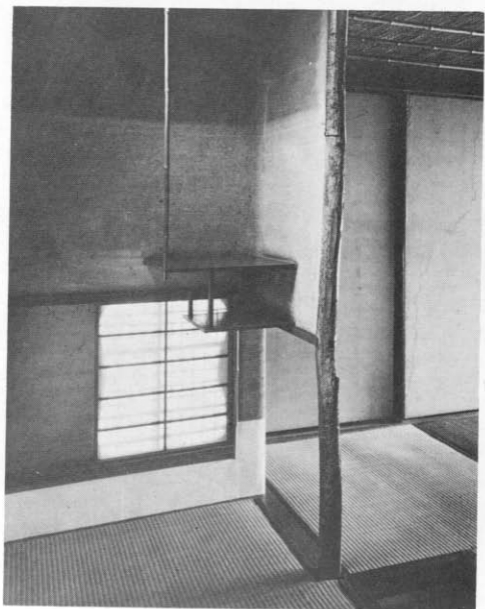
40. Cloth Hall and Belfry, Bruges



42. Fischer von Erlach. Karlskirche, Vienna. Plan



43. Rauschenberg. *Pilgrim*, 1960



44. Katsura Villa, Kyoto



45. S. Maria in Cosmedin, Rome

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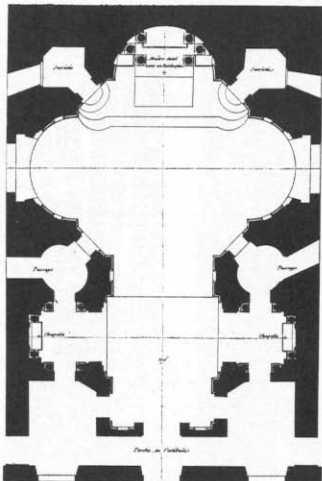
Author: Robert Venturi

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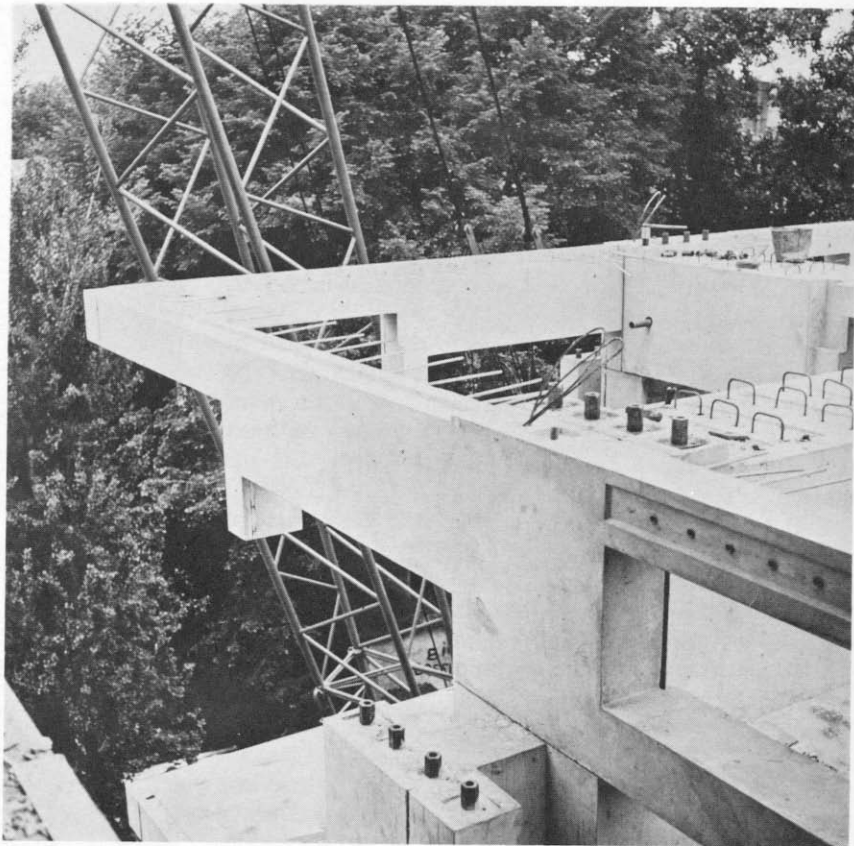
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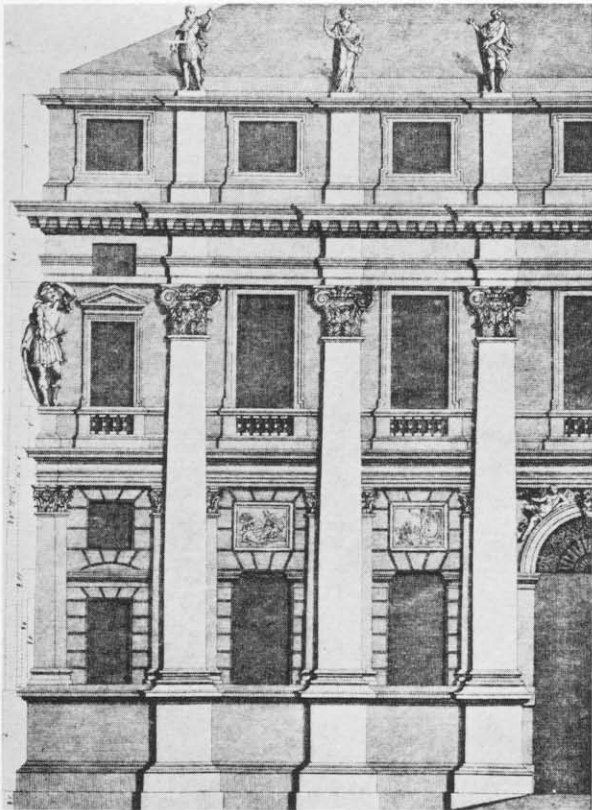


46. Mansart. Chapel, Frèsnes. Plan

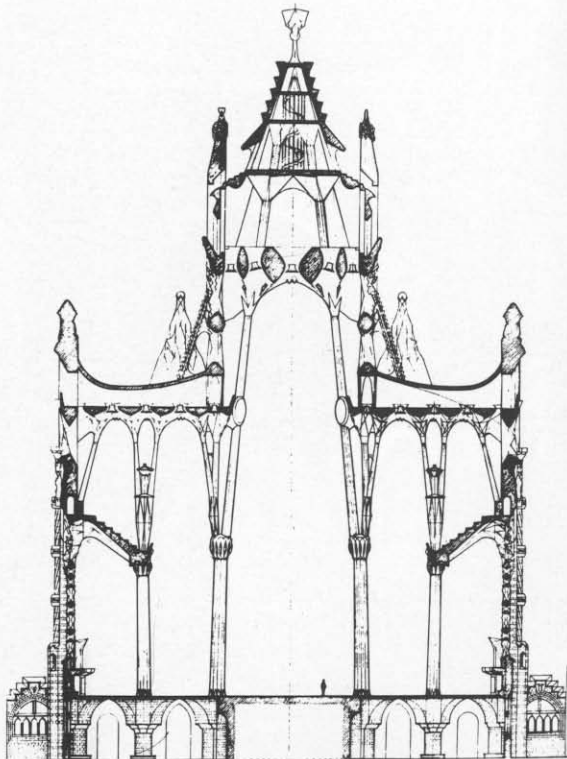


47. Kahn. Richards Medical Research Building, University of Pennsylvania, Philadelphia





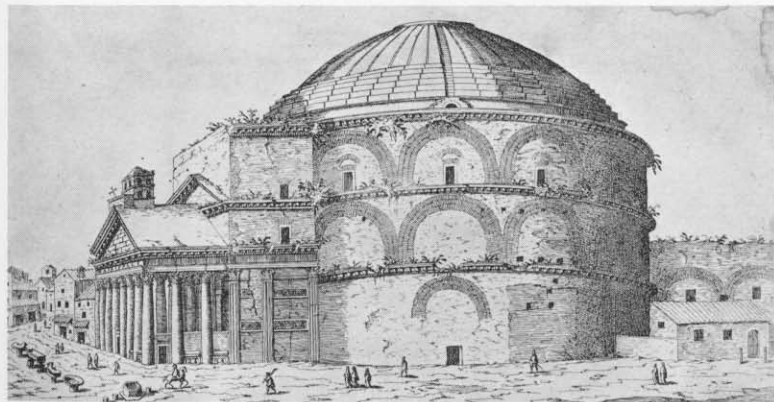
48. Palladio. Palazzo Valmarana, Vicenza, Elevation



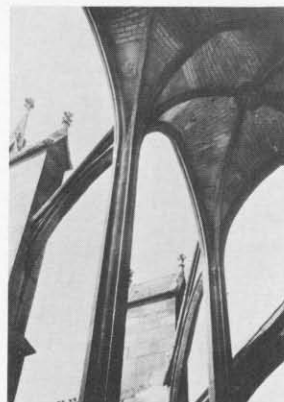
50. Gaudí. Church of the Sagrada Família, Barcelona. Section



51. Palladio. Il Redentore, Venice



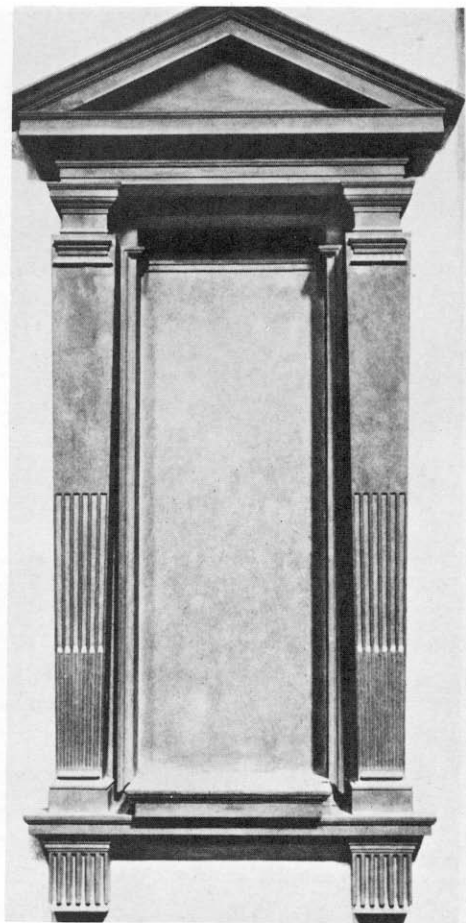
49. Pantheon, Rome. Perspective



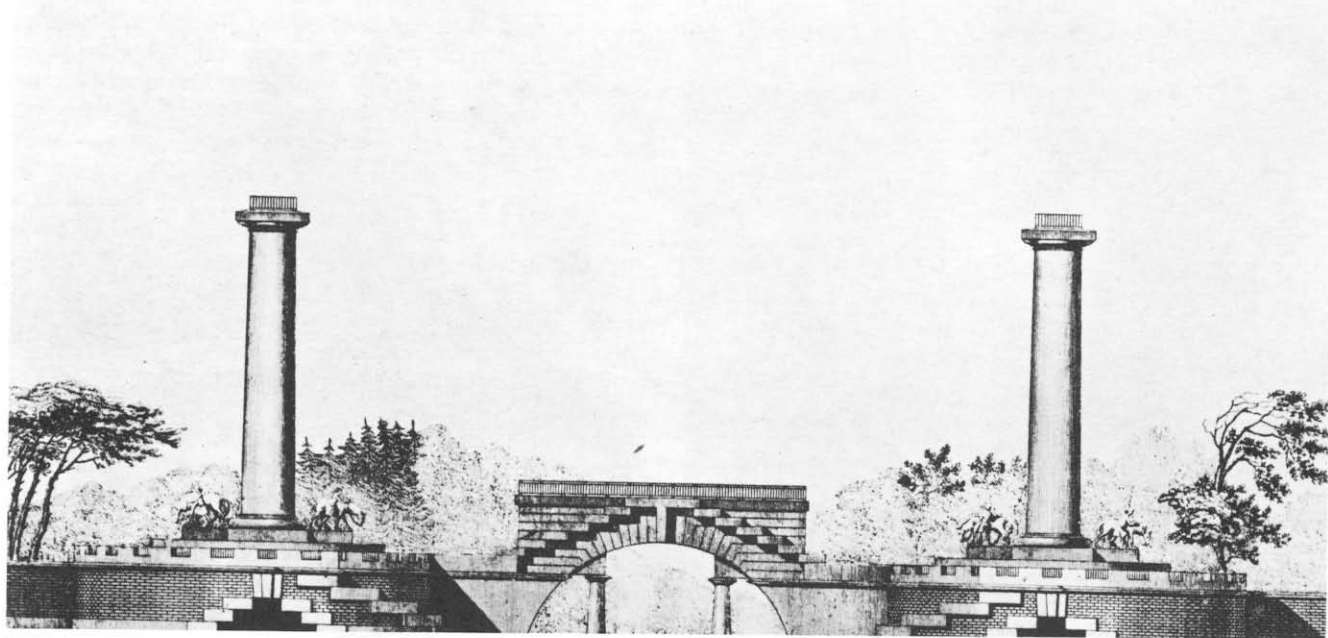
52. St. Urban, Troyes



53. Borromini, S. Maria dei Sette Dolori, Rome



54. Michelangelo, Laurentian Library, Florence



58. Ledoux. Project for a Gateway, Bourneville



59. Vanbrugh. Blenheim Palace, Oxfordshire

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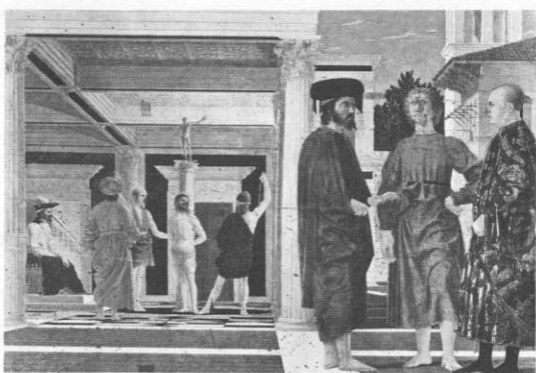
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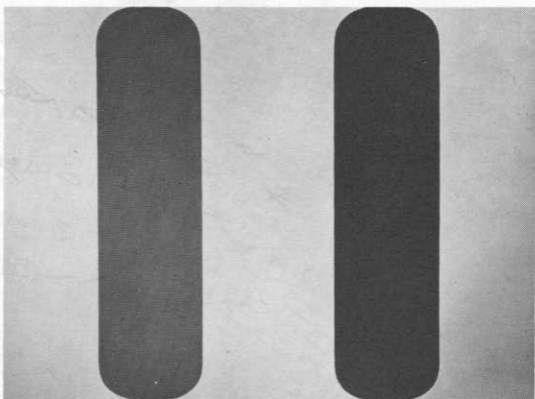
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208. Piero della Francesca. *Flagellation of Christ*. ca. 1455–60



