SPACE AND IDEAS*

by

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> "Everyone who has thought even casually about the subject knows that the specific property of architecture — the feature distinguishing it from all other forms of art — consists in its working with a three-dimensional vocabulary, which includes man."
>
> BRUNO ZEVI

> "The purport of art is form itself, that is, what has become artistic form in it. Where the two part there may be ideas but no art."
>
> LAJOS FÜLEP

Introduction

ARCHITECTURE—THE ART TO ORGANIZE SPACE. It is a paradox that the interpretation of architecture as a space-forming activity, as "the art of space" was formulated as late as in the early 20th century. It is a paradox because the aim of space-forming architecture was unequivocally set and defined only after architecture has proved throughout centuries by a long line of masterpieces that it has fulfilled its function. If one may speak of the subconscious of architecture, it must be the ability of man to organize space and not the means by which he has limited space from the infinite, because from the very beginning on space was the objective of construction work of any kind, and space was the "negative" result of everything that "positive" means: floors, walls or columns, roofings—the constructions—have created in a spontaneous way.

This "delay" of architecture becoming conscious of its own may be attributed partly to the character and development of the relevant ideas of the theory of art, and partly to the quality of the genre, to the duality of a building, as mentioned above, to its being the result of negative and positive components.

The first reason, the problem of an artistic representation was raised, characteristically—not in connection with the three-dimensional forms, with sculpture and architecture but in the course of analysing those of two dimensions, painting, drawing and relief that belongs rather to two-dimensional than to three-dimensional forms. A statue is inherently spatial whatever the degree of spatiality it represents and it is just because of this evident spatiality that it gives a more concealed information about the ideas of the period on space

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than plane arts do in spite of being its embodiment, whereas plane arts must interpret space within a limited range and with limited means. Spatial arts realize space, plane arts make it visually perceptible and—as shown by history —the spatial was brought to be seen through space representation by planar means. It needed the facts of illusion created by the spatially lower order to make the reality of the spatially higher order understood. It was the struggle for the interpretation of the spatial in the plane from where the investigations of the theory of arts started and not the "self-expression" of spatiality itself in the third dimension.

The expression of spatiality in the plane as a conscious artistic action was realized in the Greek descriptive arts and not in the Renaissance as it is generally supposed. It originated in the anthropocentrical view of life of the Greeks and found expression in perspective picture construction that made part of Greek "aesthetics", the science of noticing and perception, together with the optical corrections so strongly characteristic of their descriptive arts. It was the irrealistic atmosphere of the Greek theatre that ripened scenography, coulisses supposed to make the impression of spatiality, whose specific features caught the attention of philosophers too. It was at the sight of scenery that *Democritus* and *Anaxagoras* turned to discuss the theoretical reasons for the differences between the seeming and the real and also *Euclides* was inspired by these coulisses to write his *Optics*. Thus in Greek art and Greek thinking space was slowly becoming some objective concept even if *Platon* and *Zenon* denied its existence—or just because of it—and if *Aristotle* understood by it, pretty vaguely defined, some limited space, it gained its meaning in common use today: space is the possibility of enfolding of things and objects, their medium, a something in which things and objects "find place" which they could occupy. The important possibility of representation begun by the Greeks came to perfection in Roman wall painting. During the Middle Ages it underwent essential changes, as thoughts of this kind were imbued by transcendence. This had its inevitable consequences also for the descriptive arts resulting in golden backgrounds symbolizing the infinite and the eternal. It was perhaps at *Giotto*'s time that this transcendent golden heaven began to break to open the way before the old expression of perspective, a representation in which it was possible to revive the anthropocentric and humanitarian aspect of Antiquity. The space conception of the Renaissance was, of course, other than that of the Greeks and the Romans, which remained after all subjective, turning into geometry, to a phenomenon of natural sciences and became characteristic of painting in this sense. Finally, in the space conception of the Baroque transcendency and science were amalgamated to result in the infinite space conception of the period illustrated not only by illusionistic ceilings of churches but caused also the limits of various artistic genres to extend, fade out or even disappear.

The theory of art followed this historical career of the artistic expression of space in the following steps: first the properties of Renaissance space construction were studied, then the space representation developed from the former. Then came the problems of pictorial depth, the stratification of space. The next object of investigations was space as *hiatus*, embodied as a space form, till finally the recognition was arrived at that space conception is changing with the periods, consequently it is relative, and this is how it could became a category for style definition. It was only at this phase of progress that architecture was first considered as a space forming activity. Why it was so late can be answered by the ideas of the theoreticians of architecture.

ALOIS RIEGL, the first scientist interested in the problem, proving the originality of Roman art and its independence from the Greek one put down his famous thesis, which says that it was in Roman architecture that interior space first appeared in the history of architecture. He says that architecture has attained its ability of space forming but gradually. It began by the construction of volume-like buildings—the pyramid of Egypt, the ziggurat of Mesopotamia—going on with an amalgamation of the volume-like and the space-like—the Greek peripteral temple: the Parthenon—and arrived at its real goal: at the interior, with the Roman Pantheon. Riegl speaks—as is seen— about a chronological appearance of volume and space in architecture and SCHMARSOW criticizing it has no objection against this conception but disapproves of his static approach to space, disregarding its essential point: dynamic emphaty, the "forth dimension", time, i.e. motion. About half a century after the two great theoreticians, S. GIEDION, one of the most remarkable historians of architecture in our days, wrote his Space, Time and Architecture based on the space conception of physical relativism. In this book he sees the most characteristic feature of modern architecture in its expression of the unity of space and time. In his latest work—*The Beginnings of Architecture*—he expounds his theory on the history of architecture as a whole saying that architectural space conception passed through three stages of development: in the first lasting to the late Roman era "sculptural objects—volumes—were placed in limitless space" such were the pyramids, the ziggurat and also the Greek temple, in the second that ended with the late 18th century, "hollowed-out space—circumscribed interior space—was the finest achievement of the art of building", and finally, the third phase of development reaching to the present, "contains elements of both the first and the second stages". It is obvious from the foregoing that the interpretation of architecture—according to the views of these remarkable scientists supporting the idea—started with the volume-like quality of constructions and not from its space-forming quality, and even the latest approach suggests a chronological sequence: volume formation being the primary and space formation the secondary phenomenon, which means that the former is a more primitive, the latter a more advanced way of composition.

However far the development of artistic space conception and this chronologically dualistic interpretation of architecture goes in the explanation of the delay in the recognition of architecture as an activity of space formation—they give no answer to the question how space forms and space compositions of periods representative of the "volume-like" should be understood. There is no doubt about it that such buildings were constructed and the pyramid, the ziggurat and the peripteral temple are not all that the architectures of Egypt, the Near East and Hellas produced, as the Pantheon is not the single representative of Roman architecture if we only think of the mausoleums of Augustus and of Hadrian that in their essentials show little difference from the volume-like construction of the pyramids of Egypt. An acceptance of the chronological order of volume and space is no suitable means to demonstrate the history of the development of space formation in a lucid and satisfactorily detailed way.

This will be only possible if instead of the representative buildings of the various periods, whose selection involves the danger of *a priori* decision—generalizations are made on the basis of the entire architectural material of the period. A muster of all architectural products of a period turns what was suggested as essential and chronological into a statistical phenomenon, since both volume-like and space accommodating buildings have been constructed at every time changing the rate of their occurrence in accordance with the demands of the period. Penetrating deeper into the analysis of the question, it becomes clear that a building itself is a synthesis of similar relationships, as it consists of two parts: architectural space giving the possibility to enfold a great variety of functions and the ensemble of space-forming structures. Thus a building has a non-objective (non-volume-like) part: its circumscribed space and an objective (volume-like) part: its "shell". Taking it *ad absurdum*— the two parts differ only in not being filled out by materials of identical density, but the former by gaseous, and the latter by solid matter. This duality of architecture—its being composed of "useful space" and "structural space"— is an inherent property, determinative of its artistic form and if—from a quantitative point of view—the history of architecture is nothing but a series of changes occurring in the interrelationship of the two elements, a study of this interrelation alone is not enough to understand the phenomenon of the period embracing all space problems. For example, in the pyramid structural space fills the object almost completely, reducing useful space to a couple of chambers and passages, the relationship is most unfavourable on the expense of useful space. In the Pantheon, on the other hand, useful space is overwhelming, but only a small fraction of it is really useful: the ground plane of the space—as man can move about only at the bottom of the space: in the pyramid it is structural space, in the Pantheon useful space that appears— looking at it from a strictly utilitarian aspect—as nonsensial and superfluous.

The absurdity of such conclusions comes from two sources, the obscurity of

the quantitative relationship between useful space and structural space, on the one hand, and the fact that investigations have not differentiated definitely enough individual spaces, space forms of various periods and the relation and connection between spaces—i.e. space organization, on the other. It may be attributed to the first reason that even Riegl—in spite of opposing the "constructivism" of the aesthetical materialism of the Semperians—bound up the birth of Roman interior space with the general application of the vault, even if he never said so in as many words and that also Giedion attributes a specific impetus to construction in the development of space formation, as it is he who calls construction the subconscious of architecture. Construction in itself cannot define anything as it is just a means as H. RICKE puts it: construction is for architecture the same as colour for painting and sound for music—the stage where the drama of architecture is performed. The second reason follows from this, and only after this: construction does determine the individual space form as an element of composition—space covered with a vault is different from space covered with a plane—and as such may have a style-defining power to some extent. But the system according to which individual spaces are coupled cannot be unequivocally defined by the properties of construction. It calls for the observation of wider regions, going beyond strictly architectural elements and requires beyond the study of building constructions creating the individual spaces, investigations into the space systems characteristic of the period and their definition. This can be done, however, only after having got familiar with the economic and social life, historical career and cultural structure of the period.

