ARCH 4000

From:

Edmund N. Bacon
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"Involvement" pp. 23-32
"The Structure of the Square" pp. 95-99

INVOLVEMENT

To put an awareness of space to use creatively requires participation in a process involving the whole range of one's capabilities.

At various times in history this process of involvement has reached a high pitch. One such period, certainly, was the Periclean Age in Athens, and another was the eighteenth century in Europe, the age in which Francesco Guardi made the drawing opposite. When an artist of the caliber of Guardi sees the world with such clarity, we are indebted to him for the gift of insight he brings to us, regardless of the environment in which we live.

This is architecture, not to look at, but to be in. It draws us into its depths and involves us in an experience shared by all the people who are moving about in it. The same kind of experience can be encountered at the Villa d'Este, at Tivoli, where the fountains are not merely something to see but something to be experienced. As the water sparkles, gurgles, and flows on all sides of us, we are completely involved by it. So it is, or should be, with the city. The designer's problem is not to create façades or architectural mass but to create an all-encompassing experience, to engender involvement.

The city is a people's art, a shared experience, the place where the artist meets the greatest number of potential appreciators. In many kinds of human relationships it is the function of the active person to establish the creative force and also to develop receptivity to it. So it is the function of the designer to conceive an idea, implant it, and nurture its growth in the collective minds of the community in such a way that the final product has a reasonable chance of coming close to his original concept.

The designer thus functions in time and space: he conceives forms as pulsating expressions of organic vitality flowing through the structure of the city, and he brings to the mind of the community the significance and meaning of the evolving forms in the flow of the total development. Simultaneously, he brings into full focus the physical realization of an idea which had been implanted before and establishes a glimmer of the vision of the development to come. This can be compared to the interweaving themes in music where one theme interlocks with another in the flow of time. In this manner a vast number of separate acts of city-building can be brought into relationship with one another over a considerable span of time and over a large area.

Should anyone conclude that this process places the designer in an autocratic position that will enable him to force his ideas on the community, I hasten to say that under the democratic system there are so many safeguards and processes of rejection that the possibility of overriding the sentiment of the community is extremely unlikely. Almost invariably, the final product of the designer at the city scale will be quite different from the original form proposed. To fail to provide any coherent vision of a finer, healthier, and more inspiring city is to fail to provide people with something to which they can react. The development of an adequate hypothesis or "design idea" of what the city ought to be imposes a severe discipline on the designer and on the nature of the design itself, but until it is done there is nothing to accept, reject, or modify. The technical nature of his hypothesis, or vision of a "design idea," is of the greatest importance and consequently the subject of a major portion of this study.

True involvement comes when the community and the designer turn the process of planning and building a city into a work of art.

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MEETING THE SKY

Throughout history, architects have lavished much of their tenderest care on the part of the building which meets the sky. From the *akroterion* of the Greek temples, which delicately fused the harsh pedimental triangle with the upper atmosphere, through the spires and turrets of the Gothic churches, from the tortuous writing figures, volutes, and urns on Baroque parapets to the cupolas and iron filigree of the Victorian period, this area has been a characteristic expression of the spirit of the times. Now, all too often, we establish a typical floor and repeat it mindlessly upward—all thought ceasing before the sky is reached. We sweep our rubbish into the upper air and use it as the crowning feature of our designs, with pipes, air-conditioners, and TV aerials as symbols of our relationship with the infinity of space.

The skyline of the city has long been a dominant element in urban design and should be reconstituted as a major determinant in city-building.

MEETING THE GROUND

The way in which the building rises out of the earth determines much of the quality of the entire structure. The constant and inspired expression in Greek architecture of the raising of the temple onto a podium elevated above the surrounding land was followed by the Roman expression of beautifully patterned marble-paved spaces which bound buildings together and set the scale of the foreground. Medieval architecture rose sheer from the level of the earth, but this earth was enriched by paving, by the buildings around it, and by the wellheads and fountains upon it. The raised podium and flights of steps were used to give stability to Renaissance buildings and beauty to the squares in which they were placed.

Today it seems as though we had lost such vision and care little that our important buildings stand almost as miscellaneous features among areas confused and dehumanized by automobile spaces and by ill-placed and ugly street lights and signs.

POINTS IN SPACE

Here is the excitement of points in space positioned freely, yet firmly established in the complex spatial geometry of the composition. Point reaches to point across the void. Tensions are set up between them, and as the observer moves about in the composition the points glide and move in relation to one another in a continually changing harmonic relationship. This is one of the finest aspects of many of the very great compositions. The plane of the point at the top of the obelisk in the Piazza Navona relates to the two towers and the dome of Sant' Agnese and then dips down to the heads of the sculptured figures in the fountains at each end. The points at the top of the two domes of the Piazza del Popolo interplay with that of the Sixtus V obelisk in the center. With much of our modern building, we have tended to lose the articulation of explicit points in space, thus robbing ourselves of many of the dynamic possibilities for harmonic spatial effects.

RECESSION PLANES

Here the basic composition is set back behind firm pylons which rise on each side of us and serve as a link between ourselves and the architectural forms, heightening their dramatic power. This is the proscenium effect, the establishment of a frame of reference to give scale and measure to the forms behind. It was frequently used by the Greeks, who skillfully placed their propylaea to emphasize depth and to define the approach to their temples — even in the most isolated sites. In China and Japan much the same purpose was served by free-standing gateways. While we are unlikely to use triumphal arches today, the creation of a setting for a building, the establishment of linkages in scale with objects in the foreground, such as flagpoles, sculpture, or stairways, as a measure of depth, remains as important as it ever was, and much can be accomplished by the careful placing of large buildings and small buildings in relation to one another.

DESIGN IN DEPTH

In the interrelation of these two arches, one deep behind the other, we again have a symbolic representation of a pleasurable human experience, that of penetration in depth. This form has been used repeatedly in the history of architecture. We see it in the archway of the clock tower in Padua, which interacts with the bull's-eye window of the little church across the square; and we see it in the recession of the arches in medieval battlements and in the series of doors in a Renaissance palace. A sense of movement in depth is established, and, where the architectural forms are related to one another, the size of the space is made comprehensible by a comparison of similar forms reduced by diminishing perspective. Exemplified here is a device for unifying form in space and giving coherence to design on an urban scale.