209. Kelly. *Green, Blue, Red*. 1964



210. Louis. *Theta*. 1960



211. Sullivan. Farmers' and Merchants' Union Bank, Columbus, Wis.



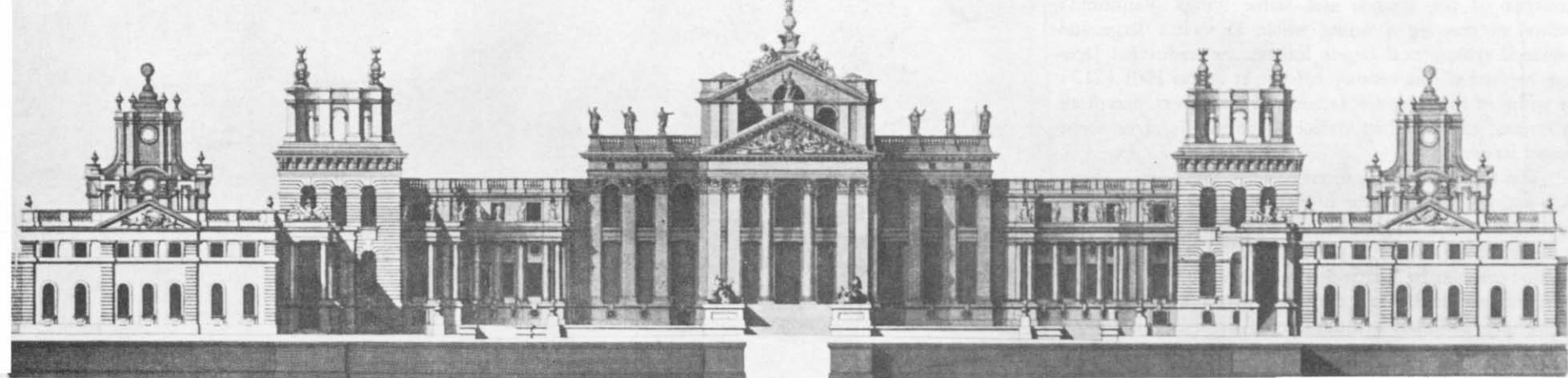
212. Martini, Church of the Madonna del Calcinaiò, Cortona



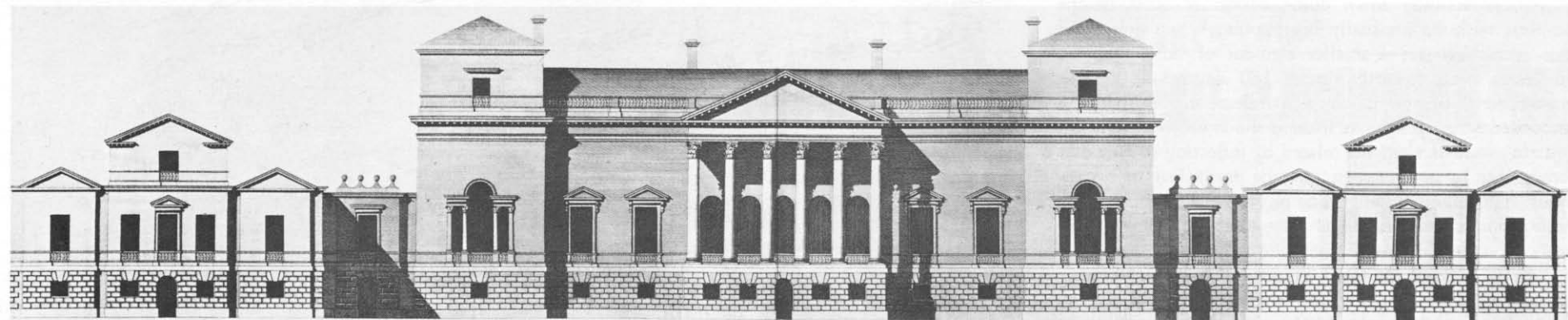
213. Thumb. Church, Birnau, Lake Constance, Bavaria



214. Thumb. Church, Birnau, Lake Constance, Bavaria



215. Vanbrugh. Blenheim Palace, Oxfordshire. Elevation



216. Kent. Holkham Hall, Norfolk. Elevation





217. Hatfield and Blickling. Aston Hall, Birmingham



218. Brazini. Orphanage of Il Buon Pastore, near Rome



219. Brazini. Orphanage of Il Buon Pastore, near Rome

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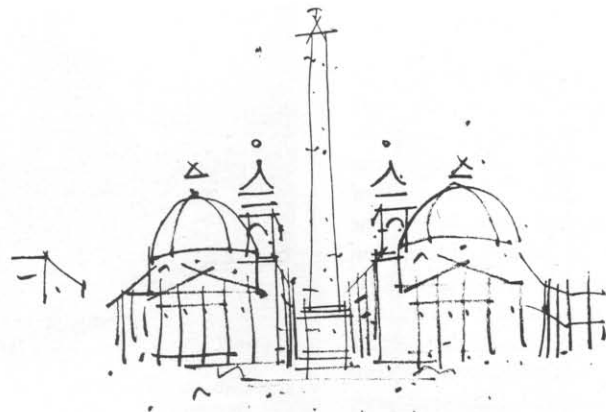
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220. Brazini. Orphanage of Il Buon Pastore, near Rome



221. Piazza del Popolo, Rome. Sketch



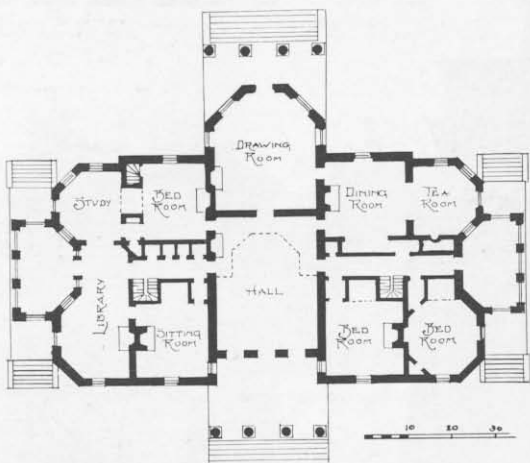
222. Palladio. Villa Zeno, Cessalto. Elevation



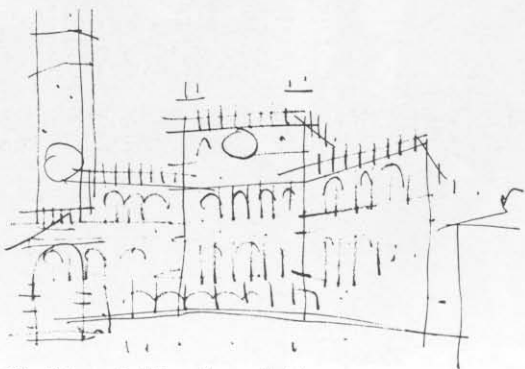
223. Rococo Sconce



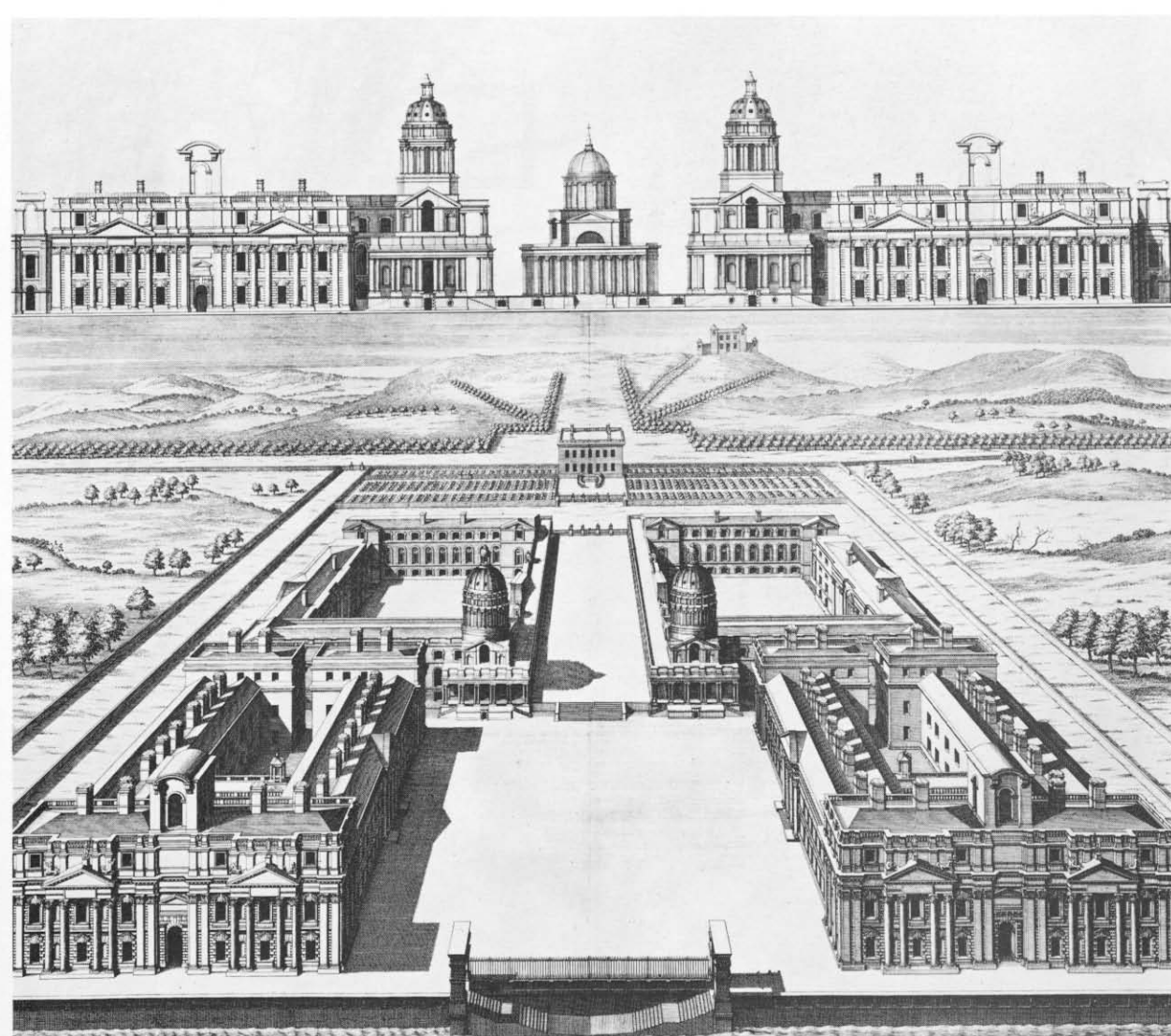
224. Della Porta and Domenichino. Villa Aldobrandini, Frascati. Perspective



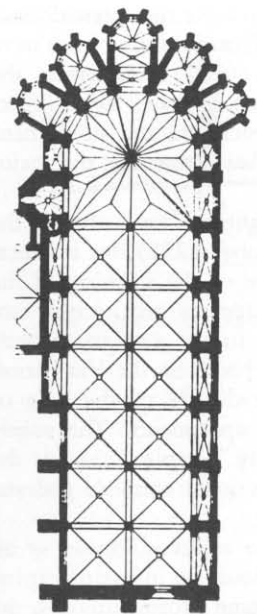
225. Jefferson. Monticello, Charlottesville. Plan



226. Palazzo Pubblico, Siena. Sketch



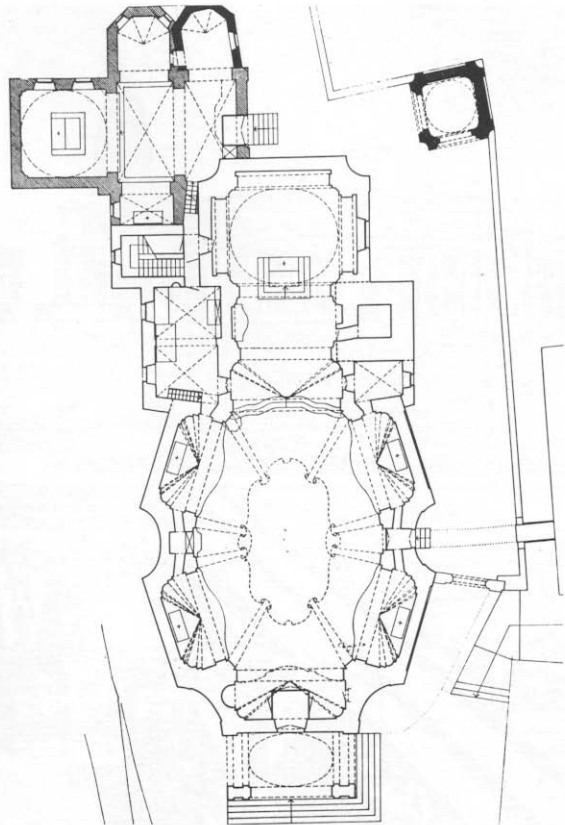
227. Wren and Jones. Royal Hospital, Greenwich. Perspective



228. Church of the Jacobins, Toulouse. Plan



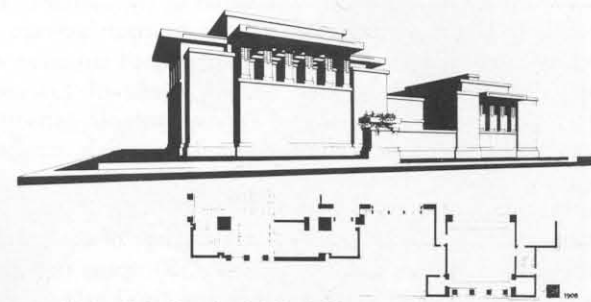
229. Parish Church, Dingolfing, W. Germany



230. Parish Church, Rimella. Plan



231. Lutyens. Lambay Castle, Ireland



232. Wright. Unity Temple, Oak Park. Plan and elevation

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Article Title: Complexity and Contradiction in Architecture Ch.1-5,10 (Images Part 8)

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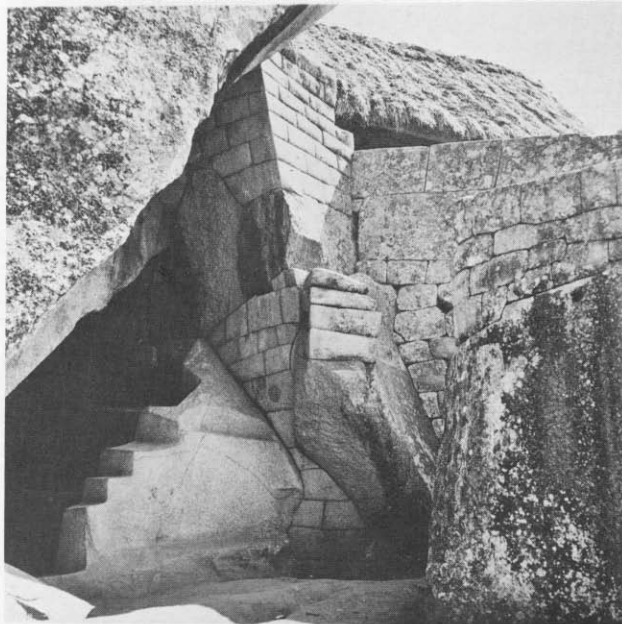
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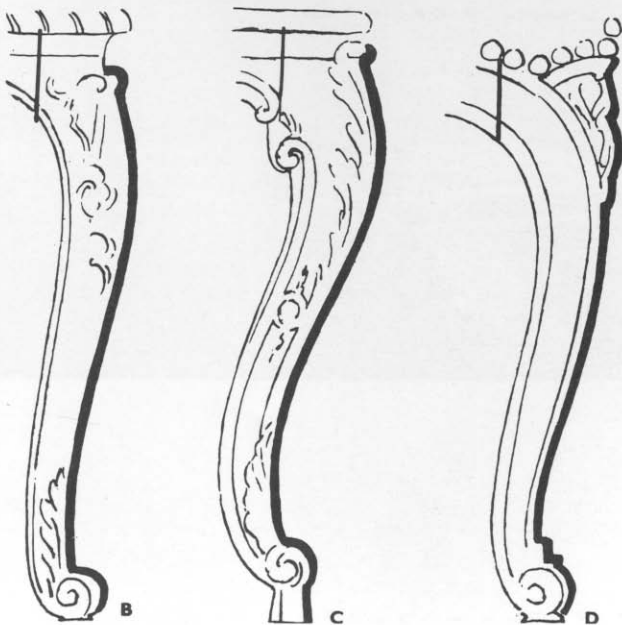