SPACE AND IDEAS. Practically, this was the reasoning of those specialists of the theory of arts who first recognized the space forming quality of architecture and also of those who made attempts to define the space symbols of various periods, which did not mean anything else but a linking up the general world of ideas of the age. These trends still considered space as absolute and ideas being of intellectual origin and reason only. This is why they could not get farther than discovering part-phenomena without being able to give an objective definition of their meaning and origin. The relativistic theory of space and the recognition that ideas are defined also by material factors turned the correct— yet upside-down—reasoning to its right position. Nobody writing about space conception can do so today without giving an extensive ideal explanation for it.

Investigations into architectural space must go hand in hand with an analysis starting from the basis of the economy, society, history and culture of the age that in some way or another demand and determine one form of architecture or another. This thesis relatively easy to accept becomes vague—almost impossible to comply with—as soon as the relationships suggested between fundamentally different things and phenomena are to be given a concrete form. Architecture and economic structure, architecture and social structure, archi-

tecture and historical events, architecture and religion, ethics, law, science, arts, etc. seem incommensurable because concrete and general, speculatively defined with visually perceptible, etc. must be compared. Fortunately, there is a general term to help us: an attitude suitable to bring seemingly incompatible phenomena to a common denominator, because it embraces and imbues also what is heterogenous and this is *the totality of the ideas of the period, ideology of the age.*

The ideological roots of art were traced by investigations into the theory of art carried out at the end of the last and in the beginning of the present century creating the possibility to study arts in various periods from the point of view of the general estimation of the age. It was done without theory of art having given an exact definition of ideology itself and without developing "multilateral" ideas by which various phenomena of life could have been typified and estimated: yet it was possible to link up various spheres if not by other means than by those of analogy and "concord". It is not the aim of the present study to give a scientific definition of ideology carefully weighing all its elements. All we wish is to outline a working hypothesis that may be used to demonstrate analogies among the phenomena of economic-social-historical-cultural life and architecture.

The working hypothesis considers ideology as a compass to find your way among the phenomena of the world, a certain sense of orientation, a *"general sense of position"* developed by various senses of position-components that can be defined in themselves. The working hypothesis assumes the general sense of position to be constant and universal within a given period as long as it does not undergo some structural alteration. In other words, it attempts a summary of the ideological characteristics of ages and not of the individual, although elements of his behaviour lending themselves to generalization are also considered. With due attention paid to these constraints and concessions it can be stated that the general sense of position is the result of the intereffect of three major ideological realms: the interconnection of the senses of position of topography, chronology—and in a sense independently of the former—that of the transitional (intermediate) component of the sense of position.

The *topographical sense of position* is formed by the reactions of man to the properties of his physical background from the closest conditions of his life to the universe. Upon this the topographical sense of position may be disintegrated into the components of the geographical and the natural senses of position. It is general knowledge that in the early periods of the development of humanity geographical background and its facts played a role more important in human ways of life than later, especially as regards economy. Subsistence binding man to a more or less narrow sphere of his background makes it natural that the typical characteristics of this sphere that make up the stage of his life should develop in him a way of orientation connected with a given place and that it

should become so absolute in his mentality that he imagines the parts of the earth unknown to him similar to his own environs. In lack of other experience, man goes on with his generalizations and extends the picture of his earthly home to give an explanation for the phenomena of the world, too, and completes by it his ideas about the world at large, about the cosmos. In this way the geographical sense of position is completed by a natural sense of position. This is sometimes a result of speculation but also in empirical experience— most frequently, a mixture of the two—consequently, it is more or less erroneous, yet authentic because it is an actual means of human orientation.

The order of world and things is determined, however, not by space alone, but also by time. The temporal component of the general sense of positions might be named by another "expression in space" *the chronological sense of position*, comprising the reaction of the human consciousness to everything that occurs around him in time. There are two kinds of such events, some of them happen independently of man—these are the natural "phenomena", others are caused by man himself, these are "happenings" following from human relations and connections. Reaction to natural phenomena is essentially included in the topographical sense of position, whereas the chronological sense of position rooting in human relations has new elements, since it can be further disintegrated into the components of social, historical and cultural senses of position. All these originate in the social sense of position the members of society show and feel in connection with their own and with the other classes of society. This attitude coming from the economic structure of the age calls forth the motifs of rule and subjugation, equilibrium and tension, etc. And although in early periods it finds only an instinctive manifestation, it still gives a characteristic rhythm to the progress of peoples. The totality of conceptions formed by peoples sharing the same historical lot about their own historical past, present and future may be considered as their historical sense of position. Within this, one of the most important elements are ideas related to the historical and political ambitions, to a people's message and even more to its vocation. The most demonstrative component of the chronological sense of position is the cultural sense of position as culture gives an infinite number of opportunities for "self-affirmation" as it is the embodiment of ideology itself. In the early stages, the most marked guiding components of the cultural sense of position are the religious and later the scientific conception of the world.

All the above are completed by two further—*intermediate*—components: the subjective sense of position of man himself developed by his physiological built-up and his psychological properties and the ethnical sense of position rooting in the ratial affinity of man. The receptiveness, interaxis and height of the eyes, the sense of equilibrium and of security, the consciousness of the abilities of the human soul form a co-ordinate system around man that helps him to find his

place in the world and by which he can understand and explain it. The form and stage of the psycho-physiological sense of position known today was developed in man presumably very long ago and it is still this specific, individual sense of orientation that filters everything that man thinks about his environs and the world. Human behaviour is determined also by the ethnic sense of position so often misjudged in its importance—often overestimated or not accepted at all—that in some respect similarly to the psycho-physiological sense, the sense of position of man remains constant during relatively longer spells of time, race being a natural principle, but also changing in history as races mingle in the course of time, their original properties becoming retrograde or modified or customs and ideologies originally characteristic of a given ethnic group may get alienated from their origin and become characteristic of other groups.

The general sense of position of man is a product of an intricate synthesis of the three components: the topographical, chronological and intermediate senses of position, and it is essentially identical with his ideology. The composition and structure of ideology is necessarily different in various areas and ages because the components themselves are different and also because the way and form of composition, the intensity of the components to assert themselves is always changing with place and time. There is no doubt about it that man's relation to the world is fundamentally determined by economic-social progress, by the social sense of position, this, however, gives only the final reason of determination and not its structure and further play: it is, namely, now one and then another factor that gets the upper hand, some components may fade out and it is possible that a single factor will mark out its whole appearance. In this study the idea of the relations of space and time stands for the changing space-time concept of man, in a way that within given limits ideology is an equivalent of the projection of a given sense of position in every field of human life. This finds also formal expression in the products of culture and is practically determinative for the attitude of literature and music, for the interpretation of sculpture and the methods of composition of architecture alike in accordance with the component specifying the features of ideology— in addition to the basic factor. Naturally, factors approach reality only in their entirety, since decomposition results in simplification and consequent distortion. This, however, is a property of every kind of research and is justified by the demands of interpretation.

This narrowing down of the concept of ideology and also its expansion at the same time, as well as its being brought in agreement with a kind of general way of behaviour has been done in order to make it suitable for the interpretation of architectural space,—and the structural characteristics of architectural space permit us to go further with the reasoning of our working hypothesis. Architecture offers an infinite number of possibilities for the realization of the

general sense of position of the period as there is hardly any other product of culture as complex as it is. Architecture is a specific mixture not only of technical and artistic, but also of utilitarian and artistic, primarily it is one of the conditions of the possibilities of life, secondarily—as a companion of other arts—it is a carrier of the ideal aims of the age and their means of expression. Thus it may not sound absurd to say that architecture is a continuation by artificial means of a natural world setting the background to human life for the sake of human existence—in the total sense of the word. This universalism of architecture means not less than that in architecture it is ideology that finds expression through man. Architecture creates space—something whose similar is found in nature; architecture is determined by the geographical, natural background both directly and indirectly, and if it wants to fulfil its mission, in must obey the orders of this milieu, however much advanced technics may help its independence. Architectural space is the "space of man", consequently it must satisfy both the primary functions of life and intellectual functions. In addition, architectural space is not only a static frame of life, it is determined also in time, and in this relation its perspectives are immense. A building is temporal as "a historical object" also because it is the product of a given historical period and also because surviving the age of its birth it may serve several generations; it is temporal as "applied science", because it represents a definite level of the period; and it is temporal as a "work of architecture" because it is able to express the same endeavours as the other contemporary branches of art; it is temporal as an ethnically defined building habit and finally, it is temporal according to the classification of the various genres of art as it can be psychologically experienced: because of its expansion in space, a work of architecture can be used, enjoyed and understood, it can be experienced only as spread out in time, with the intermediary of the space-perception of various parts of the building and of space.

As a result, this intricate interrelation of spatial and temporal components makes a building an expression of ideology not only as a piece of art but also in its entirety in which and by which an "architectonical sense of position" is realized, a reflection of ideology as a general sense of position. This architectonical sense of position may be called *the basic tendency of architectural space organization*: the positioning of the building in free space, its relation to the environs, the way of volume formation, the quality, form and interrelation of interior spaces, the system of façades, the selection of structures, the arrangement of details, etc. are all expressions of this tendency. The intention to investigate into this tendency thus starts from the total picture of the architectural period and not from individual types of buildings, space forms, structural characteristics, etc., selected as a result of hasty generalizations. This is why it gives the most general definition that can be given of architecture, in the basic tendency of architectural space organisation.