ASCENT AND DESCENT

The use of varying levels as a positive element in the design composition is brilliantly portrayed here, with emphasis on the process of ascending and descending from one level to the other. We can sense the joy of anticipation of running up a flight of steps, of the muscular effort to reach the higher level and the feeling of satisfaction when this is achieved. There can be an equal sense of pleasure in descending a stairway and anticipating the unfolding forms of the level below. Even in Ostia, the ancient port of Rome, built on a flat plain, prominent buildings were set upon very high bases that had great flights of steps, providing the citizen with the pleasure of a change in level.

With the revival of interest today in the use of many levels, stairways have taken on new importance as design elements. The use of mechanically driven escalators imposes a new architectural discipline because of the perceptual sequences they produce.

CONVEXITY AND CONCAVITY

Here we see the continuous interplay of two forms, the positive and the negative, the massive and the spacious, convexity and concavity. The forms envelop us and involve us completely in their spatial animation. In design of this sort, interrelationships are established between parts at all levels. Design is not confined to forms that depend on the land as the basic connector; it functions effectively in new kinds of relationships at each level in space. It is not limited to the manipulation of flat planes but involves buildings freely positioned in spatial volume. In our own day there has been a resurgence of interest in the use of curved forms, but all too often these have been conceived as isolated forms in space. Architects have not taken advantage of the full excitement of interplay that is possible.
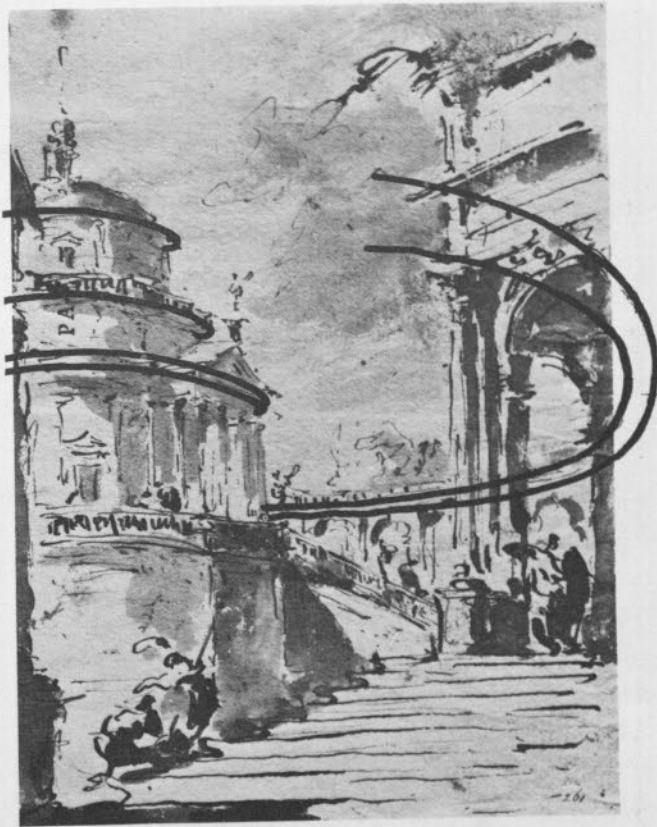

RELATIONSHIP TO MAN

In this last view of the drawing, we are concerned with the relationship of the architect to the man he is seeking to house. The forms are carefully scaled to involve the people within the building, to flow from that part of the structure the people can see at close range, that they can touch and feel. Unlike some Renaissance architecture, where the base of a column towers above the heads of the people, the column here is set on a pedestal within reach of the people passing by it.

The point of contact of the Greek Doric column with the marble block of the temple floor is in perfect relationship with the viewer. Even the most monumental of the classical Roman work was designed so that the bases of the columns were within reach of the hand. Today, with the towering dimensions of so many structures, the designer must devise new means for establishing a connection between the building he creates and the people on the ground.