233. Walls, Machu Picchu, Peru



235. Wright. Evans House, Chicago



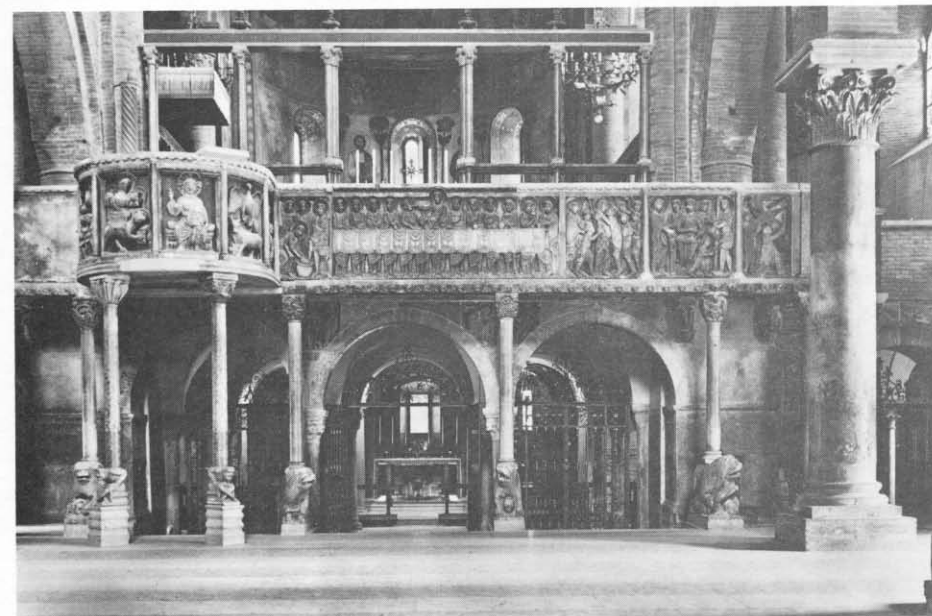
234. Studies for Cabriole Legs



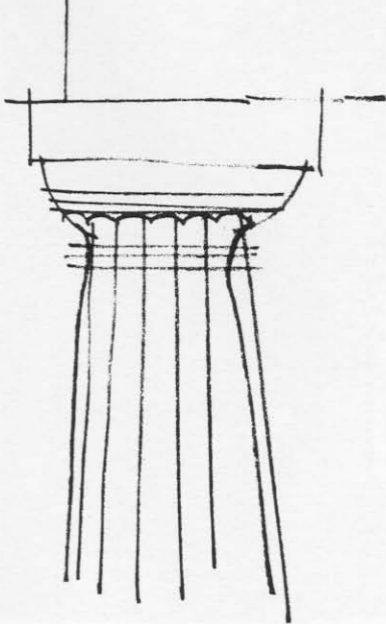
236. Cuvilliés. Amalienburg Pavilion, Nymphenburg Palace, near Munich



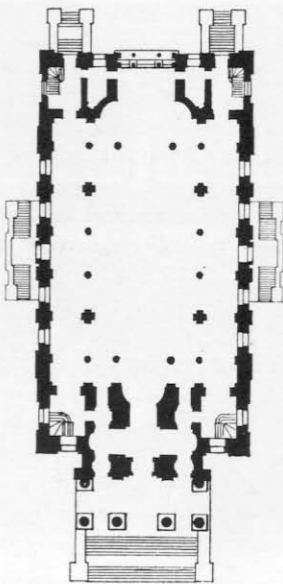
238. Soane. Gateway, Langley Park, Norfolk



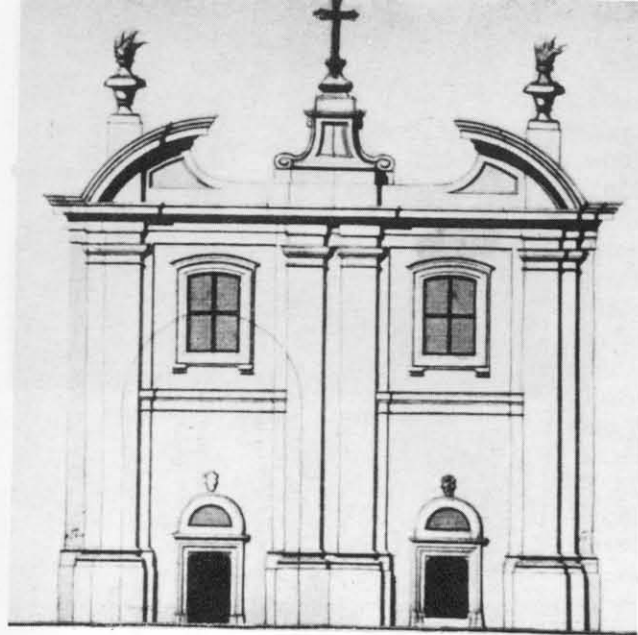
237. Modena Cathedral



239. Doric order. Sketch



240. Hawksmoor. Christ Church,  
Spitalfields. Plan



241. Fuga. Church of S. Antonio and S. Brigida. Elevation study



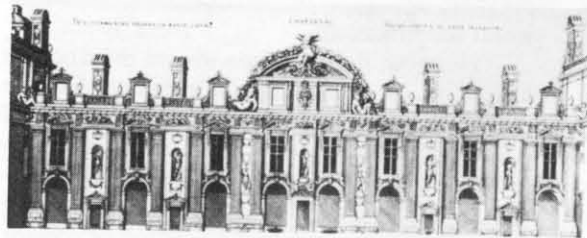
242. S. Maria della Spina, Pisa



245. Stratford Hall, Westmoreland County, Va.

function of the stair to the entrance of Stratford Hall, Virginia (245). There is no inflection in the composition of the Villa Lante (246), but an axis between the two equal pavilions, which focuses on a sculpture placed at a cross-axis, dominates the twin pavilions as a third element, thus emphasizing a whole.

But a more ambiguously hierarchical relationship of uninflected parts creates a more difficult perceptual whole. Such a whole is composed of equal combinations of parts. While the idea of equal combinations is related to the phenomenon both-and, and many examples apply to both ideas, both-and refers more specifically to contradiction in architecture, while equal combinations refer more to unity. With equal combinations the whole does not depend on inflection, or the easier relationships of the dominant binder, or motival consistency. For example, in the Porta Pia (110, 111) the number of each kind of element in the composition of the door and the wall is almost equal—no one element dominates. The varieties of shapes (rectangular, square, triangular, segmental, and round) being almost equal, the predominance of any one shape is also precluded,



243. Du Cerceau. Château, Charleval. Elevation



244. Farmer's House, near Chieti



246. Vignola. Villa Lante, Bagnaia. Plan

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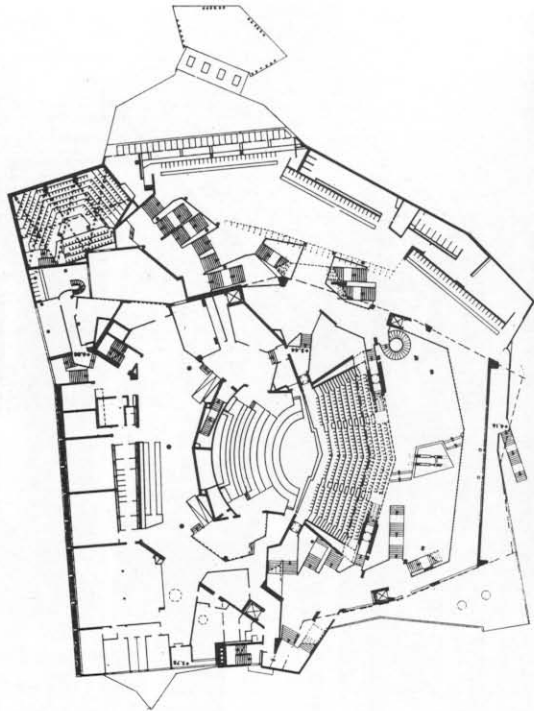
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247. Bramante and Solari. S. Maria delle Grazie, Milan



248. Scharoun. Philharmonic Hall, Berlin. Plan



249. Houses, Naples



250. Gaudí. Dressing Table, Casa Güell, Barcelona

essential at the scale of city planning. The incomplete program is valid for a complex single building as well.

Each of the fragmental twin churches on the Piazza del Popolo, however, is complete at the level of program but incomplete in the expression of form. The uniquely asymmetrically placed tower, as we have seen, infects each building toward a greater whole outside itself. The very complex building, which in its open form is incomplete, in itself relates to Maki's "group form;" it is the antithesis of the "perfect single building"<sup>49</sup> or the closed pavilion. As a fragment of a greater whole in a greater context this kind of building relates again to the scope of city planning as a means of increasing the unity of the complex whole. An architecture that can simultaneously recognize contradictory levels should be able to admit the paradox of the whole fragment: the building which is a whole at one level and a fragment of a greater whole at another level.



251. Aalto. Bentwood and Metal Chair. 1929-33



252. Jefferson. University of Virginia, Charlottesville





253. Typical Main Street, U.S.A.

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Source Title: Complexity and Contradiction in Architecture

Vol.: 21

Issue: \_\_\_\_\_

Date: 1966

Pages: \_\_\_\_\_

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# Complexity and Contradiction in Architecture

Robert Venturi

with an introduction by Vincent Scully

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**the Graham Foundation for Advanced Studies in  
the Fine Arts, Chicago**

**Distributed by New York Graphic Society, Boston**

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## Introduction

This is not an easy book. It requires professional commitment and close visual attention, and is not for those architects who, lest they offend them, pluck out their eyes. Indeed, its argument unfolds like a curtain slowly lifting from the eyes. Piece by piece, in close focus after focus, the whole emerges. And that whole is new—hard to see, hard to write about, graceless and inarticulate as only the new can be.

It is a very American book, rigorously pluralistic and phenomenological in its method; one is reminded of Dreiser, laboriously trodding out the way. Yet it is probably the most important writing on the making of architecture since Le Corbusier's *Vers une Architecture*, of 1923. Indeed, at first sight, Venturi's position seems exactly the opposite of Le Corbusier's, its first and natural complement across time.\* This is not to say that Venturi is Le Corbusier's equal in persuasiveness or achievement—or will necessarily ever be. Few will attain to that level again. The experience of Le Corbusier's buildings themselves has surely had not a little to do with forming Venturi's ideas. Yet his views do in fact balance those of Le Corbusier as they were expressed in his early writings and as they have generally affected two architectural generations since that time. The older book demanded a noble purism in architecture, in single buildings and in the city as a whole; the new book welcomes the contradictions and complexities of urban experience at all scales. It marks, in this way, a complete shift of emphasis and will annoy some of those who profess to follow Le Corbusier now, exactly as Le Corbusier infuriated many who belonged to the Beaux-Arts then. Hence the books do in fact complement each other; and in one fundamental way they are much the same. Both are by architects who have really learned something from the architecture of the

\* Here I do not forget Bruno Zevi's *Towards an Organic Architecture*, of 1950, which was consciously written as a reply to Le Corbusier. One cannot, however, regard it as a complement to the other or as an advance upon it, since it was hardly more than a reaction against it in favor of "organic" principles which had been formulated by architects other than Zevi and had indeed passed their peak of vitality long before. They had found their best embodiment in the work of Frank Lloyd Wright before 1914 and their clearest verbal statement in his writings of that period.

past. Few contemporary architects have been able to do this and have instead tended to take refuge in various systems of what can only be called historical propaganda. For Le Corbusier and Venturi, the experience was personal and direct. Each was thus able to free himself from the fixed patterns of thought and the fashions of his contemporaries, so carrying out Camus' injunction to leave behind for a while "our age and its adolescent furies."

Each learned most from very different things. Le Corbusier's great teacher was the Greek temple, with its isolated body white and free in the landscape, its luminous austerities clear in the sun. In his early polemics he would have his buildings and his cities just that way, and his mature architecture itself came more and more to embody the Greek temple's sculptural, actively heroic character. Venturi's primary inspiration would seem to have come from the Greek temple's historical and archetypal opposite, the urban façades of Italy, with their endless adjustments to the counter-requirements of inside and outside and their inflection with all the business of everyday life: not primarily sculptural actors in vast landscapes but complex spatial containers and definers of streets and squares. Such "accommodation" also becomes a general urban principle for Venturi. In this he again resembles Le Corbusier, in so far as they are both profoundly visual, plastic artists whose close focus upon individual buildings brings with it a new visual and symbolic attitude toward urbanism in general—not the schematic or two-dimensionally diagrammatic view toward which many planners tend, but a set of solid images, architecture itself at its full scale.

Yet again, the images of Le Corbusier and Venturi are diametrically opposed in this regard. Le Corbusier, exercising that side of his many-sided nature which professed Cartesian rigor, generalized in *Vers une Architecture* much more easily than Venturi does here, and presented a clear, general scheme for the whole. Venturi is more fragmentary, moving step by step through more compromised relationships. His conclusions are general only by implication. Yet it seems to me that his proposals, in their recognition of complexity and their respect for what exists, create the most necessary antidote to that cataclysmic purism of contemporary urban renewal which has presently brought so many cities to the brink of catastrophe, and in which Le Corbusier's ideas have now found terrifying vulgarization. They are a hero's dreams applied en masse—as if an

Achilles were to become the king. That is why, one supposes, Venturi is so consistently anti-heroic, compulsively qualifying his recommendations with an implied irony at every turn. Le Corbusier used irony too, but his was as sharp as a steel-toothed smile. Venturi shrugs his shoulders ruefully and moves on. It is this generation's answer to grandiose pretensions which have shown themselves in practice to be destructive or overblown.

Like all original architects, Venturi makes us see the past anew. He has made me, for example, who once focused upon the proto-Wrightian continuities of the Shingle Style, revalue their equally obvious opposite: the complicated accommodations of inside and outside with which those architects themselves were surely entranced. And he has even called attention once more to the principle of accommodation in Le Corbusier's early plans. So all inventive architects bring their dead to life again as a matter of course. It is appropriate that Le Corbusier and Venturi should come together on the question of Michelangelo, in whose work heroic action and complex qualification found special union. Venturi fixes less than Le Corbusier upon the unified assertion of Michelangelo's conception in St. Peter's but, like Le Corbusier, he sees and, as the fenestration of his Friends' Housing for the Aged shows, can build in accordance with the other: the sad and mighty discordances of the apses, that music drear and grand of dying civilizations and the fate of mankind on a cooling star.