The basic tendency of architectural space organization is, accordingly, the embodiment of the general sense of position of the age in architectonic works, irrespective of their being profane or cultic, utilitarian or monumental, made of stone or reinforced concrete, being of beam construction or vaulted, simple or complex, closed or open, longitudinal or concentric, etc. The basic tendency of space organization becomes manifest in *buildings of different function, construction and form*, within a given period, from the occupation of a space by the simplest of architectural means to the most intricate composition. This means that we must survey the results of human building activity in their integrity, and a classification of architecture according to its having a utilitarian or a monumental (artistic) form of expression cannot be supported in a reassuring way, as it is sure that ideology is reflected in one form as well as in the other. At this level of generalization a separation of purport and form has no sense either: a work of architecture is a unity in which architectural forms carrying various elements of expression are synthetized. If we insist on familiar terminology, it may be said that *purport is the general sense of position of the period —its ideology—while form is the realization of the general sense of position in the basic tendency of architectural space organization.*

Based on the foregoing, the object of the present paper is to define and interpret the early forms of manifestation of architectural space formation, because it is just in our days that the theory of architecture has begun to turn a searching eye on the initial periods of architecture (cf. the two latest books of S. Giedion) hoping to find there data useful for the comprehension of the history of architecture as a whole. In spite of the historical distance the interpretation of space forming in these periods seems more promising than in more complicated stages of development, as there are phenomena which asserting themselves later less clearly, facilitate orientation. The most important among them is the *imitative* and *symbolical* character of architecture, the relative *purity of the meaning of forms* and a so-called *lack of differentiation between form and function.*

In the early days architecture developed under a strong influence of the forms of nature and concepts on the world and having no vocabulary of its own includes in its forms of expression the models of organic and inorganic world with a marked tendency to imitation. This is so, because in the course of a gradually clearing up dim understanding of the phenomena of the world, its way of thinking is concrete by adapting familiar phenomena and properties to the thing in being: it works with metaphores and symbols. The imitative and symbolical character of architecture becomes the most clearly expressed in Antiquity among all ages, which indicates the direct connection between architectural form and purport as function often appears in a pictorial form. The relative clearness of architectural forms and their intactness means that the forms developed in various areas and periods were interrelated as back as

at an early phase of development, adaptations underwent but small distortions at the time, unlike in later periods when the forms of architecture were repeated cooled down, and, having lost their message partly or entirely, in a formalistic way. Finally, it is also characteristic of the early times that man does not yet construe "functionally" as it is understood today, because often tasks entirely different in subject appear in the same form, or to put it in other words, man imitated and employed metaphores also within the world of architecture by making use of a standard range of forms and repeating them. In this relative uniformity it is easier to recognize the general way of space organization than in the works of later periods in which functional limitation found some way of expression and the architectural picture of the age became multicoloured. This, of course, does not mean that the basic tendency of space organization is given by this agreements in form, they just warn us that behind the repeated appearence of identical schemes there is more than unexperienced construction.

The following historical discussion supposed to support the validity of the above principles deals with works of architecture in a thematic order—in spite of the independence of the basic tendency of space organization from function —in order to make the assertion of this tendency in an identical manner even more marked in various fields of construction. Thus the discussion of space conception realized in the architecture of the four great spheres of ancient culture—the Near East, Egypt, Hellas and Rome—begins with the analysis of settlements, to be continued with that of the types of buildings character-istic of the period, turning then to constructions and details. The picture formed by analogies taken from the field of descriptive arts is completed by outlining the ideology and by a comparison of space formation and ideology.

1. Babylon. 7th century B.C.

I do set my bow in the cloud, and it shall be a token of a covenant between me and the earth.

Genesis (9:13)

The Mesopotamian Circle

W₂ begin our discussion with the architecture of the cradle of human culture, of the region between the rivers Tigris and Euphrates: Mesopotamia, and the territories belonging to it, i.e. of the Near East. This way of starting departs from the usual chronological arrangement of studies dealing with the history of Antiquity, since the description of the way through which man has become a historical entity, is generally started with Egypt also today.

The latest investigations, however, have given priority to the Near East. Many a phenomenon of the end of the prehistoric period has turned into history in a continuous way. Thus the development of the consciousness of humanity can be traced back to deeper layers. It was here that monumental buildings had been first erected, buildings with an emphasis on the volume showing a specific system of space organisation, becoming general in later periods. In quite early stages also buildings stressing substantiality appeared. And as "open" the way of Mesopotamian culture is backwards, it is as open forwards: its effect had long survived its end in the common sense of the word. Even today, it would be difficult to mark out how far it has remained alive and working. This culture bears a strange stamp of completeness and timelessness, and all that man created in the valleys of the Tigris and Euphrates seems to be essential and fundamental for the historical progress of his further existence all over the world.

SETTLEMENTS. From among the relatively large number of city plans and building drawings preserved in the Near East, the Babylon World Map from the late Babylonian period is of particular importance. The stone-carved map, with cuneiform inscription does not show the usual exactness of city and building plans but is a strange mixture of reality and symbolism, in a sketchy form. The map shows the earth as a circular configuration, encircled by a rolling Ocean, the "navel" of Earth, Babylon, surrounded by cities and states marked by schematical ellipses. The whole Earth is framed in a seven-pointed star, the symbol of the Cosmos. The map tells much more about life in Mesopotamia than the "centre-of-the-world" concepts of other peoples of other countries as, also in this late period, in about the 6th century B.C. it represents a local tradition of many thousand years as alive and thriving: the idea of the homogeneity, unity, completeness and invariability of the world.

The circle in the map symbolizes the Earth and not some work of man. But it is not by a mere chance that cities and states are also marked by ellipses.

An identification of *urbs* and *orbis* can rightly be assumed, when from the earliest to the late periods, settlements and whole cities were surrounded by arched or even circular walls. The best known of them are the layouts of the temple districts of Al Ubaid and Khafaje, of the city of Zinçirli and of the Assyrian encampments. Yet the general layout and built-up of cities surrounded by cornered bastions did not lose the "concentric" character of those protected by circular walls, as in most cases the settlement centres were occupied by *temene*, the later Greek *temenos*, the focal point to which the stree¹s converged. The centralized planning of the city was reflected also in the peripheries. Contact with the outer world was facilitated by town gates facing all directions of the compass (Ur, Borsippa, Babylon, etc.). "Many-gatedness" was typical of the cities of the Near East.

The centre reserved for the rulers (administration) of the city could happen to be sited eccentrically: near the city walls, or even separated f·om the body of the city (Assur, Niniveh, Dur Sharrukin). Besides strategical considerations, this scheme was sometimes preferred because the population was neither ethnically nor socially homogeneous, and the ruling class built itself a district of segregation. The character of the city structure, however, underwent thereby only a modification without changing in its essentials. It did not become an axial or any other system but preserved its concentrical character.

The concentric, hence vertical structure of the settlements was a result of outlines and also of the orientation of streets and buildings. Buildings were oriented by the quarters of the heavens and, by the most "abstract" of natural phenomena, the direction of the prevailing wind. Palaces, streets and temples were of different orientation. The ruler's centre was located by the corners of the compass, the street system, the skeleton of the city together with the temenos, was built after the direction of the wind. Thus astrology, ripened almost into a science by the 7th century B.C. oriented the palace of king Nebuchadnezzar II to the astronomically exact North. The city itself, including the temple district, the Esagila, was built in the direction of the winds.

BUILDINGS. Central buildings over a circular ground plan were known in Mesopotamia from the early prehistorical ages, yet they did not vanish with the arrival of historical times, like elsewhere. Circular construction remained the form characteristic of architecture in the Near East, in spite of the fact that for the purposes of monumental constructions, as individual forms of building, it had almost never been applied. In the prehistorical settlement of Arpachiyah it was used for houses, while the later examples are mostly of agricultural character (Fara, granaries).

Also buildings of ground plans other than circular were concentrically arranged. The most important of this type is the temple tower, the *ziggurat*, because in its final shape, both as a purport and as a form, it incorporated the crystallized essence of the architecture of the Near East.

Several researchers connected the temple towers to the mountain gods that survived in the mind of Sumerians, who had come in times immemorial from the northern mountains. It is, however, a fact that the terrace temples can be considered as foregoers of the ziggurats (Uruk: the temple of Anu, Al Ubaid: the temple of Ninhursag) stood only on a single terrace. Thus, in the beginning, the ziggurat reminded more of an island than of a mountain. It could be a replica of the islands that populated the marshy regions of South Mesopotamia, under a constant fright from inundation and preserving the possibility of life on earth. It was only later that the temple grew to a tower, step by step, to be transformed into a heavenly replica of earthly houses: the dwelling place of gods, the symbol of Cosmos that received them. The name of one of the temple towers has an explicitly cosmic meaning: E-TEMEN-AN-KI, "the house of the foundations of Heaven and Earth". The walls of the stages of the ziggurat were painted in a different colour on each floor. Each colour stood for another celestial body in accordance with Near Eastern colour symbolics. This was, therefore, the place where man could meet and contact god, in an environment other than "human": the temple ramps ascended to, or descended, spiralled down from Heaven.

The location of the ziggurat in space and its relation to the surroundings emphasised the centrality of its volume. Similarly to the Babylon world map, where the earth was placed at the navel of the seas, the temple towers "swimming" in the area of the temenes, could be walked around. The island-like conception of temple towers gained special importance when they were surrounded by an arched wall of temenes, or were of a circular shape, sometimes slightly arched, themselves.