linea orrizontale
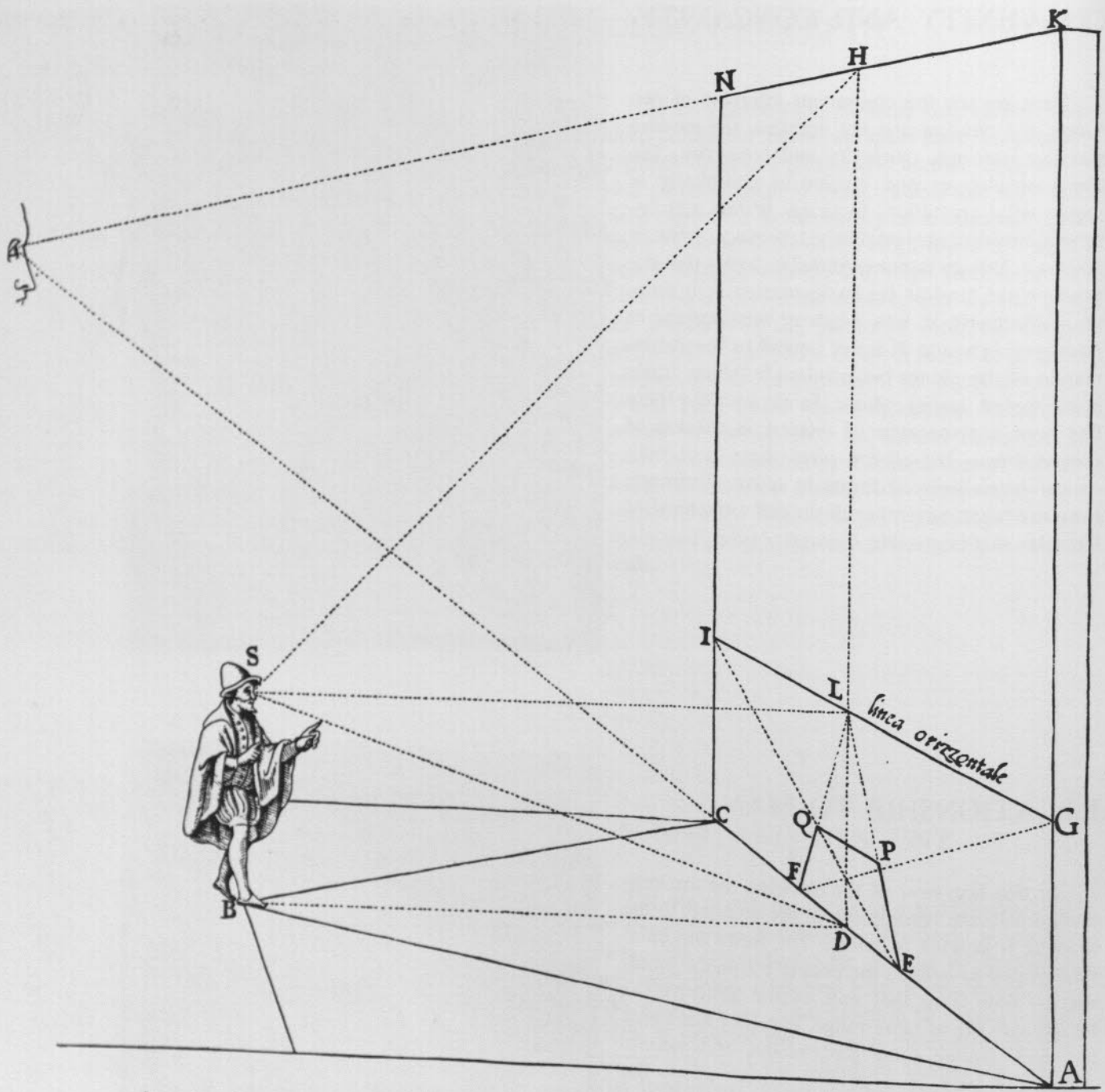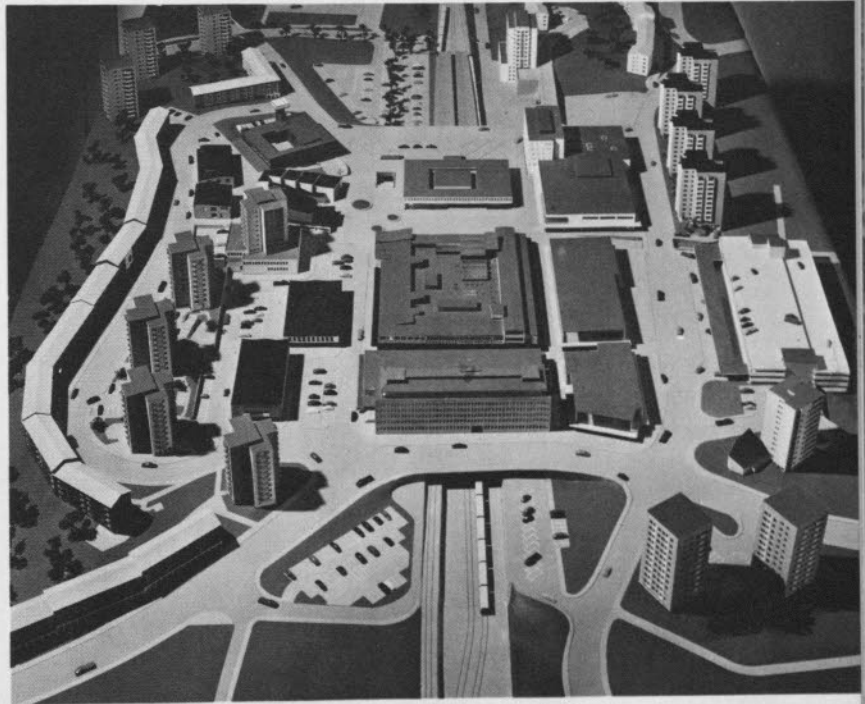
Apprehension

DESIGNER AS PARTICIPATOR

The seventeenth-century engraving on the facing page poses a question that persists today: Is the designer thinking of his work from the lofty bird's-eye viewpoint of a disembodied intellect, or is he able to project himself into the person of the participator, and so conceive his design in terms of the effect it will actually have on the senses of the people who use his buildings?

The answer to this is greatly influenced by the designer's philosophic and scientific apprehension of the culture of which he is a part, by the way he represents his ideas, and by the relationship of his method of representation to the actual realization of the building on the ground.

A contemporary illustration of this relationship is provided by the two photographs to the right. The upper one is a study model of the new town of Vällingby outside Stockholm, and the lower one shows the actual town as it was built.

Here much of the designing was done through the use of blocks (representing buildings), which were placed and moved about on a cardboard base. The view from an airplane of the completed project (below, right) is extremely impressive. It places the observer in the same angular relationship to the finished town as the designer was while he was making the study model. However, when one actually enters Vällingby on foot and moves about in the town, one looks in vain for a central organizing space. In fact, Vällingby is not as satisfying an experience on the ground as it is when viewed from the air, and this, I believe, is because the design was conceived primarily in terms of the model and not from the viewpoint of the pedestrian who was to walk about in the town itself when it was built. This stresses the importance of developing new ways of representing present-day design concepts, and the necessity of achieving a deeper understanding of the actual effect of a design on the people who use it.

In his 1781 book, *A Series of Plans for Cottages, Habitations of the Laborer,* . . . John Wood the Younger, the great architect of Bath, (see page 185) says, "In order to make myself master of the subject, it was necessary for me to feel as the cottager himself . . . no architect can form a convenient plan unless he ideally places himself in the situation of the person for whom he designs."