In that sense Venturi is, for all his own ironic disclaimers, one of the few American architects whose work seems to approach tragic stature in the tradition of Furness, Louis Sullivan, Wright, and Kahn. His being so suggests the power of successive generations, living in one place, to develop an intensity of meaning; so much of it is carried in Philadelphia: from Frank Furness to the young Sullivan, and on through Wilson Eyre and George Howe to Louis Kahn. Kahn is Venturi's closest mentor, as he has been for almost all the best young American architects and educators of the past decade, such as Giurgola, Moore, Vreeland, and Millard. The dialogue so developed, in which Aldo Van Eyck of Holland has also played an outstanding role, has surely contributed much to Venturi's development. Kahn's theory of "institutions" has been fundamental to all these architects, but Venturi himself avoids Kahn's structural preoccupations in favor of a more flexibly function-directed method which is closer to that of Alvar Aalto. Unlike his

writing, Venturi's design unfolds without strain. In it he is as facile as an architect of the Baroque and, in the same sense, as scenographic. (His project for the Roosevelt Memorial, probably the best, surely the most original of the entries, shows how serene and grand that scenographic talent can be.) There is none of Kahn's grim struggle in him, no profound agony of structural and functional opposites seeking expression. He is entirely at home with the particular and so offers the necessary opposition to the technological homogenizers who crowd our future. There is surely no quarrel here with Le Corbusier, or even with Mies, despite the universal regularity of the latter's forms. Many species of high quality can inhabit the same world. Such multiplicity is indeed the highest promise of the modern age to mankind, far more intrinsic to its nature than the superficial conformity or equally arbitrary packaging which its first stages suggest and which are so eagerly embraced by superficial designers.

The essential point is that Venturi's philosophy and design are humanistic, in which character his book resembles Geoffrey Scott's basic work, *The Architecture of Humanism*, of 1914. Therefore, it values before all else the actions of human beings and the effect of physical forms upon their spirit. In this, Venturi is an Italian architect of the great tradition—whose contact with that tradition came from art history at Princeton and a fellowship at the American Academy in Rome. But, as his Friends' Housing shows equally well, he is one of the very few architects whose thought parallels that of the Pop painters—and probably the first architect to perceive the usefulness and meaning of their forms. He has clearly learned a good deal from them during the past few years, though the major argument of this book was laid out in the late fifties and predates his knowledge of their work. Yet his "Main Street is almost all right," is just like their viewpoint, as is his instinct for changes of scale in small buildings and for the unsuspected life to be found in the common artifacts of mass culture when they are focused upon individually. The "Pop" in Le Corbusier's "Purism," as in that of the young Léger, should not be forgotten here, and it takes on renewed historical significance as its lesson of exploded scale and sharpened focus is learned once more. Again one has the feeling that Le Corbusier, painter and theorist that he was, would have best understood Venturi's alliance of visual method with intellectual intention.

It is significant in this regard that Venturi's ideas have so far stirred bitterest resentment among the more academic-minded of the Bauhaus generation—with its utter lack of irony, its spinsterish disdain for the popular culture but shaky grasp on any other, its incapacity to deal with monumental scale, its lip-service to technology, and its preoccupation with a rather prissily puristic aesthetic. Most of the Bauhaus design of the twenties, in buildings and furniture alike, can be distinguished by exactly those characteristics from Le Corbusier's more generous and varied forms of the period. Two strains in modern architecture seem to separate here, with Le Corbusier and Venturi now seen as working the same larger, more humane, architects' rather than "designers' " vein.

Venturi's projected City Hall for North Canton, Ohio, shows how his architecture also has a connection with the late work of Sullivan and so with the deepest untapped force of American vernacular experience as a whole. This is surely Venturi's largest achievement in American terms, that he opens our eyes again to the nature of things as they are in the United States—in the small town no less than in New York—and that out of our common, confused, mass-produced fabric he makes a solid architecture; he makes an art. In so doing he revives the popular traditions, and the particularized methodology, of the pre-Beaux Arts, pre-International Style, period. He thus completes that renewed connection with the whole of our past which Kahn's mature work had begun.

It is no wonder that few of the present crop of redevelopers can yet endure him. They, too, are much in the American grain, village boys with their noses pressed against the window of the candy store and with money to burn for the first time. So they are generally buying junk, fancy trash readymade by an army of architectural entrepreneurs, who portentously supply a spurious simplicity and the order of the tomb: the contemporary package, *par excellence*. Venturi looks both too complicated and too much like everyday for such people, who, in their architectural forms as in their social programs, would much prefer to gloss over a few of reality's more demanding faces. Hence, precisely because he recognizes and uses social phenomena as they exist, Venturi is the least "stylish" of architects, going always straight to the heart of the matter, working quickly without either fancy pretenses or vaporish asides. Although he has learned from Mannerist architec-

ture, his own buildings are in no sense "mannered," but surprisingly direct. After all, a television aerial at appropriate scale crowns his Friends' Housing, exactly as it fills—here neither good nor bad but a fact—our old people's lives. Whatever dignity may be in that, Venturi embodies, but he does not lie to us once concerning what the facts are. In the straightest sense, it is function that interests him, and the strong forms deriving from functional expression. Unlike too many architects of this generation, he is never genteel.

It is no wonder that Venturi's buildings have not found ready acceptance; they have been both too new and, for all their "accommodation" of complexity, too truly simple and unassuming for this affluent decade. They have refused to make much out of nothing, to indulge in flashy gestures, or to pander to fashion. They have been the product of a deeply systematic analysis in programmatic and visual terms and have therefore required a serious reorientation in all our thinking. Hence the symbolic image which prepares our eyes to see them has not yet been formed. This book may help in that regard. I believe that the future will value it among the few basic texts of our time—one which, despite its anti-heroic lack of pretension and its shift of perspective from the Champs-Élysées to Main Street, still picks up a fundamental dialogue begun in the twenties, and so connects us with the heroic generation of modern architecture once more.

Vincent Scully

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#### Note to the Second Edition

There is no way to separate form from meaning; one cannot exist without the other. There can only be different critical assessments of the major ways through which form transmits meaning to the viewer: through empathy, said the nineteenth century, it embodies it; through the recognition of signs, say the linguists, it conveys it. Each side would agree that the relevant functioning agent in this process of the human brain is the memory: empathy and the identification of signs are both learned responses, the result of specific cultural experiences. The two modes of knowing and of deriv-

ing meaning from outside reality complement each other and are both at work in varying degrees in the shaping and the perception of all works of art.

In that sense, the making and the experience of architecture, as of every art, are always critical-historical acts, involving what the architect and the viewer have learned to distinguish and to image through their own relationship with life and things. It therefore follows that the strength and value of our contact with art will depend upon the quality of our historical knowledge. And it is obvious that knowledge instead of learning is the word which has to be employed here.

Venturi's two major books have been constructed along precisely these lines. They are both critical and historical. This one, the first, despite its significant introduction of several important modes of literary criticism into architectural writing, explores mainly the physical reaction to form and is thus basically empathetic in method. The second, *Learning from Las Vegas* (written with authors Denise Scott Brown and Steven Izenour), is primarily concerned with the function of sign in human art and is therefore fundamentally linguistic in its approach. Between them the two volumes, always impeccably visual in their argument, shape an impressive working aesthetic for contemporary architects.

At this distance, I feel doubly honored to have been invited to write the original introduction, which now seems to me not so well written as the book itself (edited by Marian Scully), but embarrassingly correct in its conclusions. I am especially pleased to have had the wit to assert in it that *Complexity and Contradiction* was "the most important writing on the making of architecture since Le Corbusier's *Vers une Architecture*, of 1923." Time has shown that this outrageous statement was nothing more than the unvarnished truth, and the critics who found it most amusing or infuriating at that moment now seem to spend a remarkable amount of energy quoting Venturi without acknowledgment, or chiding him for not going far enough, or showing that they themselves had really said it all long before. It doesn't matter much. What counts is that this brilliant, liberating book was published when it was. It provided architects and critics alike with more realistic and effective weapons, so that the breadth and relevance which the architectural dialogue has since achieved were largely initiated by it. Of primary interest are the newly eloquent buildings that have been inspired by its method, of which those by Venturi

and Rauch have not surprisingly remained the most intellectually focused, archetypal, and distinguished. Once again, as when it sponsored the exhibition from which Hitchcock and Johnson's *The International Style* of 1932 derived, The Museum of Modern Art started something important when it backed this book.

V.S.  
April, 1977



This book is both an attempt at architectural criticism and an apologia—an explanation, indirectly, of my work. Because I am a practicing architect, my ideas on architecture are inevitably a by-product of the criticism which accompanies working, and which is, as T. S. Eliot has said, of “capital importance . . . in the work of creation itself. Probably, indeed, the larger part of the labour of sifting, combining, constructing, expunging, correcting, testing: this frightful toil is as much critical as creative. I maintain even that the criticism employed by a trained and skilled writer on his own work is the most vital, the highest kind of criticism . . .”<sup>1</sup> I write, then, as an architect who employs criticism rather than a critic who chooses architecture and this book represents a particular set of emphases, a way of seeing architecture, which I find valid.

In the same essay Eliot discusses analysis and comparison as tools of literary criticism. These critical methods are valid for architecture too: architecture is open to analysis like any other aspect of experience, and is made more vivid by comparisons. Analysis includes the breaking up of architecture into elements, a technique I frequently use even though it is the opposite of the integration which is the final goal of art. However paradoxical it appears, and despite the suspicions of many Modern architects, such disintegration is a process present in all creation, and it is essential to understanding. Self-consciousness is necessarily a part of creation and criticism. Architects today are too educated to be either primitive or totally spontaneous, and architecture is too complex to be approached with carefully maintained ignorance.

As an architect I try to be guided not by habit but by a conscious sense of the past—by precedent, thoughtfully considered. The historical comparisons chosen are part of a continuous tradition relevant to my concerns. When Eliot writes about tradition, his comments are equally relevant to architecture, notwithstanding the more obvious changes in architectural methods due to technological innovations. “In English writing,” Eliot says, “we seldom speak of tradition. . . . Seldom, perhaps, does the word appear except in a phrase of censure. If otherwise, it is vaguely approbative, with the implication, as to a work approved, of some pleasing archeological reconstruction. . . . Yet if the only form of tradition, of handing down, consisted in following the ways of the immediate generation before us in a blind or timid adherence to its successes, ‘tradition’ should be

positively discouraged. . . . Tradition is a matter of much wider significance. It cannot be inherited, and if you want it you must obtain it by great labour. It involves, in the first place, the historical sense, which we may call nearly indispensable to anyone who would continue to be a poet beyond his twenty-fifth year; and the historical sense involves perception, not only of the pastness of the past, but of its presence; the historical sense compels a man to write not merely with his own generation in his bones, but with a feeling that the whole of the literature of Europe . . . has a simultaneous existence and composes a simultaneous order. This historical sense, which is a sense of the timeless as well as of the temporal and of the timeless and temporal together, is what makes a writer traditional, and it is at the same time what makes a writer most acutely conscious of his place in time, of his own contemporaneity. . . . No poet, no artist of any kind, has his complete meaning alone.”<sup>2</sup> I agree with Eliot and reject the obsession of Modern architects who, to quote Aldo van Eyck, “have been harping continually on what is different in our time to such an extent that they have lost touch with what is not different, with what is essentially the same.”<sup>3</sup>

The examples chosen reflect my partiality for certain eras: Mannerist, Baroque, and Rococo especially. As Henry-Russell Hitchcock says, “there always exists a real need to re-examine the work of the past. There is, presumably, almost always a generic interest in architectural history among architects; but the aspects, or periods, of history that seem at any given time to merit the closest attention certainly vary with changing sensibilities.”<sup>4</sup> As an artist I frankly write about what I like in architecture: complexity and contradiction. From what we find we like—what we are easily attracted to—we can learn much of what we really are. Louis Kahn has referred to “what a thing wants to be,” but implicit in this statement is its opposite: what the architect wants the thing to be. In the tension and balance between these two lie many of the architect’s decisions.

The comparisons include some buildings which are neither beautiful nor great, and they have been lifted abstractly from their historical context because I rely less on the idea of style than on the inherent characteristics of specific buildings. Writing as an architect rather than as a scholar, my historical view is that described by Hitchcock: “Once, of course, almost all investigation of the architecture of the past was in aid of its nominal reconstitution—an instru-

ment of revivalism. That is no longer true, and there is little reason to fear that it will, in our time, become so again. Both the architects and the historian-critics of the early twentieth century, when they were not merely seeking in the past fresh ammunition for current polemical warfare, taught us to see all architecture, as it were, abstractly, false though such a limited vision probably is to the complex sensibilities that produced most of the great architecture of the past. When we re-examine—or discover—this or that aspect of earlier building production today, it is with no idea of repeating its forms, but rather in the expectation of feeding more amply new sensibilities that are wholly the product of the present. To the pure historian this may seem regrettable, as introducing highly subjective elements into what he believes ought to be objective studies. Yet the pure historian, more often than not, will eventually find himself moving in directions that have been already determined by more sensitive weathervanes.”<sup>5</sup>

I make no special attempt to relate architecture to other things. I have not tried to “improve the connections between science and technology on the one hand, and the humanities and the social sciences on the other . . . and make of architecture a more human social art.”<sup>6</sup> I try to talk about architecture rather than around it. Sir John Summerson has referred to the architects’ obsession with “the importance, not of architecture, but of the *relation* of architecture to other things.”<sup>7</sup> He has pointed out that in this century architects have substituted the “mischievous analogy” for the eclectic imitation of the nineteenth century, and have been staking a claim for architecture rather than producing architecture.<sup>8</sup> The result has been diagrammatic planning. The architect’s ever diminishing power and his growing ineffectualness in shaping the whole environment can perhaps be reversed, ironically, by narrowing his concerns and concentrating on his own job. Perhaps then relationships and power will take care of themselves. I accept what seem to me architecture’s inherent limitations, and attempt to concentrate on the difficult particulars within it rather than the easier abstractions about it “. . . because the arts belong (as the ancients said) to the practical and not the speculative intelligence, there is no surrogate for being on the job.”<sup>9</sup>

This book deals with the present, and with the past in relation to the present. It does not attempt to be visionary except insofar as the future is inherent in the reality of the

present. It is only indirectly polemical. Everything is said in the context of current architecture and consequently certain targets are attacked—in general, the limitations of orthodox Modern architecture and city planning, in particular, the platitudinous architects who invoke integrity, technology, or electronic programming as ends in architecture, the popularizers who paint “fairy stories over our chaotic reality”<sup>10</sup> and suppress those complexities and contradictions inherent in art and experience. Nevertheless, this book is an analysis of what seems to me true for architecture now, rather than a diatribe against what seems false.

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#### Note to the Second Edition

I wrote this book in the early 1960’s as a practicing architect responding to aspects of architectural theory and dogma of that time. The issues are different now, and I think the book might be read today for its general theories about architectural form but also as a particular document of its time, more historical than topical. For this reason the second part of the book, which covers the work of our firm up to 1966, is not expanded in this second edition.

I now wish the title had been *Complexity and Contradiction in Architectural Form*, as suggested by Donald Drew Egbert. In the early ’60’s, however, form was king in architectural thought, and most architectural theory focused without question on aspects of form. Architects seldom thought of symbolism in architecture then, and social issues came to dominate only in the second half of that decade. But in hindsight this book on form in architecture complements our focus on symbolism in architecture several years later in *Learning from Las Vegas*.

To rectify an omission in the acknowledgments of the first edition, I want to express my gratitude to Richard Krautheimer, who shared his insights on Roman Baroque architecture with us Fellows at the American Academy in Rome. I am grateful also to my friend Vincent Scully for his continued and very kind support of this book and of our work. I am happy that The Museum of Modern Art is enlarging the format of this edition so that the illustrations are now more readable.

Perhaps it is the fate of all theorists to view the ripples from their works with mixed feelings. I have sometimes felt more comfortable with my critics than with those who have agreed with me. The latter have often misapplied or exaggerated the ideas and methods of this book to the point of parody. Some have said the ideas are fine but don't go far enough. But most of the thought here was intended to be suggestive rather than dogmatic, and the method of historical analogy can be taken only so far in architectural criticism. Should an artist go all the way with his or her philosophies?