In addition to the architecture of the Near East, constructions like Mesopotamian temple towers, incorporating large volumes, were characteristic also for that of other people on the same cultural and social level, all of them having in common some astral allusions in their configuration. In the Near East, however, the ideas defining the development of the ziggurat were applied also for buildings including inner spaces: the relationship between the inner spaces of a building was the negative (space-like) counterpart of the positive (volume-like) centralism of the ziggurat. *This negative counterpart was the house with a central court, the patio, built as the first monumental object in the history of world architecture at Tepe Gawra, about four thousand years B.C., that is to say much before the appearance of the expression of the same architectural idea by the volumes of the ziggurat.* The two forms are found side-by-side in Assyrian times, at Kar Tukulti Ninurta, in the temple of Assur: the two, necessarily vertical, axes of the temple composed of a ziggurat and a patio, meet in the infinite height.

The birth of the patio-house was decisive for the architecture of the Near East. Architectural space organization became fundamentally concentric. By

this, one of the basic forms of architectonical composition was born to be kept up till the end of development. The ground plans of temples followed the principle of concentricity almost without exception. This was characteristic for the longhouse middle space temples of the anonymous dynasties, the „passageway" temples (Uruk: White and Red Temples) as well as for those with square courtyards, becoming general from the period of the 3rd Ur dynasty on (Eshnunna: the Gimilsin temple and palace), the Assyrian and New-Babylonian temples (Assur: temple of Assur; Babylon: temple of Marduk), and even the longhouse Kassite temples, and those of the late Assyrian period (Dur Sharrukin) related to the former, were built along the same principle. This does not close the line since, — in accordance with the absence of differentiation between configuration and purpose — also the relics of dwelling houses, palaces and sepulchral monuments are characterized by a concentrical layout.

Concentricity meant completeness, and the impossibility of further development gave rise to peculiar compositions when higher requirements had to be satisfied, in the first line, for *palaces*. In such cases the fundamental scheme was multiplied. In the Eshnunna Gimilsin temple and palace, for instance, the units with courtyards were juxtaposed in series. In other parts, groups were formed of them. This grouped layout was more typical for Mesopotamia: this way were constructed the house blocks of cities (Ur: the district of the Isin-Larsa period, Babylon), as well as monumental palace groups (Dur Sharrukin).

The concentrical space arrangement in the Near East is testified in a suggestive way by the architecture of the people of adjacent regions. These peoples, in the first line the Hittites, the Hurrians, the Persians and the Parthians— brought about a specific architecture other than that of the inner regions. The Hittites erected buildings somewhat similar to *megarons* and *propylaeums* known from the Mediterranean. The Hurrians built *bît hilanis*, the Persians *Apadanas*, and the Parthians *Iwans* first arranged at random. When, however, these building forms met with autochtonous architectural culture, they gradually melted into the patio composition; in Boghazkeuy, for instance, the process went so far that the original structures hardly emerged from the layout with courtyards of the „temples". In the Zinçirli Upper Palace bît hilanis can still be identified, but they are grouped around the courtyard, similarly to those of the Iwans in Assur, in the palace of the Parthians. The dimensional equilibrium typical for this territory changed the form of the apadana itself, since the early Pasargadae apadanas that still followed the crosshouse character of the bît hilanis soon were followed by those of Persepolis, of quadratic ground plan. In addition, courtyard-space appeared also in Persepolis, in the treasury of the palace, where two courtyards helped to loosen the strict layout and where bît hilani gate motives decorated the courtyard facades and did not appear from the outside, as in the volumes of apadanas: here the apadana was, so to speak, turned inside out.

Concentrical space organisation caused the buildings of the Near East to be multiple space systems that set up a hierarchical order for the components. The central element, the courtyard-space organised the subordinate space parts. In addition, a certain functionality prevailed in the distribution of the premises. The setting out of rooms of higher importance within the system, their siting in the centre, the variation of the sizes of rooms, and in case of larger compositions, that of concentrical units etc. could comply with the demands of a more differentiated life than it would seem from the somewhat monotonous ground plans.

CONSTRUCTIONS. DETAILS. Demand defined the space organisation of architecture in the Near East as concentrical: closed in their system and yet radiating in every direction, vertically in the first line. Similar tendencies characterised also the means by which concentrical compositions were brought about: the building constructions.

Solid masonry was typical for superstructures. Strength conditions of their material: bricks dried in the sun or baked, required rather heavy masonry. As compared to the enclosure, a considerable part of the built-in area was occupied by walls. The monotony of block-like masonry was relieved by buttresses and recesses. This method, that can be traced from the prehistorical settlement of Persepolis to the Parthians, is most typical of the architecture of the Near East.

The use of masonry broken up by buttresses and recesses could come from the building material brick, or could have been suggested by the simple structural experience that the resistance of curvilinear masonry is much better than that of a straight wall. Masonry and strength requirements were completed, however, by formal tradition, as the surface of brick masonry imitated the sheafs of reeds or of sedge, or trunks of palmtrees, of which pristine dwellings were constructed. The indented wall faces brought the building in some sort of connection with its surroundings: anything positive in the wall face was negative in space, and conversely, all that was positive in space, appeared as negative on the outer face of the building, corresponding to the alternating lines of serrating. The walls were often adorned with astral symbols, rosettes, circles and even with sphenographic symbols of the Sun. The role of the wall as an intermediary and a connection to the surroundings, primarily to the Cosmos, was accentuated by factual means. The animated play of light and shadow on the wall surface enhanced the impression. A point of major importance is that vertical lines were dominating the surfaces, to such extent that the architecture of the Near East suggested a direct comparison to Gothic art. The impression of reaching to the skies was only enhanced by the battlements crowning the walls: they made the building "soar high" and created the same interconnection between building and the regions of space above it, as buttresses and recesses did sidewise. The specific change of sign between volume-like and space-like

was as characteristic for the building as a whole as for its details. The counterpart of the volume of the ziggurat was a concentrical system of spaces: the battlement was in harmony with the horizontal section of the walls.

This verticalism of the buildings is confirmed by the building material itself. by the special "plano-convex" bricks of the Near East, unknown in any other part of the world. The bricks of a coil section bulging out on one side were used in herring-bone masonry and are supposed to have been laid in the way as sacrifical bread was baked. They preserved some astral-cosmic semantic message in their special, atectonic shape. It is known that height, length and width of buildings in Mesopotamia were always expressed in terms of bricks. This particular significance of bricks rooted in religion: brick was invented and first made by the gods.

Another group of vertical supporting constructions, that of solitary supports such as columns and pillars, did not play an essential part in Mesopotamian architecture. Some fragments and representations preserved show columns of abstract configurations, of ornamental character, that seem to contradict by their graphical aspect the architecture of the Near East generally characterised by plasticity. The Ionian Greek capital volute came from Mesopotamian art and preserved its plane-like character even in the par excellence spatial world of Greek art. Small wonder that it remained such at its birthplace. As a result of Mesopotamian ideas connected to the spiral line, the volute was formed and lived long also when it was used as a decoration of chapters, where its effect was ornamental rather than architectonic, in spite of the fact that later it was used structurally, as an impost-block. If, on the other hand, the volute is supposed to have imitated a plant form, the palmtree, we find that this imitation was in accordance with the way of thinking in the Near East, approaching definite phenomena and forms from the aspect that lent itself to abstraction and reproducing them in this manner.

On the frontispiece of the Uruk temple of Karaindash of Kassite half-cylinders of times immemorial. imitating sheaves of plants, changed into columnlike representations of human beings that niched between wal pilasters getting an almost tectonic interpretation. When the Hurrian architectural culture came under the influence of the autochtone architectural art of Mesopotamia, the tectonic idea ripened into a new architectural form, into a personified sort of support, the *atlas*. The atlases in the portico of Tell Halaf, the bit hilani pillar and statue melted into a single unit, expressing the plastic turn of the art of Near East, that brought about the Iranian capitals with heads of man and of bull, organically statue-like formations, even when doubled and placed symmetrically back to back.

The method of covering spaces furnishes most valuable information for the understanding of the architecture of Near East. Long, relatively narrow rooms were, as a rule, covered by plane ceilings with wooden beams, but there are also

vaults in Mesopotamia. From the second millenium B.C., barrel roofs and, according to representations, also dome roofs had become characteristic roofing structures. The building material brick proved most suitable for the building of true vaults, yet it contributed to the spreading of vaults not as a reason and demand, but as a simple means. Symbolism permeating the design and construction of ground plans had an influence also on arched roofings, as an arched roof over the space had the same meaning as one turned in the ground plane: the vault imitated the firmament, Cosmos. This interpretation of the vault is supported by the Mesopotamian concept of the sky: they imagined it as a calotte turned downwards; the Earth as a round bowl with its hollow upwards; the upper closing lines of the *stelae*, *kudurrus* etc. crowned with the symbols of the moon, sun and stars were almost invariably arched and finally, the word *marhasa*, occurring in the Akkad variant of the name of Nippur (bonds between heaven and earth) meant the keystone of a vault.