Representation
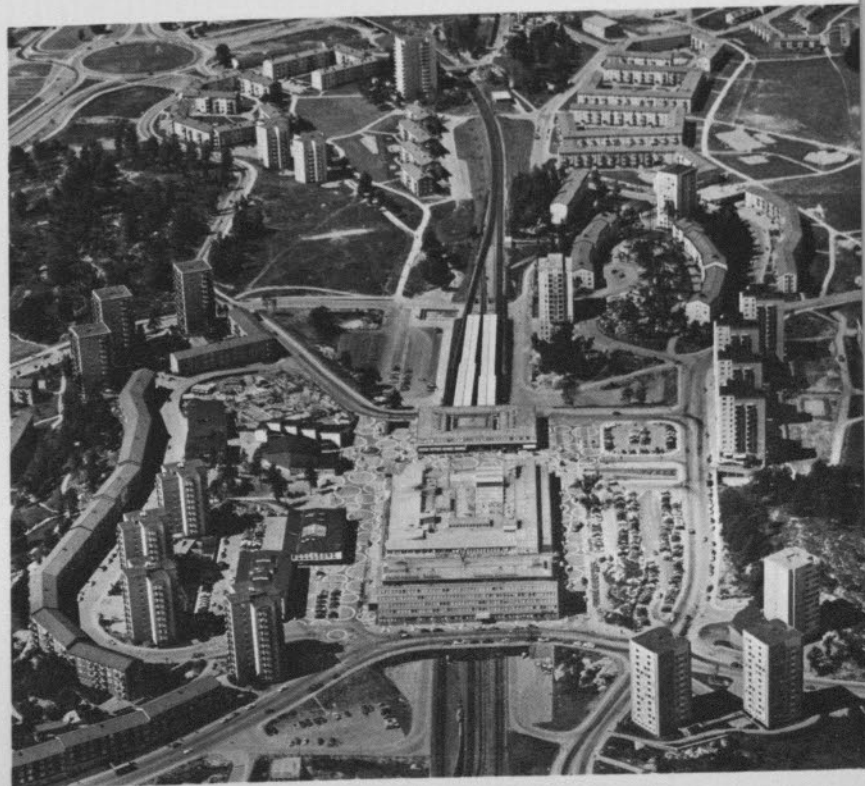
Realization
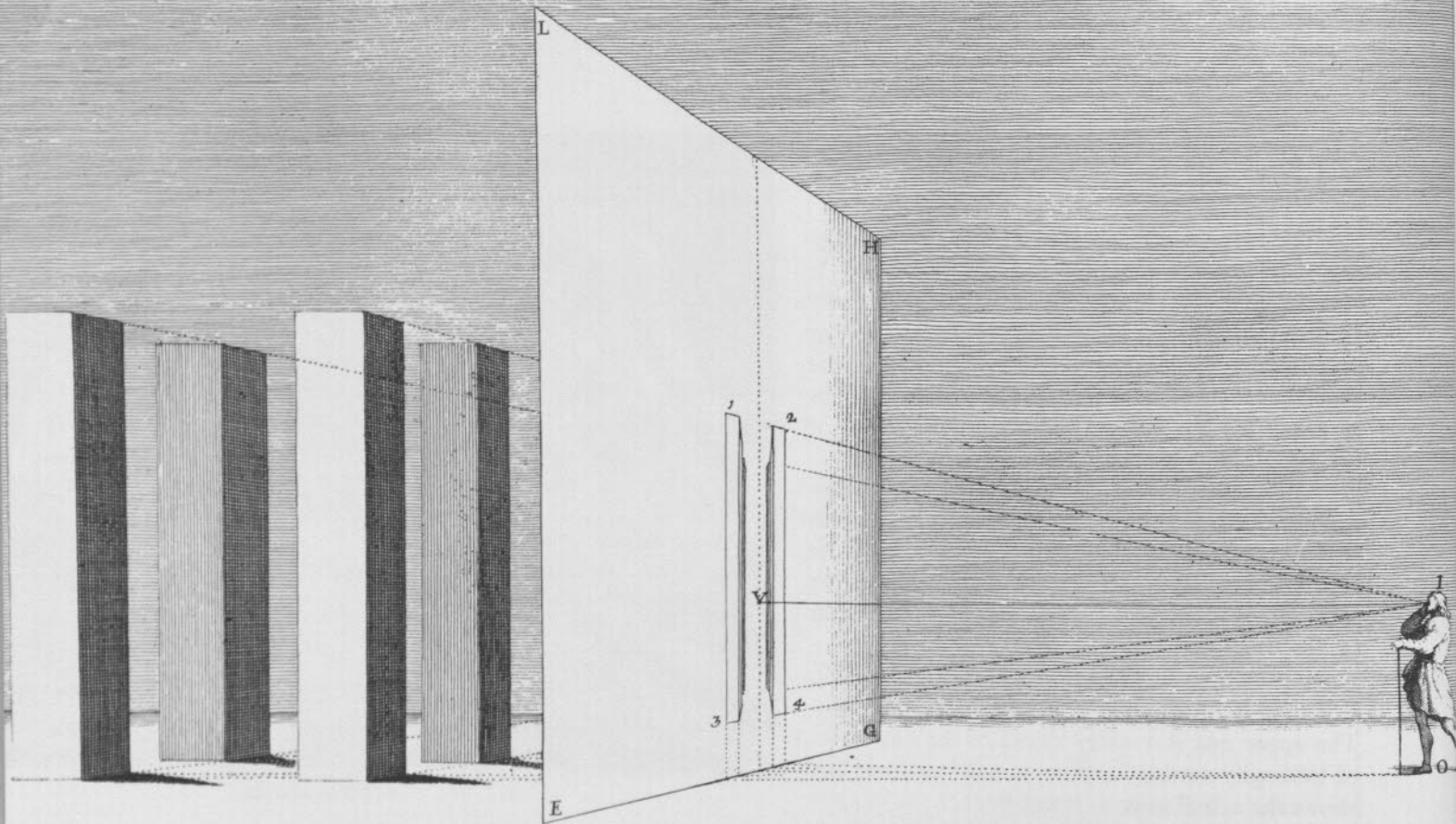
REALIZATION   REPRESENTATION   APPREHENSION

The engraving above, from Andrea Pozzo's *Prospettiva de' Pittori ed Architetti,* published in Rome in 1723, sets forth the problem of the inter-relation of apprehension, representation, and realization.

Apprehension, as Heinrich Wölfflin points out (page 11), is a living and constantly changing power, influenced by the philosophical, religious, and scientific attitudes of various periods. It is the basic power which the architect exercises while he is designing in space.

Representation is the means by which spatial concepts are reduced to tangible images, and realization is the establishment of definite three-dimensional forms—the phase of which Walt Whitman speaks on page 15. It is only when these three elements are in harmony that great design is produced.

The Renaissance man in the Pozzo engraving apprehends space within the framework of the new humanity of his period, with its fresh emphasis on the individual and on individual experience.

The images in his mind are deeply influenced by the new method of representation — scientific perspective. Thus this picture can portray both the representation on the picture plane of an already existing reality, or, conversely, the projection of an imaginary three-dimensional concept which exists in the mind of the designer.