R.V.  
April, 1977

## 1. Nonstraightforward Architecture: A Gentle Manifesto

I like complexity and contradiction in architecture. I do not like the incoherence or arbitrariness of incompetent architecture nor the precious intricacies of picturesqueness or expressionism. Instead, I speak of a complex and contradictory architecture based on the richness and ambiguity of modern experience, including that experience which is inherent in art. Everywhere, except in architecture, complexity and contradiction have been acknowledged, from Gödel's proof of ultimate inconsistency in mathematics to T. S. Eliot's analysis of "difficult" poetry and Joseph Albers' definition of the paradoxical quality of painting.

But architecture is necessarily complex and contradictory in its very inclusion of the traditional Vitruvian elements of commodity, firmness, and delight. And today the wants of program, structure, mechanical equipment, and expression, even in single buildings in simple contexts, are diverse and conflicting in ways previously unimaginable. The increasing dimension and scale of architecture in urban and regional planning add to the difficulties. I welcome the problems and exploit the uncertainties. By embracing contradiction as well as complexity, I aim for vitality as well as validity.

Architects can no longer afford to be intimidated by the puritanically moral language of orthodox Modern architecture. I like elements which are hybrid rather than "pure," compromising rather than "clean," distorted rather than "straightforward," ambiguous rather than "articulated," perverse as well as impersonal, boring as well as "interesting," conventional rather than "designed," accommodating rather than excluding, redundant rather than simple, vestigial as well as innovating, inconsistent and equivocal rather than direct and clear. I am for messy vitality over obvious unity. I include the non sequitur and proclaim the duality.

I am for richness of meaning rather than clarity of meaning; for the implicit function as well as the explicit function. I prefer "both-and" to "either-or," black and white, and sometimes gray, to black or white. A valid architecture evokes many levels of meaning and combinations of focus: its space and its elements become readable and workable in several ways at once.

But an architecture of complexity and contradiction has a special obligation toward the whole: its truth must be in its totality or its implications of totality. It must embody the difficult unity of inclusion rather than the easy unity of exclusion. More is not less.

## 2. Complexity and Contradiction vs. Simplification or Picturesqueness

Orthodox Modern architects have tended to recognize complexity insufficiently or inconsistently. In their attempt to break with tradition and start all over again, they idealized the primitive and elementary at the expense of the diverse and the sophisticated. As participants in a revolutionary movement, they acclaimed the newness of modern functions, ignoring their complications. In their role as reformers, they puritanically advocated the separation and exclusion of elements, rather than the inclusion of various requirements and their juxtapositions. As a forerunner of the Modern movement, Frank Lloyd Wright, who grew up with the motto "Truth against the World," wrote: "Visions of simplicity so broad and far-reaching would open to me and such building harmonies appear that . . . would change and deepen the thinking and culture of the modern world. So I believed."<sup>11</sup> And Le Corbusier, co-founder of Purism, spoke of the "great primary forms" which, he proclaimed, were "distinct . . . and without ambiguity."<sup>12</sup> Modern architects with few exceptions eschewed ambiguity.

But now our position is different: "At the same time that the problems increase in quantity, complexity, and difficulty they also change faster than before,"<sup>13</sup> and require an attitude more like that described by August Heckscher: "The movement from a view of life as essentially simple and orderly to a view of life as complex and ironic is what every individual passes through in becoming mature. But certain epochs encourage this development; in them the paradoxical or dramatic outlook colors the whole intellectual scene. . . . Amid simplicity and order rationalism is born, but rationalism proves inadequate in any period of upheaval. Then equilibrium must be created out of opposites. Such inner peace as men gain must represent a tension among contradictions and uncertainties. . . . A feeling for paradox allows seemingly dissimilar things to exist side by side, their very incongruity suggesting a kind of truth."<sup>14</sup>

Rationalizations for simplification are still current, however, though subtler than the early arguments. They are expansions of Mies van der Rohe's magnificent paradox, "less is more." Paul Rudolph has clearly stated the implications of Mies' point of view: "All problems can never be solved. . . . Indeed it is a characteristic of the twentieth century that architects are highly selective in determining which problems they want to solve. Mies, for instance, makes wonderful buildings only because he ignores many aspects of a building. If he solved more problems, his

buildings would be far less potent." <sup>15</sup> /

The doctrine "less is more" bemoans complexity and justifies exclusion for expressive purposes. It does, indeed, permit the architect to be "highly selective in determining which problems [he wants] to solve." But if the architect must be "committed to his particular way of seeing the universe," <sup>15</sup> such a commitment surely means that the architect determines how problems should be solved, not that he can determine which of the problems he will solve. He can exclude important considerations only at the risk of separating architecture from the experience of life and the needs of society. If some problems prove insoluble, he can express this: in an inclusive rather than an exclusive kind of architecture there is room for the fragment, for contradiction, for improvisation, and for the tensions these produce. Mies' exquisite pavilions have had valuable implications for architecture, but their selectiveness of content and language is their limitation as well as their strength.

I question the relevance of analogies between pavilions and houses, especially analogies between Japanese pavilions and recent domestic architecture. They ignore the real complexity and contradiction inherent in the domestic program—the spatial and technological possibilities as well as the need for variety in visual experience. Forced simplicity results in oversimplification. In the Wiley House, for instance (1), in contrast to his glass house (2), Philip Johnson attempted to go beyond the simplicities of the elegant pavilion. He explicitly separated and articulated the enclosed "private functions" of living on a ground floor pedestal, thus separating them from the open social functions in the modular pavilion above. But even here the building becomes a diagram of an oversimplified program for living—an abstract theory of either-or. Where simplicity cannot work, simpleness results. Blatant simplification means bland architecture. Less is a bore. — *Est. that you Modernist Bastards!*

The recognition of complexity in architecture does not negate what Louis Kahn has called "the desire for simplicity." But aesthetic simplicity which is a satisfaction to the mind derives, when valid and profound, from inner complexity. The Doric temple's simplicity to the eye is achieved through the famous subtleties and precision of its distorted geometry and the contradictions and tensions inherent in its order. The Doric temple could achieve apparent simplicity through real complexity. When complexity disappeared, as in the late temples, blandness replaced simplicity.

Nor does complexity deny the valid simplification which is part of the process of analysis, and even a method of achieving complex architecture itself. "We oversimplify a given event when we characterize it from the standpoint of a given interest."<sup>16</sup> But this kind of simplification is a method in the analytical process of achieving a complex art. It should not be mistaken for a goal.

An architecture of complexity and contradiction, however, does not mean picturesqueness or subjective expressionism. A false complexity has recently countered the false simplicity of an earlier Modern architecture. It promotes an architecture of symmetrical picturesqueness—which Minoru Yamasaki calls "serene"—but it represents a new formalism as unconnected with experience as the former cult of simplicity. Its intricate forms do not reflect genuinely complex programs, and its intricate ornament, though dependent on industrial techniques for execution, is dryly reminiscent of forms originally created by handicraft techniques. Gothic tracery and Rococo rocaille were not only expressively valid in relation to the whole, but came from a valid showing-off of hand skills and expressed a vitality derived from the immediacy and individuality of the method. This kind of complexity through exuberance, perhaps impossible today, is the antithesis of "serene" architecture, despite the superficial resemblance between them. But if exuberance is not characteristic of our art, it is tension, rather than "serenity" that would appear to be so.

[The best twentieth-century architects have usually rejected simplification—that is, simplicity through reduction—in order to promote complexity within the whole. The works of Alvar Aalto and Le Corbusier (who often disregards his polemical writings) are examples.] But the characteristics of complexity and contradiction in their work are often ignored or misunderstood. Critics of Aalto, for instance, have liked him mostly for his sensitivity to natural materials and his fine detailing, and have considered his whole composition willful picturesqueness. I do not consider Aalto's Imatra church picturesque. By repeating in the massing the genuine complexity of the triple-divided plan and the acoustical ceiling pattern (3), this church represents a justifiable expressionism different from the willful picturesqueness of the haphazard structure and spaces of Giovanni Michelucci's recent church for the Autostrada (4).<sup>\*</sup> Aalto's complexity is part of the program and structure of the whole rather than a device justified only by the

desire for expression. Though we no longer argue over the primacy of form or function (which follows which?), we cannot ignore their interdependence.

The desire for a complex architecture, with its attendant contradictions, is not only a reaction to the banality or prettiness of current architecture. It is an attitude common in the Mannerist periods: the sixteenth century in Italy or the Hellenistic period in Classical art, and is also a continuous strain seen in such diverse architects as Michelangelo, Palladio, Borromini, Vanbrugh, Hawksmoor, Soane, Ledoux, Butterfield, some architects of the Shingle Style, Furness, Sullivan, Lutyens, and recently, Le Corbusier, Aalto, Kahn, and others.

Today this attitude is again relevant to both the medium of architecture and the program in architecture.

First, the medium of architecture must be re-examined if the increased scope of our architecture as well as the complexity of its goals is to be expressed. Simplified or superficially complex forms will not work. Instead, the variety inherent in the ambiguity of visual perception must once more be acknowledged and exploited.

Second, the growing complexities of our functional problems must be acknowledged. I refer, of course, to those programs, unique in our time, which are complex because of their scope, such as research laboratories, hospitals, and particularly the enormous projects at the scale of city and regional planning. But even the house, simple in scope, is complex in purpose if the ambiguities of contemporary experience are expressed. This contrast between the means and the goals of a program is significant. Although the means involved in the program of a rocket to get to the moon, for instance, are almost infinitely complex, the goal is simple and contains few contradictions; although the means involved in the program and structure of buildings are far simpler and less sophisticated technologically than almost any engineering project, the purpose is more complex and often inherently ambiguous.

\*I have visited Giovanni Michelucci's Church of the Autostrada since writing these words, and I now realize it is an extremely beautiful and effective building. I am therefore sorry I made this unsympathetic comparison.

### 3. Ambiguity

While the second classification of complexity and contradiction in architecture relates to form and content as manifestations of program and structure, the first concerns the medium and refers to a paradox inherent in perception and the very process of meaning in art: the complexity and contradiction that results from the juxtaposition of what an image is and what it seems. Joseph Albers calls "the discrepancy between physical fact and psychic effect" a contradiction which is "the origin of art." And, indeed, complexity of meaning, with its resultant ambiguity and tension, has been characteristic of painting and amply recognized in art criticism. Abstract Expressionism acknowledges perceptual ambiguity, and the basis of Optical Art is shifting juxtapositions and ambiguous dualities relating to form and expression. Pop painters, too, have employed ambiguity to create paradoxical content as well as to exploit perceptual possibilities.

In literature, too, critics have been willing to accept complexity and contradiction in their medium. As in architectural criticism, they refer to a Mannerist era, but unlike most architectural critics, they also acknowledge a "mannerist" strain continuing through particular poets, and some, indeed, for a long time have emphasized the qualities of contradiction, paradox, and ambiguity as basic to the medium of poetry, just as Albers does with painting.

Eliot called the art of the Elizabethans "an impure art,"<sup>17</sup> in which complexity and ambiguity are exploited: "in a play of Shakespeare," he said, "you get several levels of significance"<sup>18</sup> where, quoting Samuel Johnson, "the most heterogeneous ideas are yoked together by violence."<sup>19</sup> And elsewhere he wrote: "The case of John Webster . . . will provide an interesting example of a very great literary and dramatic genius directed towards chaos."<sup>20</sup> Other critics, for example, Kenneth Burke, who refers to "plural interpretation" and "planned incongruity," have analyzed elements of paradox and ambiguity in the structure and meaning of other poetry besides that of the seventeenth century metaphysical poets and those modern poets who have been influenced by them.

Cleanth Brooks justifies the expression of complexity and contradiction by their necessity as the very essence of art: "Yet there are better reasons than that of rhetorical vainglory that have induced poet after poet to choose ambiguity and paradox rather than plain discursive simplicity. It is not enough for the poet to analyze his experience as the

scientist does, breaking it up into parts, distinguishing part from part, classifying the various parts. His task is finally to unify experience. He must return to us the unity of the experience itself as man knows it in his own experience. . . . If the poet . . . must perforce dramatize the oneness of the experience, even though paying tribute to its diversity, then his use of paradox and ambiguity is seen as necessary. He is not simply trying to spice up, with a superficially exciting or mystifying rhetoric the old stale stockpot. . . . He is rather giving us an insight which preserves the unity of experience and which, at its higher and more serious levels, triumphs over the apparently contradictory and conflicting elements of experience by unifying them into a new pattern."<sup>21</sup>

And in *Seven Types of Ambiguity* William Empson "dared to treat what [had] . . . been regarded as a deficiency in poetry, imprecision of meaning, as poetry's chief virtue . . ." <sup>22</sup> Empson documents his theory by readings from Shakespeare, "the supreme ambiguiist, not so much from the confusion of his ideas and the muddle of his text, as some scholars believe, as simply from the power and complexity of his mind and art."<sup>23</sup>

Ambiguity and tension are everywhere in an architecture of complexity and contradiction. Architecture is form *and* substance—abstract *and* concrete—and its meaning derives from its interior characteristics and its particular context. An architectural element is perceived as form *and* structure, texture *and* material. These oscillating relationships, complex and contradictory, are the source of the ambiguity and tension characteristic to the medium of architecture. The conjunction "or" with a question mark can usually describe ambiguous relationships. The Villa Savoye (5): is it a square plan or not? The size of Vanbrugh's fore-pavilions at Grimsthorpe (6) in relation to the back pavilions is ambiguous from a distance: are they near or far, big or small? Bernini's pilasters on the Palazzo di Propaganda Fide (7): are they positive pilasters or negative panel divisions? The ornamental cove in the Casino di Pio IV in the Vatican (8) is perverse: is it more wall or more vault? The central dip in Lutyens' façade at Nashdom (9) facilitates skylighting: is the resultant duality resolved or not? Luigi Moretti's apartments on the Via Parioli in Rome (10): are they one building with a split or two buildings joined?

The calculated ambiguity of expression is based on the



confusion of experience as reflected in the architectural program. This promotes richness of meaning over clarity of meaning. As Empson admits, there is good and bad ambiguity: ". . . [ambiguity] may be used to convict a poet of holding muddled opinions rather than to praise the complexity of the order of his mind." <sup>24</sup> Nevertheless, according to Stanley Edgar Hyman, Empson sees ambiguity as "collecting precisely at the points of greatest poetic effectiveness, and finds it breeding a quality he calls 'tension' which we might phrase as the poetic impact itself." <sup>25</sup> These ideas apply equally well to architecture.

#### 4. Contradictory Levels:

##### The Phenomenon of "Both-And" in Architecture

Contradictory levels of meaning and use in architecture involve the paradoxical contrast implied by the conjunctive "yet." They may be more or less ambiguous. Le Corbusier's Shodhan House (11) is closed yet open—a cube, precisely closed by its corners, yet randomly opened on its surfaces; his Villa Savoye (12) is simple outside yet complex inside. The Tudor plan of Barrington Court (13) is symmetrical yet asymmetrical; Guarini's Church of the Immaculate Conception in Turin (14) is a duality in plan and yet a unity; Sir Edwin Lutyens' entrance gallery at Middleton Park (15, 16) is directional space, yet it terminates at a blank wall; Vignola's façade for the pavilion at Bomarzo (17) contains a portal, yet it is a blank portico; Kahn's buildings contain crude concrete yet polished granite; an urban street is directional as a route yet static as a place. This series of conjunctive "yets" describes an architecture of contradiction at varying levels of program and structure. None of these ordered contradictions represents a search for beauty, but neither as paradoxes, are they caprice.