Architectural details and ornaments, as a rule, did not follow the plasticity represented by the system of buttresses and recesses. Mosaics made by the ancestral Uruk technique, i. e. by inserting coloured terracotta cones into the walls surfaced them like many-coloured oriental carpets. The same plane-like effect was obtained later by glazed pottery and glazed bricks. Such surfacings were always applied to lively wall faces. The placing of definitely high reliefs on the buildings created a tectonic relationship between fine arts and architecture, because of the orthostatic arrangement that became general from the Hurrian period on. Finally, paintings in the interior made the appearance of space homogeneous, as in the eyes of the artist of the Near East walls were not independent planes, but something to be contracted into an unbroken surface. In one of the halls of the Khorsabad palace a figural frieze running uninterrupted all around the walls created spatial unity.

Summing up it may be stated that vertical breaking up of walls, battlement pointing out to the infinite, cultic notions of bricks, imitative tendency absorbed in vault form, synthesis of atlas, tectonical application of the works of art and their subordination to the unity of space were manifestations of concentrical space conception materialised in architectural space organisation, at a time when structural limitations made simple oblong space the typical individual space form. The same space conception was reflected also in the works of art, not always unequivocal in the setting of figures, but always uniform in the plastic modelling of the represented.

FINE ARTS AND ORNAMENTS. With respect to one of the extreme forms of sculpture, the atlas, it may seem peculiar that column and sculpture were first synthetized by an art which hardly used columns. The contradiction is resolved as soon as we start examining the rest of sculpture: statues from Mesopotamia were column-like in themselves, without any architectonic use. Column-like appearance was, in the first line, the characteristic of statues representing

standing human forms, particularly, because the lower part of the body was covered by garments arranged cylindrically. Also ornamental hairdresses and even the socles of statues were cylindrical. This made the statues definitely spatial in spite of their frontal set-up. Thus Mesopotamian statues bear the characteristics of the same space conception that formed the frontispieces of buildings. Concentrical space conception asserted itself inside the building and on its front separately, without any real connection between the two. The circular conception of statues was further enhanced by inscriptions being carved into the figure itself: horizontal lines of spenography intersecting the forms of the body were running all around it (statue of Salmanassar III).

Moulding of forms and methods of compositions of the bas-reliefs of Near East find a most illustrative representation in the Naramsin stela from the Akkadian period. The artist formed the figures of the stela with a plastic intensity worthy of a Greek sculptor. Yet both the principal figure and the secondary figures were made in the straight-view method, and the composition itself preserved the reminiscences of archaic breaking up into strips and the setting out of the principal figure by its size. Vertical composition made the group appear as if ascending the mountain had been represented as viewed from the position of the main figure, looking back. This elevated the figure of Naramsin into the heights and allowed the soldiers attending him to dwindle down into the depths. A description in the Etana-epos suggests the same interpretation as the composition of the bas-relief: in his flight, Etana saw the earth gradually disappear in the distance, and the images of the objects dwindled down as he took to heights. It cannot be assumed that the artist of Mesopotamia knew the rules of perspective and made use of them, but he did know how to render the archaic way of setting up by creating some "space stratification".

The reliefs and pictures from Mesopotamia include many symmetrical compositions that, as a consequence of symmetry, were somewhat plane in effect. The plane was, however, resolved and made spatial by various motifs, like tripartite, concentrical arrangement (e.g. inlaid harp with the image of Gilgamesh, the vase of Entemena), the figures looking out of the picture, which gives a suggestive, tensioned connection in space between represented object and onlooker (Imdugud relief). Details arisen spontaneously in the course of working also expressed an interconnection between artistical creation and living world: serrations similar to battlements resolved the edges of the reliefs (Stela of Sun God Sippar), and many a relief was made without frame, in others the figures reached beyond the limits marked out by the frames.

The idea of spatiality is reflected in the fine arts by the small number of purely graphical works. Early and late periods were characterized by a drawing-like way of representation, but the true Mesopotamian manner was plastic. The "genre" of drawing in the Near East can be studied, in the first line, on architectural representations of cities and buildings. The building designs were

made to scale, by a method of "technical drawing" implying a kind of abstraction: the objects were drawn, generally, from top view, or by the ground-plan section; it may be assumed that the early pictographic symbol of the house represented also a ground plan—that of a patio-house! (Ground plan on the knees of the Gudea statue, map of Nippur, etc.)

Similarly to building designs, ornamentism was characterized by a certain degree of abstraction. Namely, the development of ornamental elements was inspired by celestial bodies swarming the Cosmos, themselves of abstract formation, the circle or the star, or speculatively created shapes like rosettes or spirals, and not by organic forms of nature, from the vegetable and animal kingdom. The rosette with its concentricity, with its petals embracing the central circle, could serve as an emblem for everything that has been said about the space organising tendency of the architecture of the Near East, modelled rather after something cosmic-astral than after a flower. From the very beginning on, the spiral was an expression of unity, the completion of the Cosmos, the interdependence of Earth and Heaven, the same as its architectural expression, the ziggurat or perhaps even the strange section of the plane-convex brick itself.

Column-like statues, the definitely plastic representation in the relief resolving the plane effect of the archaic idiom, the vertical variant of symmetry, the unconfined edges of images, and finally, abstract view and reproduction—are characteristics that can be traced back to a single subject: the predominance of a concentric space conception.

IDEAS. What has been said about the architecture and art of the Near East may seem *a priori* generalisations as they make the almost four thousand years of history of this ancient territory appear stationary from the first to the last, in spite of the fact that its population was a conglomeration of a great variety of ethnic groups of different cultural levels. It goes without saying that the history of the Near East underwent changes as implied by an intricate interconnection of inner potentialities and outside influences. Still, it seems justified to take advantage of a kind of global aspect. It was not slavery alone that made progress necessarily uniform, but the specifically conservative character of the Sumerian-Akkadian-Babylonian culture itself with its power to acclimatize, to shape the way of thinking and feeling of peoples successively entering the Mesopotamian theatre at a later date to follow its own example. On the other hand, ancient Mesopotamia raised and answered many vital questions of human existence in a way that they have become treasured values of human culture as a whole.

It was its geographical situation by which the Near East occupied a central position in the shaping world of man. Closed in by mountains in the North and the West, bordered by the desert in the South, it had the character of an open territory all the same, as its shores were washed by two seas that opened wide

gates to two different worlds: to the East and to the West. It is not mere chance
that the geographical situation had its effect on not only the primary pattern
of life of the inhabitants, but was reflected also in their consciousness, stimulating
them to multi-dimensional thinking. The openness of the territory is, however,
coupled to some kind of completion, that may be explained by the fact that
the territory embraced by two rivers was historically the most significant so
that the Greek name *Mesopotamia* was more than a simple geographical
description, as it referred to all the concepts that originated in the insular cha-
racter of the country and were preserved in its Arab name later.

Man in Mesopotamia considered its immediate surroundings as an enemy:
malevolent nature never was his friend. He had every reason to his attitude as
he could gather bitter experiences about storm and flood dispersing his herds,
breaking up his fields and devastating his cities. The catastrophe of the Flood
was alive in everybody's mind. Pessimism and resignation, so characteristic of
the scope of emotions of the inhabitants of the Near East go back to their
sense of position in Nature; small wonder that the Mesopotamian, turning his
back to an unstable world, found the basis on which to build his own world in a
Heaven he supposed to be unchanging. This launched him up to the world of
stars, to the generality of the Cosmos, and made him overlook the natural world
of the Earth: he did not need any intermediary between man and Heaven. Reli-
gious writings have preserved the belief in the similarity between terrestrial and
upper spheres, like in the epic from the New-Babylonian era, written in Sumer-
Akkadian and beginning with the words: "Enuma elis. ." what exists up there
is the same down here. According to the epic, Babylon and its temple district
Esagila are replicas of heavenly Babylon; even the design of the buildings was
marked out in the firmament. And also the other way round: celestial bodies
—first of all the most important one in the planetary of the Near East, the
moon— were divided like the countries of the Near East with the same names.
Thus the world had two poles: one "continent" was the vertical projection of
the other. Orientation towards the skies was enhanced by the personification
of the winds, by wind-gods elusive in their unsubstantiality, bringing good or
evil: Ea, Ninurta, Istar, Marduk. The wind gods only emphasized the abstrac-
tion of ideas about nature.

Such an interpretation of the universe could, naturally, take shape only in
a human community at a higher social and cultural level. The outlines of the
economic structure of the Near East were determined by shepherding, that
had brought about the great changes in social structure by creating a readi-
ness to find a generalizing explanation for various phenomena. The other
economic basis of slavery in its patriarchal appearance so typical of the East
was irrigation farming. The most important factor in Mesopotamian economy
was, however, trade whose routes formed a network all over the area. The in-
fluence of trade was manifold: home trade started urbanisation, intermediate

trade lent various patterns of life a uniform character and led to cosmopolitanism and deepened rational thinking in general.

The history of the Near East is made up of that of individual city-states. The units of urban character—populating like planets the firmament of history in the Near East, were small self-sufficient worlds. It was now one, then the other that took the leading part, but this hegemony had little impact on the basic traditions of the rest: it is known that the history of cities which seized power at comparatively late dates also goes back to times immemorial. The possibility of centralised power was given in spite of disunity. its realisation did not cause any essential changes—it was rather an arrangement of the order of magnitude. The expansive forces radiating into the world from the times of the Akkadians on, developed in the Assyrian era into consciously organised militarism: the victorious hero, the ideal of the Near East reached its "regular" form. A characteristic expression of expansive endeavours was the development and extension of the network of roads in the Assyrian times, setting a model to the Persians and later even to Rome. Finally, Babylon—the last among the city-states— opened its gates to the Persians, to be raised to the Eastern world's capital by Alexander the Great. In the knowledge of his political conceptions, it may be presumed that, being familiar with the values of universal importance of Babylon and the entire country, he might have made it the centre of the world.