These two phases interact on each other, the concept influencing the structure and the structure influencing the concept in a never-ending interplay.

The designer conceives a three-dimensional form which is later built on the ground. From observation of this he gains new understanding of his own mental symbols as expressed in his two-dimensional drawing. However, there is a conflict between the drawing and the three-dimensional reality. Thus the four pylons in the drawing above, through which one can move in ever-changing directions, seem startlingly different from their perspective representation on the picture plane. This poses a dual dilemma.

In order that his three-dimensional concept

be realized through actual construction on the ground, the designer must reduce it to a two-dimensional, representational image which serves as the medium of communication to the builder, who must put it back into three dimensions again. This two-dimensional image also serves as the medium of communication to the client and to the general public, whose support may be necessary for its construction. When a design is truly rich in its three-dimensional aspect, to reduce it to a two-dimensional image may destroy its most vital qualities and thus result in a most imperfect process of communication. This occurred in the case of the winning design by Pedersen and Tilney for the Franklin Delano Roosevelt Memorial in Washington, D.C. The essential nature of the design was totally misunderstood by many of its critics because it was not reducible to a picture plane.

The second problem occurs in the mind of the designer himself. This is so because his work is limited by the stock of images, by the range of the vocabulary of conceptual models, at his command, just as a mathematician is limited by the mathematical symbols he uses. In vast three-dimensional design problems at the scale of the modern city, the traditional range of two-dimensional symbols has proved to be totally inadequate for the task at hand.

In the medieval era (see pages 53 to 57) perception and apprehension were often indivisible, and the representation or communication problem was greatly simplified because the designer and the builder were often the same man. In the Renaissance period the buildings and their mode of representation were very much in harmony because building design was largely an outgrowth of form produced by scientific perspective.

Today our design problems have expanded to a degree of complexity that is beyond the capacity of perspective to represent. Thus traditional representation breaks down as a means of communication, and, even more important, it fails to provide the range of symbols that the modern designer needs for the formulation of his concepts.

In the chart below an attempt has been made to summarize the interaction of apprehension, representation, and realization over four periods of history. I have put question marks in the last two sections of the modern period because the questions raised in these areas are still unresolved.

	APPREHENSION	REPRESENTATION	REALIZATION
MEDIEVAL Intuitive Design	Awareness of total environment	Simultaneously several objects from various viewpoints	Construction closely integrated to its environment
RENAISSANCE Individual-Centered Design	The precise observation of one individual at one specific moment	Rational, rigid, one-point perspective of a single object in space	Single, self-sufficient buildings, detached from surroundings
BAROQUE Single Movement System	Experience as simple continuity in time	Simultaneously multiple planes receding in space to single vanishing-point	Structures related to movement along a single axis
MODERN Simultaneous Movement Systems	Space-time relativity	?	?