Cleanth Brooks refers to Donne's art as "having it both ways" but, he says, "most of us in this latter day, cannot. We are disciplined in the tradition either-or, and lack the mental agility—to say nothing of the maturity of attitude—which would allow us to indulge in the finer distinctions and the more subtle reservations permitted by the tradition of both-and." <sup>26</sup> The tradition "either-or" has characterized orthodox modern architecture: a sun screen is probably nothing else; a support is seldom an enclosure; a wall is not violated by window penetrations but is totally interrupted by glass; program functions are exaggeratedly articulated into wings or segregated separate pavilions. Even "flowing space" has implied being outside when inside, and inside when outside, rather than both at the same time. Such manifestations of articulation and clarity are foreign to an architecture of complexity and contradiction, which tends to include "both-and" rather than exclude "either-or."

If the source of the both-and phenomenon is contradiction, its basis is hierarchy, which yields several levels of meanings among elements with varying values. It can include elements that are both good and awkward, big and little, closed and open, continuous and articulated, round and square, structural and spatial. An architecture which includes varying levels of meaning breeds ambiguity and tension.

Most of the examples will be difficult to "read," but abstruse architecture is valid when it reflects the complexities and contradictions of content and meaning. Simultaneous perception of a multiplicity of levels involves struggles and hesitations for the observer, and makes his perception more vivid.

Examples which are both good and bad at the same time will perhaps in one way explain Kahn's enigmatic remark: "architecture must have bad spaces as well as good spaces." Apparent irrationality of a part will be justified by the resultant rationality of the whole, or characteristics of a part will be compromised for the sake of the whole. The decisions for such valid compromises are one of the chief tasks of the architect.

In Hawksmoor's St. George-in-the-East (18) the exaggerated keystones over the aisle windows are wrong in relation to the part: when seen close-up they are too big in relation to the opening they span. When seen farther back, however, in the context of the whole composition, they are expressively right in size and scale. Michelangelo's enormous rectangular openings in the attic story of the rear façade of St. Peter's (19) are wider than they are high, so that they must be spanned the long way. This is perverse in relation to the spanning limitations of masonry, which dictate in Classical architecture that big openings, such as these, be vertically proportioned. But because one usually expects vertical proportions, the longitudinal spanning expresses validly and vividly their *relative* smallness.

The main stair in Frank Furness' Pennsylvania Academy of the Fine Arts in Philadelphia (20) is too big in relation to its immediate surroundings. It lands on a space narrower than its width, and faces an opening narrower than its width. Furthermore, the opening is bisected by a post. But this stair is ceremonial and symbolic as well as functional, and it relates to the hall immediately beyond the opening, to the whole building, and to the great scale of Broad Street outside. The outer thirds of Michelangelo's stair in the Laurentian Library vestibule (21) are abruptly chopped off and lead virtually nowhere: it is similarly wrong in the relation of its size to its space, and yet right in relation to the whole context of the spaces beyond.

Vanbrugh's end bays in the central pavilion of the entrance façade of Blenheim Palace (22) are incorrect because they are bisected by a pilaster: this fragmentation produces a duality which decreases their unity. Their very

incompleteness, however, reinforces by contrast the center bay and increases the overall unity of this complex composition. The pavilions which flanked the château at Marly (23) contained a similar paradox. The compositional duality of their two-bay façades lacks unity, but reinforces the unity of the whole complex. Their own incompleteness implied the dominance of the château itself and the completeness of the whole.

The basilica, which has mono-directional space, and the central-type church, which has omnidirectional space, represent alternating traditions in Western church plans. But another tradition has accommodated churches which are both-and, in answer to spatial, structural, programmatic, and symbolic needs. The Mannerist elliptical plan of the sixteenth century is both central and directional. Its culmination is Bernini's Sant' Andrea al Quirinale (24), whose main directional axis contradictorily spans the short axis. Nikolaus Pevsner has shown how pilasters rather than open chapels bisect both ends of the transverse axis of the side walls, thereby reinforcing the short axis toward the altar. Borromini's chapel in the Propaganda Fide (25) is a directional hall in plan, but its alternating bays counteract this effect: a large bay dominates the small end; a small bay bisects the center of the long wall. The rounded corners, as well, begin to imply a continuity of enclosure and a central-type plan. (These characteristics occur in the courtyard of San Carlo alle Quattro Fontane too.) And the diagonal gridlike ribs in the ceiling indicate a multidirectional structure as much like a dome as a vault. Hagia Sophia in Istanbul is equivocal in a similar way. Its central dome on the square bay with pendentives implies a central type church, but its two apses with half-domes begin to set up a longitudinal axis in the tradition of the directional basilica. The horseshoe plan of the Baroque and neo-Baroque opera house focuses on the stage and the center of the auditorium. The central focus of the elliptical plan is usually reflected in the ornamental ceiling pattern and the enormous central chandelier; the focus toward the stage in the directional distortion of the ellipse and partitions between the surrounding boxes as well as in the interruption of the stage itself, of course, and the seating in the pit. This reflects the dual focus in the program of the gala theatre: the performance and the audience.

Borromini's San Carlo alle Quattro Fontane (26) abounds in ambiguous manifestations of both-and. The

almost equal treatment of the four wings implied in the plan suggests a Greek cross, but the wings are distorted toward a dominant east-west axis, thus suggesting a Latin cross, while the fluid continuity of the walls indicates a distorted circular plan. Rudolf Wittkower has analyzed similar contradictions in section. The pattern of the ceiling in the articulations of its complex mouldings suggests a dome on pendentives over the crossing of a Greek cross (27). The shape of the ceiling in its overall continuity distorts these elements into parodies of themselves, and suggests rather a dome generated from an undulating wall. These distorted elements are both continuous and articulated. At another scale, shape and pattern play similarly contradictory roles. For example, the profile of the Byzantine capital (28) makes it seem continuous, but the texture and vestigial patterns of volutes and acanthus leaves articulate the parts.

The pedimented porch of Nicholas Hawksmoor's St. George, Bloomsbury (29), and the overall shape of its plan (30) imply a dominant axis north and south. The west entrance and tower, the interior configuration of balconies, and the east apse (which contained the altar) all suggest an equally dominant counter axis. By means of contrary elements and distorted positions this church expresses both the contrasts between the back, front, and sides of the Latin cross plan and the duo-directional axes of a Greek cross plan. These contradictions, which resulted from particular site and orientation conditions, support a richness and tension lacking in many purer compositions.

The domed basilica of *Vierzehnheiligen* (31) has a central altar under a major dome in the nave. Nikolaus Pevsner has vividly contrasted its series of domes, which are distorted and superimposed on the Latin cross plan, with the conventional placing of a single dome at the crossing. This is a Latin cross church, which is also a central-type church because of the unusual position of the altar and the central dome. Other late Baroque churches juxtapose the square and the circle. Bernardo Vittone's elements—ambiguously pendentives or squinches—in the nave of S. Maria di Piazza in Turin (32) support what is both a dome and a square lantern. Hawksmoor juxtaposes mouldings in rectangular and elliptical patterns on the ceilings of some of his churches. They create contradictory expressions of both central and directional-type churches. In some rooms of the Palazzo di Propaganda Fide (33) a straddling

arch in the corners allows the space to be rectangular below and continuous above. This is similar to Wren's ceiling configuration in St. Stephen Walbrook (34).

In the ceilings of his secular chambers (35) Sir John Soane glories in spaces and structures both rectangular and curvilinear, and domed and vaulted. His methods include complex combinations of vestigial structural shapes resembling squinches and pendentives, oculi, and groins. Soane's Museum (36) employs a vestigial element in another dimension: the partition in the form of suspended arches, meaningless structurally yet meaningful spatially, defines rooms at once open and closed.

The façade of the cathedral at Murcia (37) employs what has been called inflection to promote largeness yet smallness. The broken pediments above the shafts are inflected toward each other to help suggest an enormous portal, appropriate spatially to the plaza below and symbolically to the region beyond. Storied orders within the shafts, however, accommodate the scale of the immediate conditions of the building itself and its setting. Bigness and smallness are expressed at once in a characteristic Shingle Style stair through distortion in width and direction. The risers and treads remain constant, of course, but the widening of the run at the bottom accommodates the spacious living-room hall below, while the narrower run at the top relates to the narrower hall above.

Precast concrete construction can be continuous yet fragmentary, flowing in profile yet surfaced with joints. The contours of its profiles between columns and beams can designate the continuity of the structural system, but the pattern of its grouted joints can designate the fragmented method of its erection.

The tower of Christ Church, Spitalfields (38), is a manifestation of both-and at the scale of the city. Hawksmoor's tower is both a wall and a tower. Toward the bottom the vista is terminated by the extension of its walls into kinds of buttresses (39) perpendicular to the approaching street. They are seen from only one direction. The top evolves into a spire, which is seen from all sides, spatially and symbolically dominating the skyline of the parish. In the Bruges Cloth Hall (40) the scale of the building relates to the immediate square, while the violently disproportionate scale of the tower above relates to the whole town. For similar reasons the big sign sits on top of the Philadelphia Savings Fund Society Building, and yet

it is invisible from below (41). The Arc de Triomphe also has contrasting functions. Seen diagonally from the radial approaches other than the Champs Elysées, it is a sculptural termination. Seen perpendicularly from the axis of the Champs Elysées, it is spatially and symbolically both a termination and a portal. Later I shall analyze some organized contradictions between front and back. But here I shall mention the Karlskirche in Vienna (42), whose exterior contains elements both of the basilica in its façade and of the central-type church in its body. A convex form in the back was required by the interior program; the urban space required a larger scale and a straight façade in front. The disunity that exists from the point of view of the building itself is contradicted when the building is seen in relation to the scale and the space of the neighborhood.

The double meanings inherent in the phenomenon both-and can involve metamorphosis as well as contradiction. I have described how the omni-directional spire of the tower of Christ Church, Spitalfields, evolves into a directional pavilion at its base, but a perceptual rather than a formal kind of change in meaning is possible. In equivocal relationships one contradictory meaning usually dominates another, but in complex compositions the relationship is not always constant. This is especially true as the observer moves through or around a building, and by extension through a city: at one moment one meaning can be perceived as dominant; at another moment a different meaning seems paramount. In St. George, Bloomsbury (30), for instance, the contradictory axes inside become alternately dominant or recessive as the observer moves within them, so that the same space changes meaning. Here is another dimension of "space, time and architecture" which involves the multiple focus.

## 5. Contradictory Levels Continued: The Double-Functioning Element

The "double-functioning"<sup>27</sup> element and "both-and" are related, but there is a distinction: the double-functioning element pertains more to the particulars of use and structure, while both-and refers more to the relation of the part to the whole. Both-and emphasizes double meanings over double-functions. But before I talk about the double-functioning element, I want to mention the multifunctioning building. By this term I mean the building which is complex in program and form, yet strong as a whole—the complex unity of Le Corbusier's La Tourette or the Palace of Justice at Chandigarh in contrast to the multiplicities and articulations of his Palace of the Soviets project or the Armée du Salut in Paris. The latter approach separates functions into interlocking wings or connected pavilions. It has been typical of orthodox Modern architecture. The incisive separations of the pavilions in Mies' design for the urban Illinois Institute of Technology can be understood as an extreme development of it.

Mies' and Johnson's Seagram Building excludes functions other than offices (except on the ground floor in back), and by using a similar wall pattern camouflages the fact that at the top there is a different kind of space for mechanical equipment. Yamasaki's project for The World Trade Center in New York even more exaggeratedly simplifies the form of an enormous complex. The typical office skyscrapers of the '20's differentiate, rather than camouflage, their mechanical equipment space at the top through architecturally ornamental forms. While Lever House includes differently-functioning spaces at the bottom, it exaggeratedly separates them by a spatial shadow joint. In contrast, one exceptional Modern building, the P.S.F.S. (41), gives positive expression to the variety and complexity of its program. It integrates a shop on the first floor and a big bank on the second with offices above and special rooms at the top. These varieties of functions and scales (including the enormous advertising sign at the top) work within a compact whole. Its curving façade, which contrasts with the rectangularity of the rest of the building, is not just a cliché of the '30's, because it has an urban function. At the lower pedestrian level it directs space around the corner.

The multifunctioning building in its extreme form becomes the Ponte Vecchio or Chenonceaux or the Futurist projects of Sant' Elia. Each contains within the whole contrasting scales of movement besides complex functions.

Le Corbusier's Algerian project, which is an apartment house and a highway, and Wright's late projects for Pittsburgh Point and Baghdad, correspond to Kahn's viaduct architecture and Fumihiko Maki's "collective form." All of these have complex and contradictory hierarchies of scale and movement, structure, and space within a whole. These buildings are buildings and bridges at once. At a larger scale: a dam is also a bridge, the loop in Chicago is a boundary as well as a circulation system, and Kahn's street "wants to be a building."

There are justifications for the multifunctioning room as well as the multifunctioning building. A room can have many functions at the same time or at different times. Kahn prefers the gallery because it is directional and nondirectional, a corridor and room at once. And he recognizes the changing complexities of specific functions by differentiating rooms in a general way through a hierarchy of size and quality, calling them servant and major spaces, directional and nondirectional spaces, and other designations more generic than specific. As in his project for the Trenton Community Center, these spaces end by paralleling in a more complex way the pre-eighteenth century configurations of rooms en suite. The idea of corridors and rooms each with a single function for convenience originated in the eighteenth century. Is not Modern architecture's characteristic separation and specialization of program functions within the building through built-in furniture an extreme manifestation of this idea? Kahn by implication questions such rigid specialization and limited functionalism. In this context, "form evokes function."

The multifunctioning room is a possibly truer answer to the Modern architect's concern with flexibility. The room with a generic rather than a specific purpose, and with movable furniture rather than movable partitions, promotes a perceptual flexibility rather than a physical flexibility, and permits the toughness and permanence still necessary in our building. Valid ambiguity promotes useful flexibility.

The double-functioning element has been used infrequently in Modern architecture. Instead, Modern architecture has encouraged separation and specialization at all scales—in materials and structure as well as program and space. "The nature of materials" has precluded the multifunctioning material, or, inversely, the same form or surface for different materials. Wright's divergence from his master began, according to his autobiography, with Louis Sulli-



van's indiscriminate application of his characteristic ornament to terra cotta, iron, wood, or brick. To Wright, "appropriate designs for one material would not be appropriate for another material."<sup>28</sup> But the façade of Eero Saarinen's dormitory at the University of Pennsylvania includes among its materials and structure vine-covered grade, brick wall, and steel grille—yet the curving profile of its form is continuous. Saarinen overcame the current obsession against using different materials in the same plane or the same material for two different things. In Robert Rauschenberg's painting, *Pilgrim* (43), the surface pattern continues from the stretcher canvas to the actual chair in front of it, making ambiguous the distinction between the painting and the furniture, and on another level, the work of art in a room. A contradiction between levels of function and meaning is recognized in these works, and the medium is strained.

But to the structural purist, as well as the organicist, the double-functioning structural form would be abhorrent because of the nonexact, ambiguous correspondence between form and function, and form and structure. In contrast, in the Katsura Villa (44) the bamboo rod in tension and the wood post in compression are similar in form. To the Modern architect, I think, the two would seem sinisterly similar in section and size despite the current inclination toward traditional Japanese design. The Renaissance pilaster (as well as other structural elements used in a nonstructural way) can involve the phenomenon both—and at several levels. It can be at the same time physically structural or not, symbolically structural through association, and compositionally ornamental by promoting rhythm and also complexity of scale in the giant order.