The accomplishments of the culture of the Near East were given a lasting value by a common fact: by the rational core hidden in all products of culture. In the Near East the earliest forms of religious thinking originated in animism, in the animation of things and phenomena, and this primitively abstract religion had a greater importance here than elsewhere, as it ripened into monotheism—even if only of local character—that was the starting point of the Jahve worship, the most abstract religion in Antiquity.

Abstraction was the soil of the concept that events return in a predestined way in nature, human life and history alike. The idea of "eternal revolution" gave birth to the most characteristic achievements of Mesopotamian culture: the intricate system of prophecies based on observations made in the sky, in the animal kingdom and on the liver considered as the centre of the human body; to the codification of usage based on the idea that motives of action must always be the same; and to a sensitivity for the historical that always kept a watching eye on the events of the past. The historical picture is a gift presented by the Sumerians to universal culture, the annals are the products of the historiography of the Assyrians and it was the same mentality that urged to the collection of the ancient accomplishments of literature and science in the form of some "archeology" of the Antiquity (Nabu Naid's Museum, Babylon).

The ideas about death were the most characteristic reflections of the "enlightened" way of thinking in the Near East. The epic Gilgamesh, one of the masterpieces of Mesopotamian literature is characterised by dark scepticism, advo-

cating submission to the thought of evalescence and the vanity to oppose
fate.

The writing of the Near East undervent a process of abstraction. It got rid
of its "picturesque garment" pretty soon and exchanged pictography at a com-
paratively early stage, in the predynastic era, for abstract sphenography. The
sealing cylinder, a primitive "stereo" of symbols was a typical product of the
Near East not only by its cylindrical shape but also because mould and print:
the unity of positive and negative form was one of the cornerstones of thinking
in the Near East. Their entire vision of the world was based on similar parallel-
isms and dualisms.

The abstract character of the way of thinking of man in the Near East raised
empirical knowledge to an almost scientific level, in particular regarding the sky
and its phenomena. The sun's orbit, the ecliptic, immobile stars, the stars of
the Zodiac told the Mesopotamian "astronomist" how to find his way in the
sky. He duly made his knowledge a common property of ancient culture. Also
an instrument was prepared by which to study the sky, the *polos*, a hemisphere
with a rod, completed later by a sphere made up of hoops. The division of the
circle into 360 grades and the names of the days of the week came from the
belief in interconnections between life in heaven and life on earth. The man of
the Near East was not far from recognising the effect of sun spots either.

All this knowledge found a verbal formulation and was systematized rather
late but its roots go back to faraway millennia. It was, however, accepted by
peoples who entered the stage of history of the Near East much later as their
own. It might be possible to link up various specialities with one ethnic group
or another but the effects got interwoven to such extent that it is impossible to
speak about any "national character" of this culture, the less so as the funda-
ments themselves were a synthesis of Sumerian-Akkadian-Babylonian origin.

The world concept of the man of the Near East was formed—returning to
the introductory terminology—by the following factors: the geographically
central position of Mesopotamia and the general picture of the region developed
a sense of position of expansive, yet limited character. A linking up of celestial
and terrestrial phenomena determined a sense of position in nature which inter-
preted the Cosmos as dualistic and thought to discover a periodicity in every
phenomenon, some kind of "static rhythm". A readiness to find an abstract
explanation for things was born from the social sense of position, and the same
component is responsible for the recognition of the social structure and the
order of historical events as necessary and imperative. Well-organized central
political power was the typical form of government in the Near East, accompa-
nied by a historical sense of position coming from expansivity. The cultural
sense of position was fed by an incessant thirst for the rational, that of the
ethnic sense of position by a mingling of national characteristics and some sort
of cosmopolitanism that forged a uniform picture of the world. As to the sense

of psycho-physical position, it may be accepted as a possibility that—in spite of a keen sense for the vertical—orientation to all directions was a survival of an archaic, undifferentiated aspect.

SPACE AND IDEAS. The development of concentric space composition on a regional scale was ripened by the geographical sense of position. The wide-stretching dimensions given in Mesopotamia's road system, with its extended dimensions, initiated the many-gatedness of the peripheries of the settlements, of city-walls. This given condition was interwoven by manifestations of the natural sense of position governing the way of thinking: the orientation of settlements and buildings to the quarters of the world and to the direction of the winds, terrace and tower constructions, free building-in, the concentric arrangement of interior spaces, the verticalism of walls and their interrelations with surrounding space, battlements reaching for the sky, column-like statues and the plasticity of reliefs.

An intensive readiness to abstraction originating in the social sense of position created a world of forms populated by cosmic, generalised geometrical elements like the circle, the spiral and the polos, instead of making use of natural objects. At the core of concentric space conception there was an abstraction again in the form of cities with concentric ground plans, in the spiral of the temple tower and in ornamentation. Naturally, the social sense of position came to expression in subjects less abstract than this as well, it shows directly in the scope of architecture, and in the endeavours for separation that marked out living quarters for the ruling class in the peripheries of the city, and in the tension between huge buildings and the rather primitive tools of construction.

A quantitative property of space composition in the Near East was a multiplication of spaces, in which the historical sense of position found an architectural expression. Namely, all peoples whose society is governed by economic, military or bureaucratic administration, have also a well-organised architecture: the differentiated building layouts in the Near East were inspired by the same spirit of bureaucracy. The emphasis given to the centre of the space-group system by order of magnitude was in harmony with the hierarchical structure of the political system, while the radiating system of spaces told about the idea of expansivity.

The rationalism of the cultural sense of position was reflected by functionalism in architecture. Even if possibilities offered by a concentric space system were limited, conscious trends to space organisation appeared in their purposeful linking-up, magnitude varieties and in the emphasis on buildings of functional importance.

Finally, the formal immobility and uniformity of architecture in the Near East is a product of traditionalism and of a hybrid or absent sense of ethnical position. Architecture bore the traits of uniformity wrought by traditionalism and cosmopolitism through the maze of millennia.