THINKING IN TERMS OF MOVEMENT SYSTEMS
drawings by Romaldo Giurgola
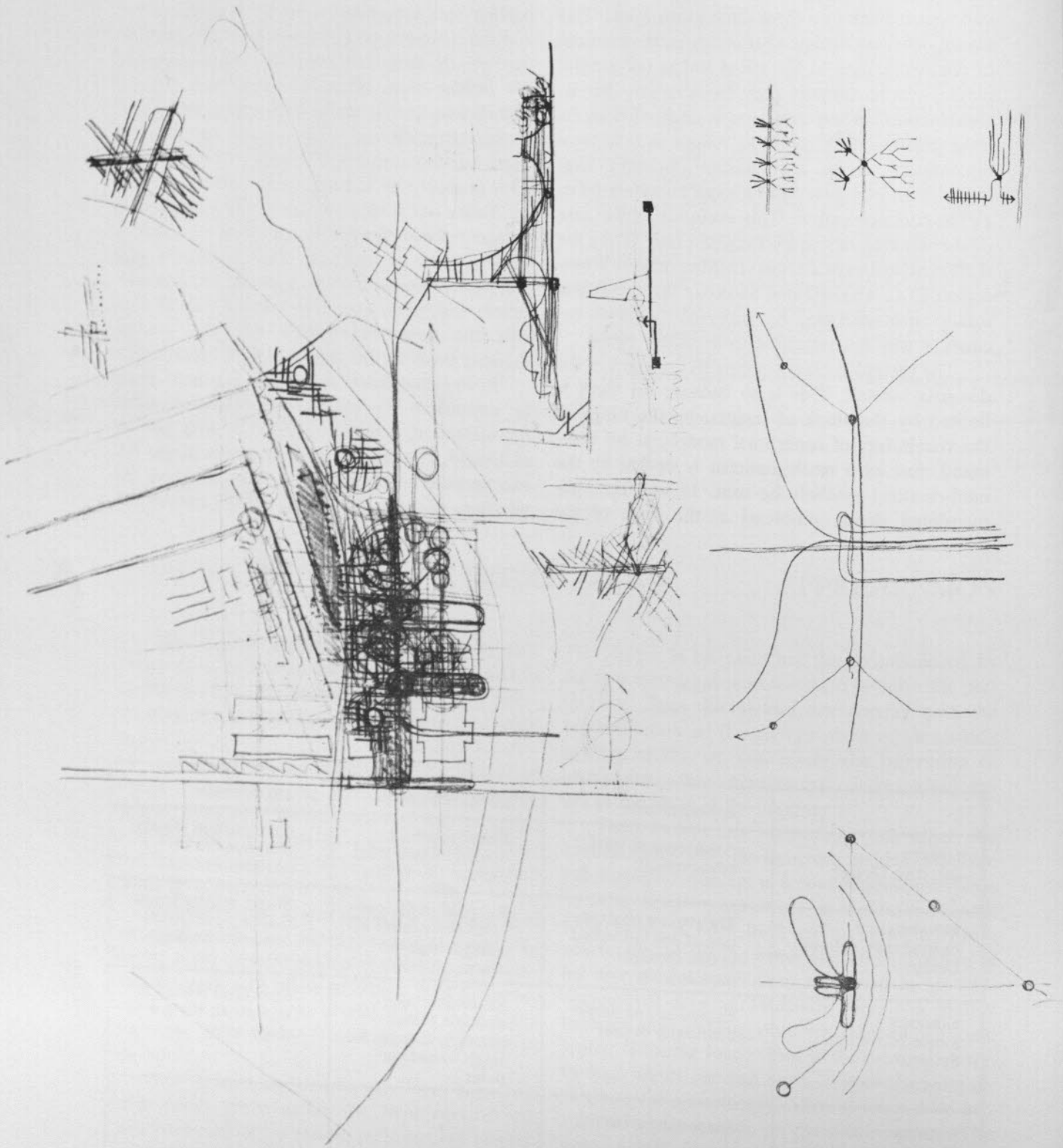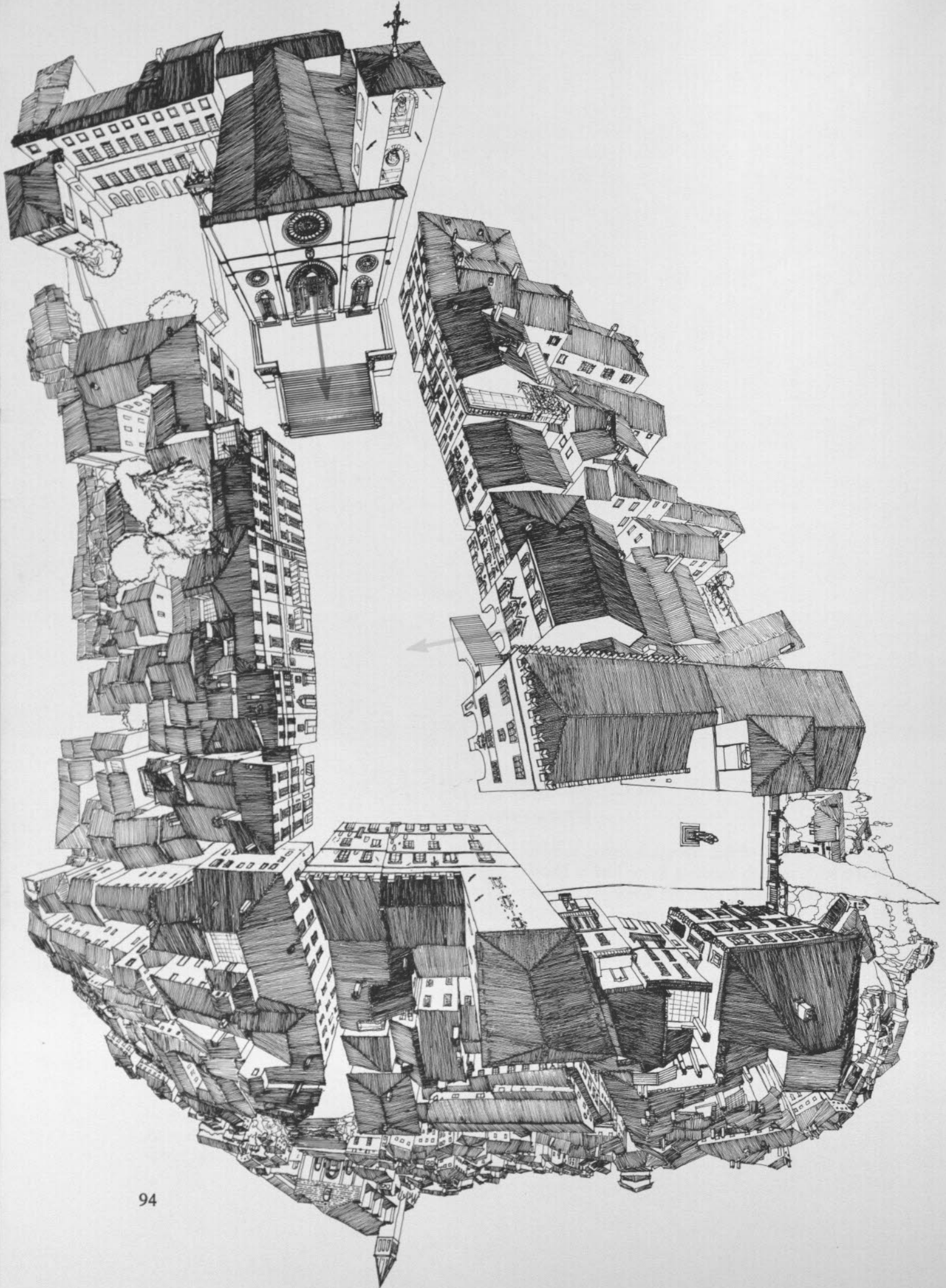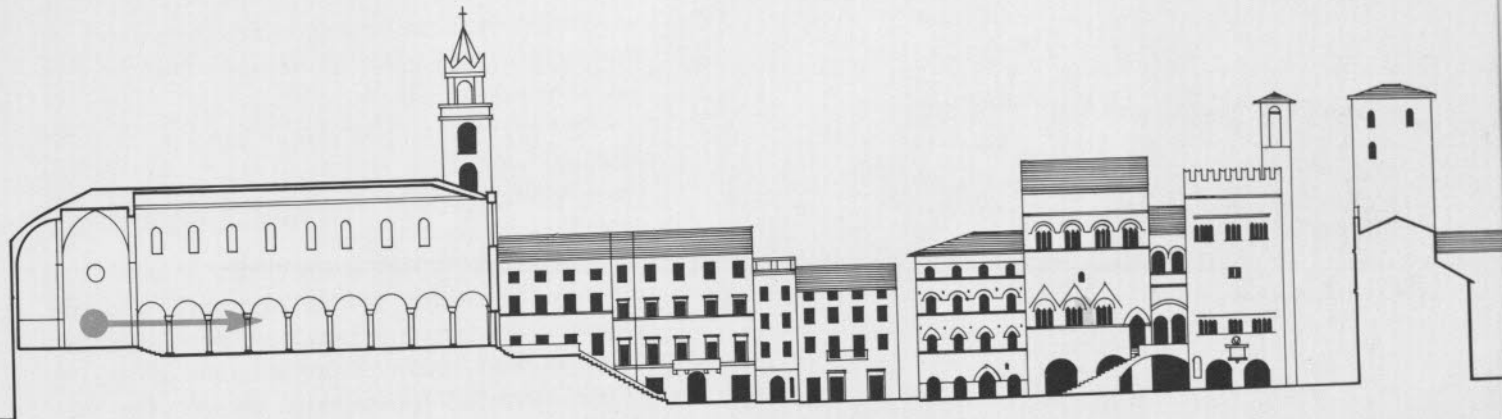
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THE STRUCTURE OF THE SQUARE

Spectacular among the architectural works of medieval cities is the design of the two interlocking squares in Todi. The smaller of the squares (at the extreme right of the drawing opposite), with a statue of Garibaldi at its center, overlooks the rolling Umbrian plains and draws the spirit of the countryside into the town. It was conceived as a space, with one corner overlapping the area of the principal center square, the Piazza del Popolo, thus establishing a small volume of space common to the two squares, of special intensity and impact. The towers of the Palazzo del Popolo and the Palazzo dei Priori, shown on the extreme right of the drawing above, flank this abstractly defined space and provide vertical forces that hold down the two corner points at the position of greatest intensity of design.