Besides specializing forms in relation to materials and structure, Modern architecture separates and articulates elements. Modern architecture is never implicit. In promoting the frame and the curtain wall, it has separated structure from shelter. Even the walls of the Johnson Wax Building are enclosing but not supporting. And in detailing, Modern architecture has tended to glory in separation. Even the flush joint is articulated, and the shadow joint predominates. The versatile element which does several things at once is equally rare in Modern architecture. Significantly the column is favored over the pier. In S. Maria in Cosmedin's nave (45) the column form results from its dominant, precise function as a point support. It can direct space

only incidentally in relation to other columns or elements. But the alternating piers in the same nave are intrinsically double-functioning. They enclose and direct space as much as they support structure. The Baroque piers in the chapel at Frèsnes (46), residual as form and redundant as structure, are extreme examples of double-functioning elements which are structural and spatial at once.

Le Corbusier's and Kahn's double-functioning elements may be rare in our architecture. The brise-soleils in the Unité d'Habitation in Marseilles are structure and porches as well as sunscreens. (Are they wall segments, piers, or columns?) Kahn's clusters of columns and his open piers "harbor" space for equipment, and can manipulate natural light as well, like the rhythmically complex columns and pilasters of Baroque architecture. Like the open beams in the Richards Medical Center (47), these elements are neither structurally pure nor elegantly minimum in section. Instead, they are structural fragments inseparable from a greater spatial whole. It is valid to sense stresses in forms which are not purely structural, and a structural member can be more than incidentally spatial. (However, the columns and the stair towers in this building are separated and articulated in an orthodox manner.)

Flat plate construction consists of concrete slabs of constant depth and varied reinforcement, with irregularly placed columns without beams or caps. To maintain a constant depth, the number of reinforcing bars changes to accommodate the more concentrated structural loads in the constant, beamless section. This permits, in apartment houses especially, a constant ceiling profile for the spaces below in order to accommodate partitions. Flat plates are structurally impure: their section is not minimum. The demands of structural forces are compromised because of the demands of architectural space. Form follows function here in a contradictory way; substance follows structural function; profile follows spatial function.

In some Mannerist and Baroque masonry construction the pier, pilaster, and relieving arch about evenly make up a façade, and the resultant structure, like that of the Palazzo Valmarana (48), is bearing wall and frame at once. The relieving arches in the Pantheon (49), in this case not originally part of the visual expression, similarly generate a wall structurally double-functioning. In this context the Roman basilica, Gaudí's Sagrada Familia (50), and Palladio's Il Redentore (51) are totally different from the

Gothic basilica (52). In contrast to the segregated flying buttress, the Roman countervault spans as well as buttresses, and Gaudí's subtle invention of the tilted pier-buttress supports the weight of the vault as well as buttresses the thrust in one continuous form. Palladio's buttresses are also broken pediments on the façade. A flying buttress at S. Chiara in Assisi forms a portal for the piazza as well as a support for the building.

The double-functioning element can be a detail. Mannerist and Baroque buildings abound in drip mouldings which become sills, windows which become niches, cornice ornaments which accommodate windows, quoin strips which are also pilasters, and architraves which make arches (53). The pilasters of Michelangelo's niches in the entrance of the Laurentian Library (54) also look like brackets. Borromini's mouldings in the rear façades of the Propaganda Fide (55) are both window frames and pediments. Lutyens' chimneys at Grey Walls (56) are literally sculptural entrance markers as well, a dado at Gledstone Hall (57) is an extension of a stair riser in the same room, and the stair landing at Nashdom is also a room.

The balloon frame, which has been traced by Siegfried Giedion, *becomes* on all levels. Structurally and visually it evolves from a separate frame to a skin which is both structural and sheltering: to the extent that it is made up of 2 x 4's, it is frame; to the extent that the 2 x 4's are small, close together, and braced and meshed by diagonal siding, it becomes skin. These intricate characteristics are evident in the way penetrations are made in it and in the way it is terminated. The balloon frame is another element in architecture which is several things at once. It represents a method between two pure extremes, which has evolved from each of them until it has characteristics of both.

Conventional elements in architecture represent one stage in an evolutionary development, and they contain in their changed use and expression some of their past meaning as well as their new meaning. What can be called the vestigial element parallels the double-functioning element. It is distinct from a superfluous element because it contains a double meaning. This is the result of a more or less ambiguous combination of the old meaning, called up by associations, with a new meaning created by the modified or new function, structural or programmatic, and the new context. The vestigial element discourages clarity of meaning; it promotes richness of meaning instead. It is a

basis for change and growth in the city as manifest in remodeling which involves old buildings with new uses both programmatic and symbolic (like palazzi which become museums or embassies), and old street patterns with new uses and scales of movement. The paths of medieval fortification walls in European cities became boulevards in the nineteenth century; a section of Broadway is a piazza and a symbol rather than an artery to upper New York state. The ghost of Dock Street in Philadelphia's Society Hill, however, is a meaningless vestige rather than a working element resulting from a valid transition between the old and the new. I shall later refer to the vestigial element as it appears in Michelangelo's architecture and in what might be called Pop architecture.

The rhetorical element, like the double-functioning element, is infrequent in recent architecture. If the latter offends through its inherent ambiguity, rhetoric offends orthodox Modern architecture's cult of the minimum. But the rhetorical element is justified as a valid if outmoded means of expression. An element can seem rhetorical from one point of view, but if it is valid, at another level it

enriches meaning by underscoring. In the project for a gateway at Bourneville by Ledoux (58), the columns in the arch are structurally rhetorical if not redundant. Expressively, however, they underscore the abstractness of the opening as a semicircle more than an arch, and they further define the opening as a gateway. As I have said, the stairway at the Pennsylvania Academy of the Fine Arts by Furness is too big in its immediate context, but appropriate as a gesture towards the outside scale and a sense of entry. The Classical portico is a rhetorical entrance. The stairs, columns, and pediment are juxtaposed upon the other-scale, real entrance behind. Paul Rudolph's entrance in the Art and Architecture Building at Yale is at the scale of the city; most people use the little door at the side in the stair tower.

Much of the function of ornament is rhetorical—like the use of Baroque pilasters for rhythm, and Vanbrugh's disengaged pilasters at the entrance to the kitchen court at Blenheim (59) which are an architectural fanfare. The rhetorical element which is also structural is rare in Modern architecture, although Mies has used the rhetorical I-beam with an assurance that would make Bernini envious.

. . . Toledo [Ohio] was very beautiful.\*

An architecture of complexity and accommodation does not forsake the whole. In fact, I have referred to a special obligation toward the whole because the whole is difficult to achieve. And I have emphasized the goal of unity rather than of simplification in an art "whose . . . truth [is] in its totality."<sup>45</sup> It is the difficult unity through inclusion rather than the easy unity through exclusion. Gestalt psychology considers a perceptual whole the result of, and yet more than, the sum of its parts. The whole is dependent on the position, number, and inherent characteristics of the parts. A complex system in Herbert A. Simon's definition includes "a large number of parts that interact in a non-simple way."<sup>46</sup> The difficult whole in an architecture of complexity and contradiction includes multiplicity and diversity of elements in relationships that are inconsistent or among the weaker kinds perceptually.

Concerning the positions of the parts, for instance, such an architecture encourages complex and contrapuntal rhythms over simple and single ones. The "difficult whole" can include a diversity of directions as well. Concerning the number of parts in a whole, the two extremes—a single part and a multiplicity of parts—read as wholes most easily: the single part is itself a unity; and extreme multiplicity reads like a unity through a tendency of the parts to change scale, and to be perceived as an overall pattern or texture. The next easiest whole is the trinity: three is the commonest number of compositional parts making a monumental unity in architecture.

But an architecture of complexity and contradiction also embraces the "difficult" numbers of parts—the duality, and the medium degrees of multiplicity. If the program or structure dictates a combination of two elements within any of the varying scales of a building, this is an architecture which exploits the duality, and more or less resolves dualities into a whole. Our recent architecture has suppressed dualities. The loose composition of the whole used in the "binuclear plan" employed by some architects right after the Second World War, was only a partial exception to this rule. But our tendency to distort the program and to sub-

vert the composition in order to disguise the duality is refuted by a tradition of accepted dualities, more or less resolved, at all scales of building and planning—from Gothic portals and Renaissance windows to the Mannerist façades of the sixteenth century and Wren's complex of pavilions at Greenwich Hospital. In painting, duality has had a continuous tradition—for example, in compositions of the Madonna and Child and of the Annunciation; in enigmatic Mannerist compositions such as Piero della Francesca's *Flagellation* (208); and in the recent work of Ellsworth Kelly (209), Morris Louis (210), and others.

Sullivan's Farmers' and Merchants' Union Bank in Columbus, Wisconsin (211), is exceptional in our recent architecture. The difficult duality is prominent. The plan reflects the bisected inside space which accommodates the public and the clerks on different sides of the counter running perpendicular to the façade. On the outside the door and the window at grade reflect this duality: they are themselves bisected by the shafts above. But the shafts, in turn, divide the lintel into a unity of three with a dominant central panel. The arch above the lintel tends to reinforce duality because it springs from the center of a panel below, yet by its oneness and its dominant size it also resolves the duality made by the window and the door. The façade is composed of the play of diverse numbers of parts—single elements as well as those divided into two or three are almost equally prominent—but the façade as a whole makes a unity.

Gestalt psychology also shows that the nature of the parts, as well as their number and position, influences a perceptual whole and it also has made a further distinction: the degree of wholeness can vary. Parts can be more or less whole in themselves, or, to put it in another way, in greater or lesser degree they can be fragments of a greater whole. Properties of the part can be more or less articulated; properties of the whole can be more or less accented. In the complex compositions, a special obligation toward the whole encourages the fragmentary part or, as Trystan Edwards calls it, the term, "inflection."<sup>47</sup>

Inflection in architecture is the way in which the whole is implied by exploiting the nature of the individual parts, rather than their position or number. By inflecting toward something outside themselves, the parts contain their own linkage: inflected parts are more integral with the whole than are *uninflected* parts. Inflection is a means

\* Gertrude Stein, *Gertrude Stein's America*, Gilbert A. Harrison, ed., Robert B. Luce Inc., Washington, D. C., 1965.

of distinguishing diverse parts while implying continuity. It involves the art of the fragment. The valid fragment is economical because it implies richness and meaning beyond itself. Inflection can also be used to achieve suspense, an element possible in large sequential complexes. The inflected element can be called a partial-functioning element in contrast to the double-functioning element. In terms of perception it is dependent on something outside itself, and in whose direction it inflects. It is a directional form corresponding to directional space.

The interior of the church of the Madonna del Calcinaio in Cortona (137) is composed of a limited number of elements which are uninflected. Its windows and niches (212), pilasters and pediments, and the articulated elements of its altar, are independent wholes, simple in themselves and symmetrical in form and position. They add up to a greater whole. The interior of the pilgrimage church at Birnau in Bavaria (213), however, contains a diversity of inflections directed toward the altar. The complex curves of the vaults and arches, even the distortions of the pilaster capitals, inflect toward this center. The statues and the multitude of fragmental elements of the side altars (214) are inflected parts, asymmetrical in form yet symmetrical in position, which integrate into a symmetrical whole. This subordination of parts corresponds to Wölfflin's "unified unity" of the Baroque—which he contrasts with the "multiple unity" of the Renaissance.

A comparison of the entrance fronts of Blenheim Palace (215) and Holkham Hall (216) illustrates the use of inflection on the exterior. Holkham Hall achieves an extensive whole through the addition of similar wholes which are always independent: most of its bays are pedimented pavilions which could stand alone as single buildings—Holkham Hall could almost be three buildings in a row. Blenheim achieves a complex whole through fragmental parts, separate but inflected. The last two bays of the central block, when taken alone, are dualities incomplete in themselves. But in relation to the whole they become inflected terminations to the central pavilion, and a confirmation of the pedimented center of the whole composition. The piers at the corners of the porch and the broken pediments above them are also terminal inflections, similarly reinforcing the center. The bays at the far extremities of this enormous façade form pavilions which are not inflected. They are perhaps expressive of the relative inde-

pendence of the kitchen and stable wings. Vanbrugh's method of creating a strong whole in such a large and diverse if symmetrical façade follows the traditional Jacobean method of the century before: at Aston Hall (217) the wings of the forecourt façade and the towers, parapeted pediments, and windows inflect in position and/or shape toward its center.

The varying configurations of the wings and windows, roofs and ornaments of the orphanage of the Buon Pastore near Rome (218, 219, 220) are an orgy of inflections of enormous scope similar to the scale of Blenheim. This neo-Baroque complex by Armando Brazini, (bizarre in 1940 and admittedly questionable for an asylum for little girls) astonishingly composes a multitude of diverse parts into a difficult whole. At all levels of scale it is an example of inflections within inflections successively directed toward different centers—toward the short façade in the front, or the anticlimactically small dome near the center of the complex, with its unusually big cupola. When you stand close enough to see a smaller element of inflection, you sometimes need to turn almost 180 degrees to see its counterpart at a great distance. An element of suspense is introduced when you move around the enormous building. You are aware of elements related by inflection to elements already seen or not yet seen, like the unraveling of a symphony. As a fragment in plan and elevation, the asymmetrical composition of each wing is wrought with tensions and implications concerning the symmetrical whole.

At the scale of the town, inflection can come from the position of elements which are in themselves uninflected. In the Piazza del Popolo (221) the domes of the twin churches confirm each building as a separate whole, but their single towers, symmetrical themselves, become inflective because of their asymmetrical positions on each church. In the context of the piazza each building is a fragment of a greater whole and a part of a gateway to the Corso. At the smaller scale of Palladio's Villa Zeno (222) the asymmetrical positions of the symmetrical arched openings cause the end pavilions to inflect toward the center, thus enforcing the symmetry of the whole composition. This kind of inflection of asymmetrical ornament within a symmetrical whole is a dominant motif in Rococo architecture. For example, on the side altars at Birnau (214), and on the characteristic pairs of sconces (223), or andirons, doors, or other elements, the inflection of the rocaille is part of an

asymmetry within a larger symmetry that exaggerates the unity yet creates a tension in the whole.

Direction is a means of inflection in the Villa Aldobrandini (224). Its front is articulated into additive parts or bays, but the unique diagonals of the fragmentary pediments on the end bays tend to direct the ends toward the center, and unify that dominating façade. In the plan of Monticello (225) the enclosing diagonal walls inflect the extremities toward the center focus. In Siena the distortion of its façade inflects the Palazzo Pubblico (226) toward its dominating piazza. Here distortion is a method of confirming the whole rather than of breaking it, as in the case of contradiction accommodated. Baroque details, such as coupled pilasters in the end bays of a series of pilastered bays, become devices of inflection because they create variations in rhythm to terminate a sequence. Such methods of inflection are largely used to confirm the whole—and since monumentality involves a strong expression of the whole, as well as a certain kind of scale, inflection becomes a device of monumentality as well.

Inflection accommodates the difficult whole of a duality as well as the easier complex whole. It is a way of resolving a duality. The inflecting towers on the twin churches on the Piazza del Popolo resolve the duality by implying that the center of the whole composition is located in the space of the bisecting Corso. In Wren's Royal Hospital at Greenwich (227) the inflection of the domes by their asymmetrical position similarly resolves the duality of the enormous masses flanking the Queen's House. Their inflection further enhances the centrality and importance of this diminutive building. The unresolved dualities of the end pavilions facing the river, on the other hand, reinforce the unifying quality of the central axis by their own contrasting disunity.