As a common resultant of all these factors it can be rightly said that the basic tendency of space organisation in the ancient Near East is a concentric space composition of vertical orientation with a certain kind of abstraction, that remained the essential point in the structure of architecture from the first to the last. The divergence of the individual, typical space form—the longhouse space—and of the manner of space coupling—concentricity—may be explained by the stage of development of contemporary building structures, a divergence that passed away with Antiquity. It cannot be considered accidental that it was this sphere of culture that ripened later the central system proper, with a dome roof, as both principles and means of such a composition were *ab ovo* given in Mesopotamia.
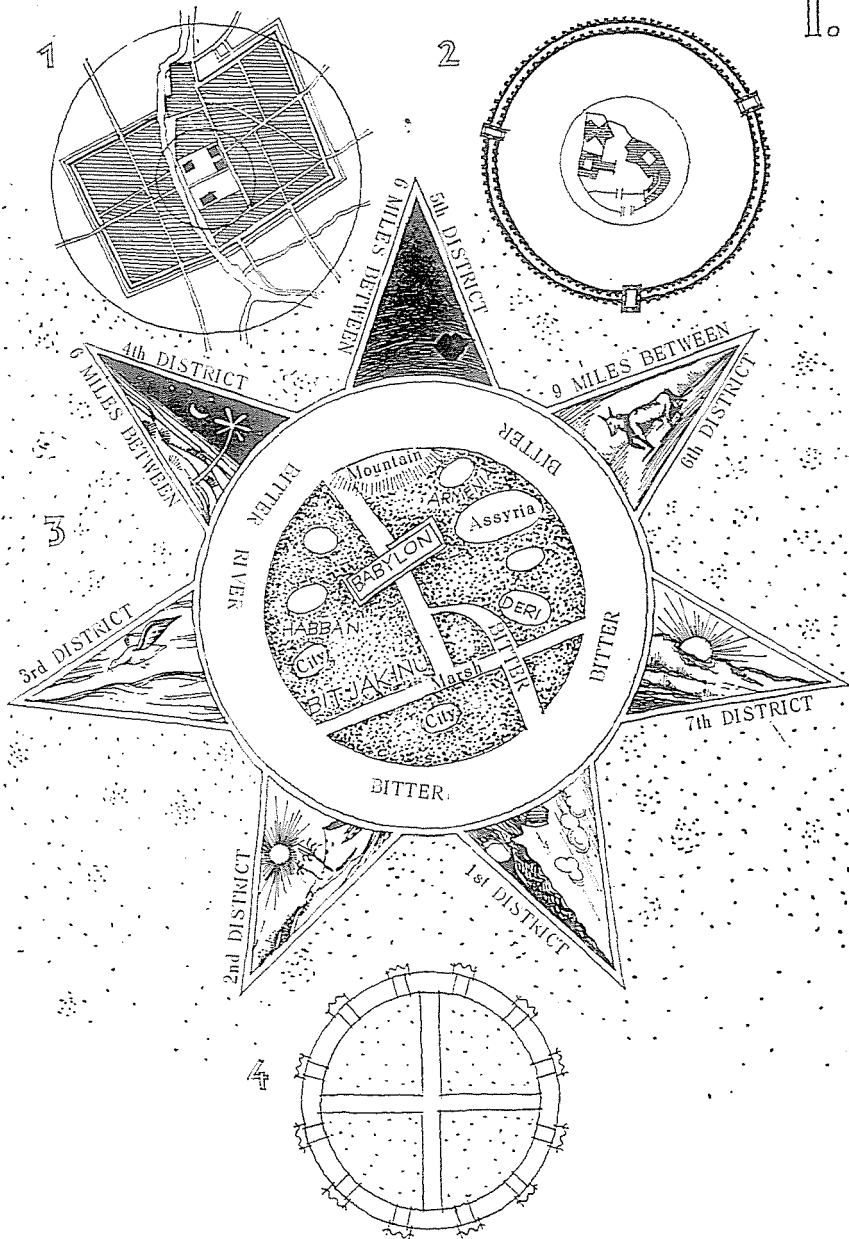
Plate I. Near East. Settlements.
1. Babylon, 7th century B.C.; *2.* Zinçirli, 9th century B.C.; *3.* Babylonian Map of the
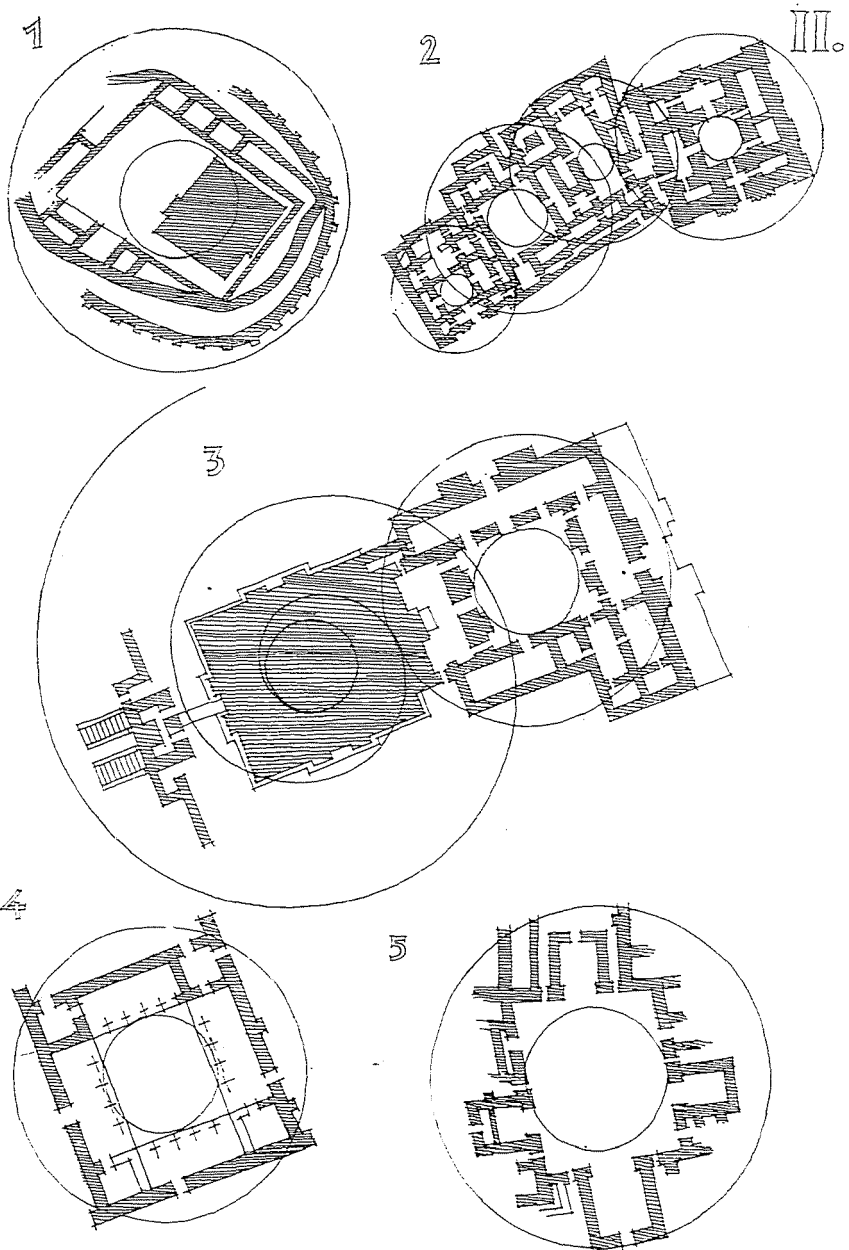World, 6th century B.C.; *4.* Assyrian Military Camp.

Plate II. Near East. Buildings.
1. Khafaje. Terrace-temple, I. Dyn. of Ur; *2.* Eshnunna. Palace-temple, III. Dyn. of Ur;
3. Kar Tukulti Ninurta. Temple of Assur, 13th century B.C.; *4.* Persepolis. Courtyard of
the Treasury, 5th century B.C.; *5.* Courtyard with Iwans of Parthian Palace of Assur,
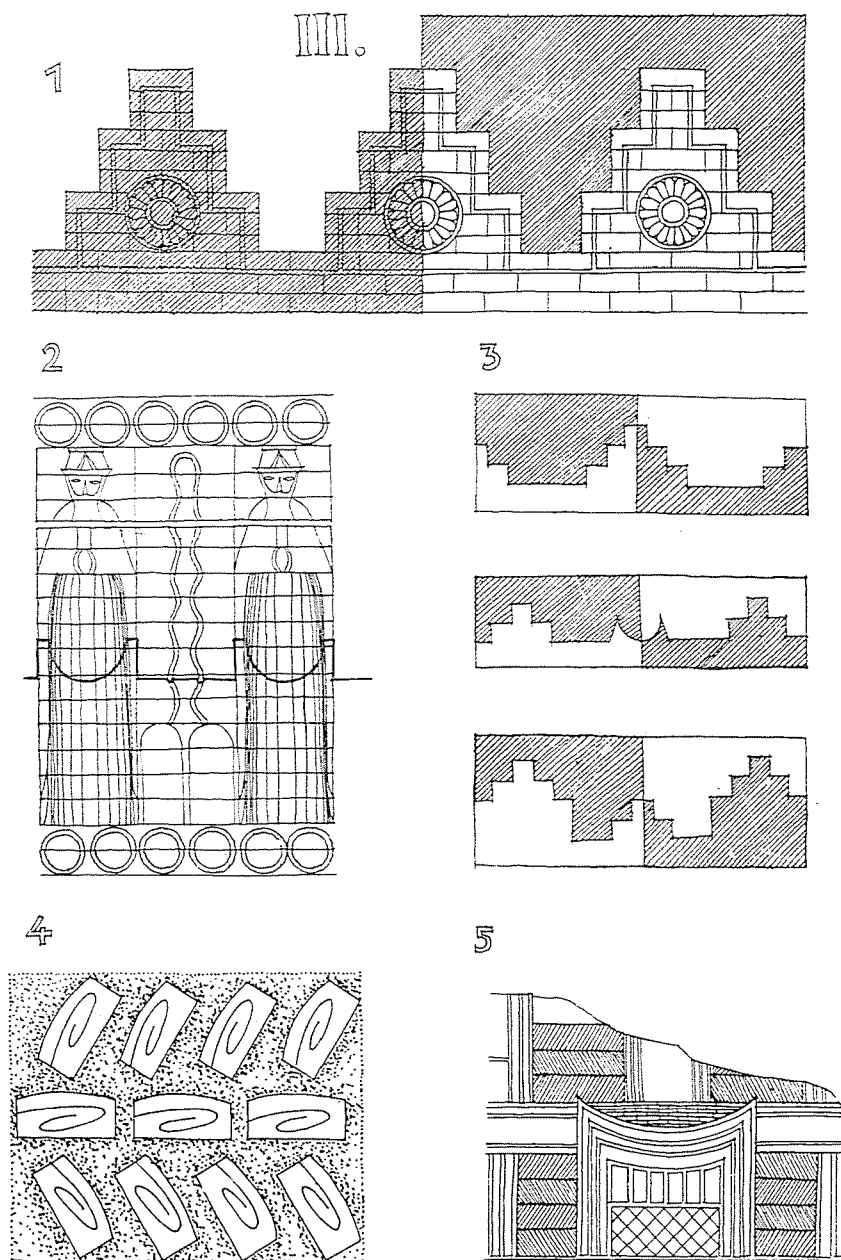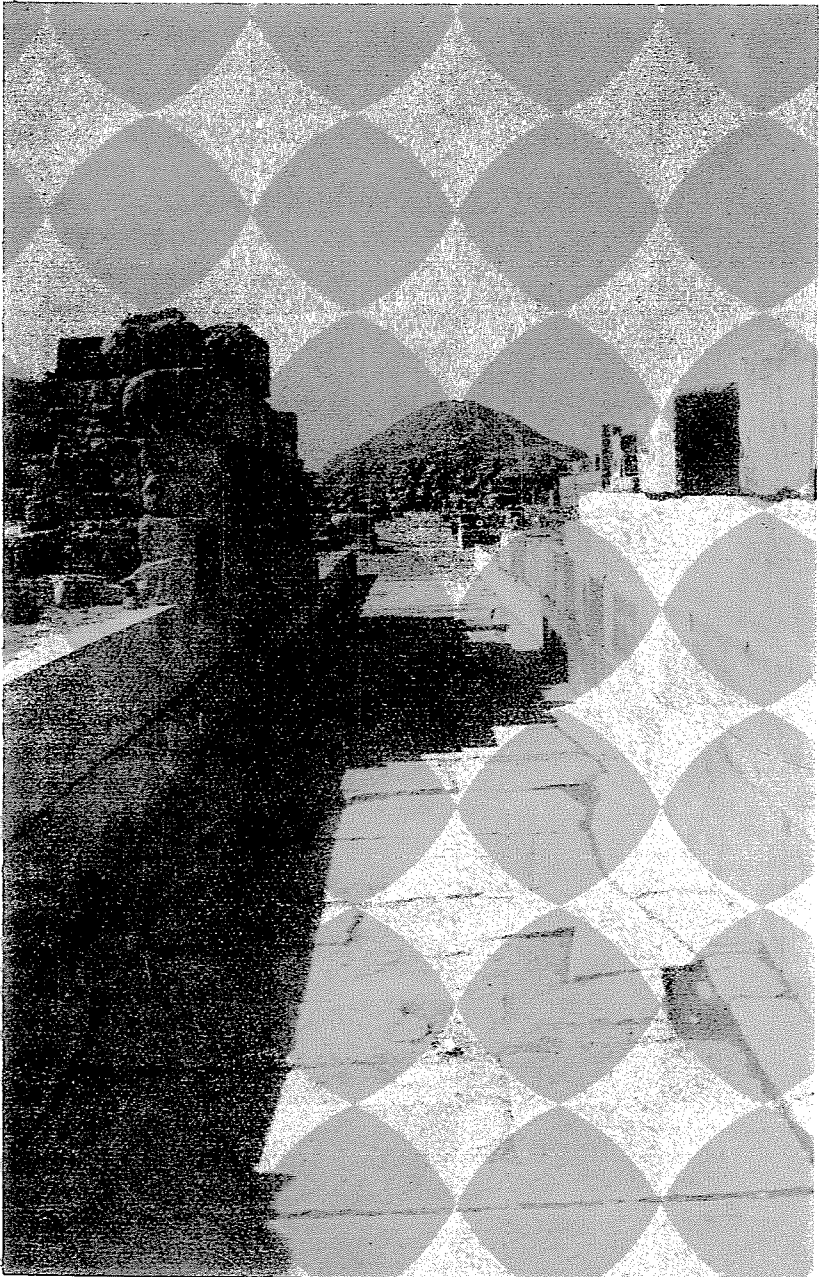3th century A.D.