The positions of the buildings representing the two principal functions of communal life (symbolized in yellow for the mayor and blue for the archbishop) are precisely determined in the design both in plan and in a vertical relationship. The entrances to both the Palazzo del Popolo and to the cathedral are raised above the plane of the public square onto a level of their own, accessible by a large flight of steps. The simplicity of this over-all design is such that the citizen never loses his feeling of relationship with the city as a design entity while he is participating in his function as a member of the church or as a member of the political community.

In a process somewhat the reverse of Michelangelo's idea of cutting away the superfluous marble to liberate the mass of the statue which, in his mind, was contained there, the collective mind of the citizens of Todi must have conceived the space volumes of the two squares as abstract entities, and then brought them into being by the construction of individual buildings over many years, which gradually defined their edges.

The remarkable drawing of J. H. Aronson opposite, influenced by modern technology but utilizing multiple vanishing points, attempts in a way quite different from that of Lorenzetti to present the picture of the city as a totality. You may intensify your pleasure in this drawing by slowly revolving the book through 360 degrees.

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THE APPROACH

In the city of Todi, as in many other cities of the Middle Ages, the design energy does not expire with the completion of the central squares, but it extends outward to the limits of the city at the walls, or, conversely, it penetrates inward from the walls, thus relating the heart of the city with the surrounding countryside.

In Todi there is great clarity to the form of the total city, and, as in Athens, it is easy to visualize the sequence of space experiences as one moves from the gate to the square.

Particularly subtle is the series of views and sensations provided by the approach from the southeast. The street is bent, so that one sees first a narrow shaft of space focused on the central bay of the cathedral (photograph above). The view shifts to the right bay, and, as the space widens, shifts back again (photograph below). At the point of entry into the space of the smaller square with its spectacular view across the countryside, the space of the arcaded loggia under the Palazzo del Popolo becomes dominant and strengthens the feeling of the downward thrust of the mass of the tower above.

THE ARRIVAL

As one moves into the square (the vista being completely enclosed so that there is no distraction from the civic functions which take place there), the great flight of steps along the north side of the square leading up to the cathedral looms as the dominant element in the composition. When going up these steps, one can catch a glimpse over the countryside to the left. The experience of the square is complemented by the experiences of the interior space of the cathedral with its great apse at the end, which deflects the design force back into the square.

As one comes out of the cathedral, the square presents a totally different aspect. From here the two towers emerge as dominant elements, and the great flight of steps up to the plane of the Palazzo del Popolo only now makes itself felt, drawing our attention down into the central square, then up again.

Here is an example, developed over time, of the full interplay of the many necessary elements of design — recession planes, penetration in depth, meeting the sky and the ground, ascent and descent — which were shown in the Guardi drawing.
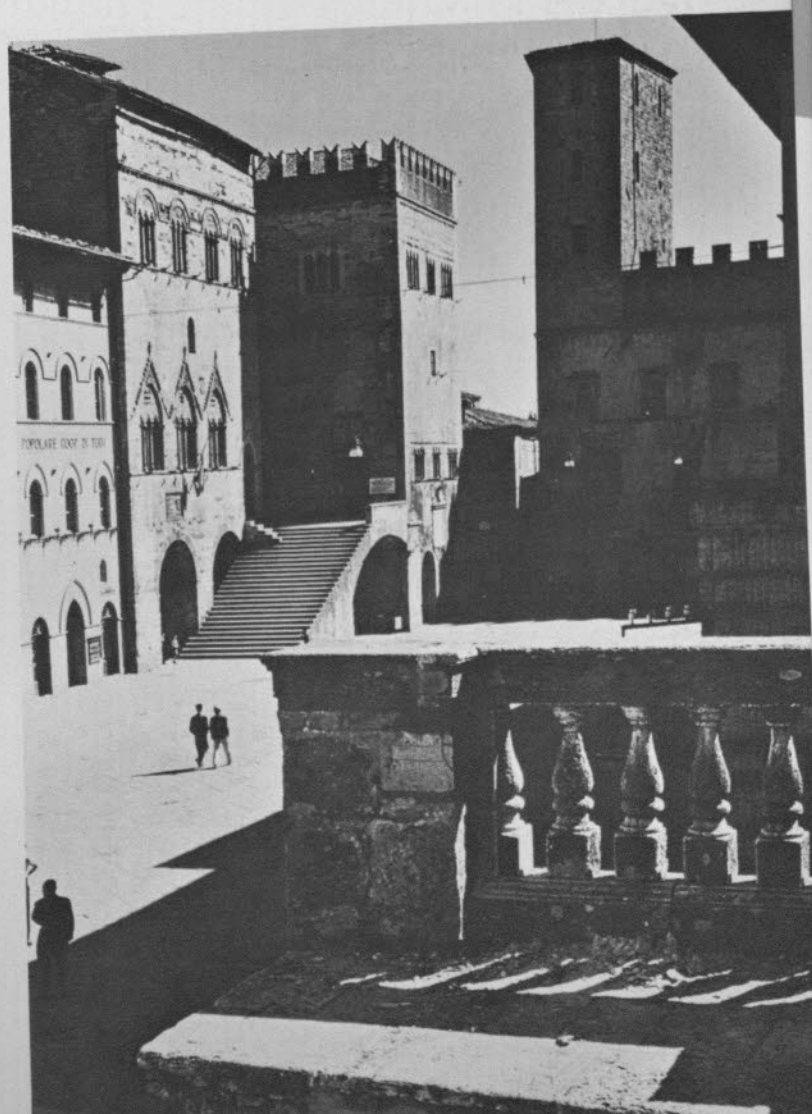
BASIC DESIGN STRUCTURE

Within the range of cities built in Italy during the medieval and Renaissance periods there emerges a recurring theme in which there is a direct and purposeful design extension from the central square to an outward point where it clamps onto an expression of the forces of the region. Presented on these pages are four examples, drawn to a common scale, all strikingly similar in their basic concept.