The French chevet contrasts with the blunt termination of the English Gothic choir, because it inflects to terminate and enhance the whole. In the church of the Jacobins in Toulouse (228) the inflection of the chevet tends to resolve the duality of the nave, which is bisected by the row of columns. The apse in Furness' library at the University of Pennsylvania similarly resolves the duality formed by the arched interior wall opposite. One column bisects the nave at the end of the Late Gothic parish church at Dingolfing (229), a hall-type church, but the juxtaposition of the central bay and window behind, which evolve



from the complex vaulting above, resolve the original duality. The directional inflecting of the side walls of the nave of the parish church in Rimella (230) counteracts the disunifying effect of the two bays of the nave. Their inflection toward the center increases enclosure and strengthens the whole. A minor intermediate bay also binds the major bays together.

Lutyens' work abounds in dualities. The duality of the entrance façade of the castle at Lambay (231), for instance, is resolved by the inflecting shape of the opening in the juxtaposed garden wall. In contemporary architecture rare examples of inflection are found in the vestigial broken pediments of Moretti's apartment house on the Via Parioli (10). They partially resolve the duality of the pair of wings which distinguish sets of apartments. The subtly balanced duality of Wright's Unity Temple (232) is devoid of inflections unless the directional entrance pedestal is one.

Modern architecture tends to reject inflection at all levels of scale. In the Tugendhat House no inflecting capital compromises the purity of the column's form, although the shear forces in the supported roof plane must thus be ignored. Walls are inflected neither by bases nor cornices nor by structural reinforcements, such as quoins, at corners. Mies' pavilions are as independent as Greek temples; Wright's wings are interdependent but interlocked rather than independent and inflected. However, Wright, in accommodating his rural buildings to their particular sites, has recognized inflection at the scale of the whole building. For example, Fallingwater is incomplete without its context—it is a fragment of its natural setting which forms the greater whole. Away from its setting it would have no meaning.

If inflection can occur at many scales—from a detail of a building to a whole building—it can contain varying degrees of intensity as well. Moderate degrees of inflection have a kind of implied continuity that affirms the whole. Extreme inflection literally becomes continuity. Today we emphasize our opportunities to express the literal continuities of structure and materials—such as the welded joint, skin structures, and reinforced concrete. Except for the flush joint of early Modern architecture, implied continuity is rare. The shadow joint of Mies' vocabulary tends to exaggerate separation. And Wright, especially, articulates a joint by a change in profile when there is a change in

material—an expressive manifestation of the nature of materials in Organic architecture. But a contrast between expressive continuity and real discontinuity of structure and materials is a characteristic of the façade of Saarinen's dormitory at the University of Pennsylvania. In section its continuous curves defy the changes in materials, structure, and use. In the precise walls of Machu Picchu (233) the same profile continues between the built-up jointed masonry and the rock in situ. The arched shape of the opening of Ledoux's entrance at Bourneville (58) spans two kinds of structure (corbeled and arched) and two kinds of material (rusticated masonry at the top and smooth masonry at the bottom). Similar contradictions occur in Rococo furniture. Cabriole legs (234) disguise the joint and express continuity in their shape and ornament. The continuous grooves common to the leg and the seat-frame imply a continuity beyond inflection which is somewhat contradictory to the material and the structural relationship of these separate frame elements. The ubiquitous rocaille is another ornamental device for expressive continuity common to the architecture and furniture of the Rococo.

Some of Wright's early interiors (235) parallel in the motif of the wood strip the rocaille-filled interiors of the Rococo (236). In Unity Temple and the Evans House (235) these strips are used on the furniture, walls, ceilings, light fixtures, and window mullions, and the pattern is repeated on the rugs. As in the Rococo, a continuous motif is used to achieve a strong whole expressive of what Wright called plasticity. He employed a method of implied continuity for valid expressive reasons, and in ironic contradiction to his dogma of the nature of materials and his expressed hatred of the Rococo.

On the other hand, an architecture of complexity and contradiction can acknowledge an expressive *discontinuity*, which belies a certain structural continuity. In the choir screen in the cathedral at Modena (237), where one uninflected element precariously supports another in its visual expression, or in the abrupt abutments of the uninflected wings of All Saints Church, Margaret Street (93), a formal discontinuity is implied where there is a structural continuity. Soane's Gate at Langley Park (238) is made up of three architectural elements totally uninflected and independent; besides the dominance of the middle element, it is the sculptural elements which are inflected and which give unity to the three parts.

The Doric order (239) works a complex balance among extremes of both expressive and structural continuities and discontinuities. The architrave, the capital, and the shaft are noncontinuous structurally but only partially noncontinuous expressively. That the architrave sits on the capital is expressed by the uninflected abacus. But the echinus in relation to the shaft expresses structural continuity consistent with expressive continuity. The horizontal and vertical elements of Saarinen's T.W.A. Terminal and Frederick Kiesler's Endless House are without structural contradiction: they are continuous everywhere. However, precast concrete that is assembled offers ambiguous combinations of continuity and discontinuity, both structural and expressive. The surfaces of the Police Administration Building in Philadelphia include patterns of shadow joints separating precast elements whose curving inflections, however, evolve continuous profiles—a paradoxical play of continuity and discontinuity inherent in the expression and the structure of the architecture.

A kind of implied continuity or inflection is inherent in Maki's "group form." This, the third category in the designation of complex architecture he calls "collective form," includes "generative" parts with their own "linkage," and wholes in which the system and unit are integral. He has referred to other characteristics of group form which indicate some of the implications of inflection in architecture. A consistency of the basic parts and their sequential relationship permit a growth in time, a consistency of human scale, and a sensitivity to the particular topography of the complex.

The "group form" contrasts with Maki's other basic category, the "mega-form." The whole, which is dominated by hierarchical relationships of parts rather than by the inherent inflective nature of the parts, can also be a characteristic of complex architecture. Hierarchy is implicit in an architecture of many levels of meaning. It involves configurations of configurations—the interrelationships of several orders of varying strengths to achieve a complex whole. In the plan of Christ Church, Spitalfields (240), it is the sequence of orders of supports—higher, lower, and middle; large, small, and medium—that make the hierarchical whole. Or in a palace façade of Palladio (48), it is the juxtapositions and adjacencies of parts (pilasters, windows, and mouldings) and the contrasts of large, small, and relatively important that conduct the eye to the whole.

The dominant binder is another manifestation of the hierarchical relationships of parts. It manifests itself in the consistent pattern (the thematic kind of order) as well as by being the dominant element. This is not a difficult whole to achieve. In the context of an architecture of contradiction it can be a doubtful panacea, like the fallen snow which unifies a chaotic landscape. At a scale of the town in the Medieval period it is the wall or castle which is the dominant element. In the Baroque it is the axis of the street against which minor diversities play. (In Paris the rigid axis is confirmed by cornice heights, while in Rome the axis tends to zigzag and is punctuated by connecting piazzas with obelisks.) The axial binder in Baroque planning sometimes reflects a program devised by an autocracy, which could easily exclude elements that today must be considered. Arterial circulation can be a dominant device in contemporary urban planning. In fact, in the program the consistent binder is most often represented by circulation, and in construction the consistent binder is usually the major order of structure. It is an important device of Kahn's viaduct architecture and Tange's collective forms for Tokyo. The dominant binder is an expediency in renovations. James Ackerman has referred to Michelangelo's predilection for "symmetrical juxtaposition of diagonal accents in plan and elevation" in his design for St. Peter's, which was essentially a renovation of earlier construction. "By using diagonal wall-masses to fuse together the arms of the cross, Michelangelo was able to give St. Peter's a unity that earlier designs lacked."<sup>48</sup>

The dominant binder, as a third element connecting a duality, is a less difficult way of resolving a duality than inflection. For example, the big arch unambiguously resolves the duality of the double window of the Florentine Renaissance palazzo. The façade of the double church of S. Antonio and S. Brigidá by Fuga (241) is resolved by inflected broken pediments—but also by a third ornamental element, which dominates the middle. Similarly, the façade of S. Maria della Spina, Pisa (242) is dominated by a third pediment. In plan the domed bays of Guarini's church of the Immaculate Conception in Turin (14) are inflected in shape, but they are also resolved by a minor intermediate bay. The ornamental pediment at the center of the elevation of Charleval (243) is also a dominant third element, as are the gable and the stair at the front of the farmer's house near Chieti (244)—similar, in this context, to the

function of the stair to the entrance of Stratford Hall, Virginia (245). There is no inflection in the composition of the Villa Lante (246), but an axis between the two equal pavilions, which focuses on a sculpture placed at a cross-axis, dominates the twin pavilions as a third element, thus emphasizing a whole.

But a more ambiguously hierarchical relationship of uninflected parts creates a more difficult perceptual whole. Such a whole is composed of equal combinations of parts. While the idea of equal combinations is related to the phenomenon both-and, and many examples apply to both ideas, both-and refers more specifically to contradiction in architecture, while equal combinations refer more to unity. With equal combinations the whole does not depend on inflection, or the easier relationships of the dominant binder, or motival consistency. For example, in the Porta Pia (110, 111) the number of each kind of element in the composition of the door and the wall is almost equal—no one element dominates. The varieties of shapes (rectangular, square, triangular, segmental, and round) being almost equal, the predominance of any one shape is also precluded,

and the equal varieties of directions (vertical, horizontal, diagonal, and curving) have the same effect. There is similarly an equal diversity in the size of the elements. The equal combinations of parts achieve a whole through superimposition and symmetry rather than through dominance and hierarchy.

The window above Sullivan's portal in the Merchants' National Bank in Grinnell, Iowa (112), is almost identical to the Porta Pia in its juxtaposition of an equal number of round, square and diamond-shaped frames of equal size. The diverse combinations of number analyzed in his Columbia Bank façade (groups of elements involving one, two, and three parts) have almost equal value in the composition. However, there the unity is based upon the relation of horizontal layers rather than on superimposition. The Auditorium (104) exploits the complexity of directions and rhythms that such a program can yield. The simple semicircles of the wall ornament, structure, and segmental ceiling covets counteract, in plan and section, the complex curves of the proscenium arches, rows of seats, balcony slopes, boxes, and column brackets. These, in turn, play against the rectangular relationships of ceilings, walls, and columns.

This sense of the equivocal in much of Sullivan's work (at least where the program is more complex than that of a skyscraper) points up another contrast between him and Wright. Wright would seldom express the contradiction inherent in equal combinations. Instead, he resolved all sizes and shapes into a motival order—a single predominant order of circles or rectangles or diagonals. The Vigo Schmidt House project is a consistent pattern of triangles, the Ralph Jester House of circles, and the Paul Hanna House of hexagons.

Equal combinations are used to achieve a whole in Aalto's complex Cultural Center at Wolfsburg (78). He does not disperse the parts nor make them similar as Mies does at I.I.T. As I have pointed out before, he achieves a whole by combining an almost equal number of diagonal and rectangular elements. S. Maria delle Grazie in Milan (247) works equal combinations into an extreme form by contrasting opposite shapes in its exterior composition. The dominant triangle-rectangle composition in the front combines with the dominant circle-square composition in the back. Michelucci's church of the Autostrada (4), like the Church of the Holy Sepulchre in Jerusalem (plan only

illustrated in 101), consists of almost equal combinations of contrasting directions and rhythms in columns, piers, walls, and roofs. A similar composition is that of the Berlin Philharmonic Hall (248). The plastic forms of indigenous Mediterranean architecture (249) are simple in texture, but rectangles, diagonals, and segments are blatantly combined. Gaudí's dressing table in the Casa Güell (250) represents an orgy of contrasting dualities of form: extreme inflection and continuity are combined with violent adjacencies and discontinuities, complex and simple curves, rectangles and diagonals, contrasting materials, symmetry and asymmetry, in order to accommodate a multiplicity of functions in one whole. At the scale of furniture, the prevalent sense of the equivocal is expressed in the chair illustrated in (103). Its back configuration is curving and its front is rectangular. It is not dissimilar in its difficult composition to Aalto's bentwood chair illustrated in (251).

Inherent in an architecture of opposites is the inclusive whole. The unity of the interior of the Imatra church or the complex at Wolfsburg is achieved not through suppression or exclusion but through the dramatic inclusion of contradictory or circumstantial parts. Aalto's architecture acknowledges the difficult and subtle conditions of program, while "serene" architecture, on the other hand, works simplifications.

However, the obligation toward the whole in an architecture of complexity and contradiction does not preclude the building which is unresolved. Poets and playwrights acknowledge dilemmas without solutions. The validity of the questions and vividness of the meaning are what make their works art more than philosophy. A goal of poetry can be unity of expression over resolution of content. Contemporary sculpture is often fragmentary, and today we appreciate Michelangelo's unfinished Pietàs more than his early work, because their content is suggested, their expression more immediate, and their forms are completed beyond themselves. A building can also be more or less incomplete in the expression of its program and its form.

The Gothic cathedral, like Beauvais, for instance, of which only the enormous choir was built, is frequently unfinished in relation to its program, yet it is complete in the effect of its form because of the motival consistency of its many parts. The complex program which is a process, continually changing and growing in time yet at each stage at some level related to a whole, should be recognized as

essential at the scale of city planning. The incomplete program is valid for a complex single building as well.

Each of the fragmental twin churches on the Piazza del Popolo, however, is complete at the level of program but incomplete in the expression of form. The uniquely asymmetrically placed tower, as we have seen, inflects each building toward a greater whole outside itself. The very complex building, which in its open form is incomplete, in itself relates to Maki's "group form;" it is the antithesis of the "perfect single building"<sup>40</sup> or the closed pavilion. As a fragment of a greater whole in a greater context this kind of building relates again to the scope of city planning as a means of increasing the unity of the complex whole. An architecture that can simultaneously recognize contradictory levels should be able to admit the paradox of the whole fragment: the building which is a whole at one level and a fragment of a greater whole at another level.

In *God's Own Junkyard* Peter Blake has compared the chaos of commercial Main Street with the orderliness of the University of Virginia (252, 253). Besides the irrelevancy of the comparison, is not Main Street almost all right? Indeed, is not the commercial strip of a Route 66 almost all right? As I have said, our question is: what slight twist of context will make them all right? Perhaps more signs more contained. Illustrations in *God's Own Junkyard* of Times Square and roadtown are compared with illustrations of New England villages and arca-dian countrysides. But the pictures in this book that are supposed to be bad are often good. The seemingly chaotic juxtapositions of honky-tonk elements express an intriguing kind of vitality and validity, and they produce an unexpected approach to unity as well.

It is true that an ironic interpretation such as this results partly from the change in scale of the subject matter in photographic form and the change in context within the frames of the photographs. But in some of these compositions there is an inherent sense of unity not far from the surface. It is not the obvious or easy unity derived from the

dominant binder or the motival order of simpler, less contradictory compositions, but that derived from a complex and illusive order of the difficult whole. It is the taut composition which contains contrapuntal relationships, equal combinations, inflected fragments, and acknowledged dualities. It is the unity which "maintains, but only just maintains, a control over the clashing elements which compose it. Chaos is very near; its nearness, but its avoidance, gives . . . force."<sup>50</sup> In the validly complex building or cityscape, the eye does not want to be too easily or too quickly satisfied in its search for unity within a whole.

Some of the vivid lessons of Pop Art, involving contradictions of scale and context, should have awakened architects from prim dreams of pure order, which, unfortunately, are imposed in the easy Gestalt unities of the urban renewal projects of establishment Modern architecture and yet, fortunately are really impossible to achieve at any great scope. And it is perhaps from the everyday landscape, vulgar and disdained, that we can draw the complex and contradictory order that is valid and vital for our architecture as an urbanistic whole.