TODI

The diagram emphasizes that the interlocking squares are firmly positioned between vistas, one in each direction, across the Umbrian hills. The architecturally contained center square, affording glimpses of nothing but overlapping façades of buildings, establishes unequivocally the urban character of the city core, and makes more dramatic the inrush of the countryside (shown in green), in a narrow, sharply focused channel on the upper platform before the cathedral, and in a broad expanse at the end of the smaller square. The identities of the town and countryside are kept separate and are sharply defined within the individual parts of the composition.

PERUGIA

Perugia, another Umbrian medieval hill town, expresses the same design principles as does Todi. The central square, with its ancient and beloved fountain (shown by the circle), so skillfully interrelated with the design of the cathedral on one side and that of the city hall on the other, receives the thrust of space defined by the street leading in from the square overlooking the countryside. The cathedral is turned so that it receives the impact of the space movement broadside, which is unusual for Gothic cathedrals.

At the other end of the connecting street two squares are developed on each side of a public building, and promenades extend along the angled city wall, allowing wide vistas of the surrounding terrain.

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FLORENCE

The medieval square of Florence, Piazza della Signoria, was originally conceived as an entirely self-contained urban center, with no thought of including in its design an expression of the forces of the region which sustains the city. It was a purposeful act of Cosimo de' Medici to cut through a jumbled area to the River Arno, and to commission Giorgio Vasari to design the Uffizi Palace as both a practical and an architecturally symbolic link between the town center and the River Arno. (The palace is positioned on either side of the street extension, drawn in yellow, leading to the river.) With superlative mastery Vasari fulfilled the hopes of his client. The palace visually interrelates the ancient monuments, the Palazzo Vecchio, the dome of the cathedral, and the sculpture in the Piazza della Signoria, and fuses the perpendicular movement from the square onto the movement along the course of the Arno, thus dramatizing the river's existence.
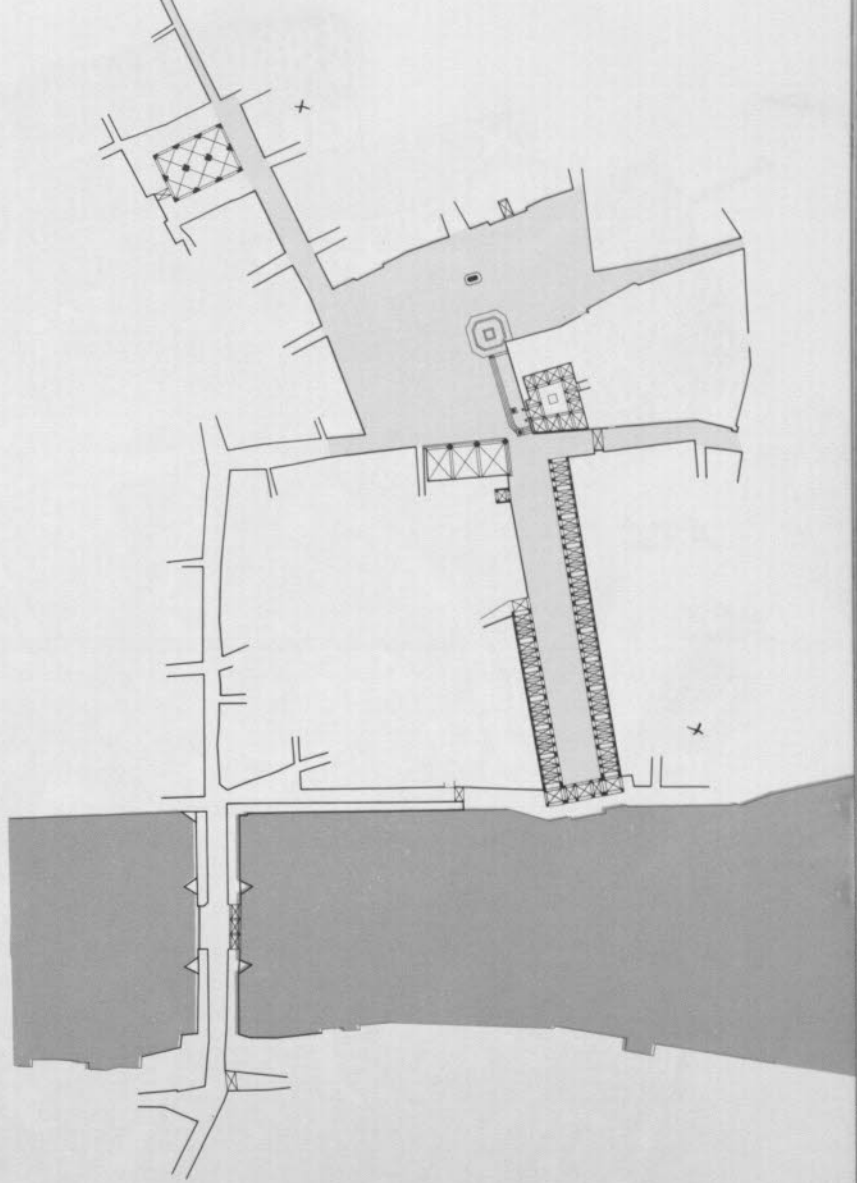
VENICE

The basic form of Piazza San Marco in Venice is similar to that of Piazza della Signoria in Florence, but the history of its development is different. In the port-oriented city of Venice, the open space which is now the Piazetta was part of the original design, leading to an only slightly larger space before the Cathedral of Saint Mark. Here the open space was principally an extension of the maritime space of the Grand Canal. Piazza San Marco, as we know it today, was a much later enlargement of the central open space, the formalized expression of the urban entity.

In all these examples the underlying design theme is the establishment of a clear and powerful expression of civic unity connected to some feature expressive of the natural forces of the region.

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