Plate III. Near East. Constructions, Details.

1. Battlements; *2*. Uruk. Facade of temple of Karaindash, 15th century B.C.; *3*. Different buttresses; *4*. Plano-convex bricks, herring-bone construction; *5*. Tello. Representation of wall-construction.

2. Saqqara. Causeway of Ounas pyramid. 6th Dyn.

Death is to me today
like the fragrance of the lotus...
like the road in the rain...
like longing to see your home again.
(One weary of life talking to his soul)

The Egyptian Line

The world of thought and emotion of ancient Egypt seems the result of a view of the world formed with naive clearness. Getting a close knowledge of the culture will show us, however, that behind the interpretation of phenomena an intricate and contradictory soul was hidden. Most of the contradictions are supposed to come from the different cultures of the two great provinces, Upper and Lower Egypt, but the outlines of thoughts have merged to such an extent in time and in space alike, that it is almost impossible to hope for their exact separation today.

The contradictions did not lead to dissonance, as phenomena so different from one another were all "Egyptian" to a degree that the history of the Nile Valley could be considered a process untouched by any kind of outside influence, for a long time. This aspect has lost its validity, but permits the statement that the culture of Egypt has remained limited in its impact as the facts it expressed were the facts of mankind put in a shape, hardly lending themselves to any kind of rewording again.

SETTLEMENTS. It is but a sketchy picture that, up to this day, we may gather about Egyptian settlements. This shortcoming is not a mere chance, as Egyptians built their monumental constructions, first of all their *tombs* from time-defying stone, as they were meant for eternity, whereas the frames of life here below were made of short-lived materials like plants, wood or bricks dried in the sun. Fragmentary archeological material is still abundant enough to show us that the types of settlements were greater in number than those of the Near East. It was so in spite of the fact that the geographical conditions of the country offered practically a single solution: to build in the territory stretching along the Nile as recognized and instinctively made use of also by prehistoric man. The oval huts of Merimde Beni Salame were lined up along the canal as if forecasting the principle of arrangement determinative of the architecture of historical periods: linearity. The way of settlement in Lower Nubian villages —popular architecture of the near past—has preserved this forced adaptation to natural environs till quite recently.

In the initial—already historical—architectural culture of Egypt this linearity was still absent, showing some kind of the "opposite", concentric space organisation as its most characteristic trait. One of the oldest hieroglyphs was round in shape and stood for the threshing place, but Egyptians used the circle to indicate the city itself in hieroglyphs. The pallettes of the earliest times show

the ground plans of oval *forts* articulated by engaged pilasters and bastions. In the archaic cities of El Kab and Nechen the city formed an island in the body of the town surrounded by walls, calling for a real concentrical arrangement. These data support the theory that tells about the enforcement of the influence of the Near East in early Egyptian history.

The probability of this theory is strongly supported by the tomb district of Pharaoh Zoser at Saqquara, which latest suppositions consider as a large-scale replica of the common capital of the two kingdoms, of "white-walled" Memphis. The central building of the burial district, the *step mastaba*, corresponded to Ptah's sanctuary, the *funeral temple* to the royal palace, the *festival hall* to the coronation building, the *chapels* to the "town halls" of the *nomoi* and finally, the *Southern House* and the *Northern House* to the *chanceries* of the two kingdoms. The concentrical trend of the system, the connection of individual buildings to the court, a functional ease, the copying of the worldly life of the Pharaoh into a burial town in the strictest sense of the word, the fifteen gates opening to all corners of the compass,—independent from the fact that only one of them was functioning—the vertical articulation of the walls, were all elements that had been preserved from the archaic period in Egypt's life till as late as the rule of Dynasty III, elements quite different from what was to come later. At the same time forces that asserted themselves from the Dynasty IV on, began also stirring: linearity, axiality, space conceived in the form of a corridor, a lively and varied imitation of nature. The work of Imhotep, this genius of architecture and architect to the Pharaoh, brought the traditions of the past and the possibilities of the future in a successful synthesis that offers the key to the understanding of Egyptian architecture as a whole.

The linearity of settlements along the banks of the Nile became general with the time: this principle of arrangement created the plan for the one-street town built near the mastaba of Queen Khent-kaw-s of Dynasty IV, in Giza. Linearity was predominant in Kahun, the "pyramid town" of those engaged in the construction of Sestoris II, built also in the period of the Middle Kingdom, with the difference that in this case the structure of the town was given by two straight streets perpendicular to each other and forming the backbone of the two districts: that of the workers and that of the officials controlling the work of construction. Axiality was the principle of arrangement also in the Nubian forts of Semna, Kuban and Aniba in spite of the fact that strategic considerations called for adaptation to the terrain. Thebes, capital of the New Kingdom, known only by description, could be also of a similar construction and this type of settlement was Akhetaten, the city of Akhenaten stretching seven miles long on the two sides of a main street of loosely connected lines of public buildings, temple districts and living quarters.

The determinative force of the Nile had a general influence on town building, too. Towns that repeated what had been realized at a larger scale in the Nile

Valley in the dried-out beds of brooks might be called wady settlements. Such a wady settlement was Deir el Medineh to the west of Thebes, a district for artisans busy in the construction of the tombs of the Pharaohs, that consisted of a single street only and of long plots arranged perpendicularly to it. The tombs belonging to the settlement were cut into the slope of the valley parallel to the run of the street. It was with the clearness of a formula that Deir el Medineh reflected the spontaneous form of towns to be built in Egypt.

BUILDINGS. As seen, the form of Egyptian settlement progressed from concentric space conception towards linearity and the same holds true also for the buildings, even if concentric tendencies appear now and again also later. Linearity has become the specific and distinct mark of the basic trend in Egyptian space organisation. It shaped the specific form of space into a "two-dimensional" causeway and connected several spaces by arranging them parallelly or perpendicularly to each other.

A group of the tombs of the early dynasties in Saqqara as well as in Abydos was built in concentric arrangement. In Saqqara this was realized by building the central chamber inside the buttress and niche fronted brick building larger than the rest (Tomb no. 3503) and in Abydos by placing the individual tomb block in the middle of a court space lined by chambers (Zet's tomb). In Khasekhemuwy's tomb concentric and linear are merged: the stone crypt was embedded into a maze of brick galleries.

Zoser's tomb district at Saqqara reflected transition not only as a town replica but also as a tomb. The revolutionary innovation of Imhotep was primarily to use carved rock—the walls of Memphis were still made of bricks—and that he made the material felt eternal preserve life in all its changes by having imitations of the forms of nature, carved and concretised in it. What is more: he preserved life itself and secured the familiar background for his Pharaoh. From Dynasty IV on, however, this static character of the tomb changed into a dynamic process; the "Simultan-Bühne" of Saqqara was superseded by the "Prozession-Bühne" of Giza, Abusir and the rest: it was not only the pyramid that made out the Pharaoh's tomb, as it was believed for some time, but the long way beginning at the valley temple on the bank of the Nile and leading through causeway, funeral temple and the galleries of the pyramid to the crypt.

Together with the funeral district becoming a "funeral route" new and contradictory features were added to the aspect of Egyptian architecture. A corridor space was characteristic not only of corridors proper —like the causeway and the galleries—, but also of valley temple and funeral temple. Their space system divided by pillars was a composition of far-reaching space units, arranged either parallelly or perpendicularly to each other, making the impression that the Egyptians wanted to make the dimensions appear in an articulated form broken to details, to express thereby one of the characteristics of their behaviour: analytic spirit. It is the readiness to analysis that is reflected by the frequent

absence of inner relationships. The parts of the T-form space composition of
tombs and temples, for example, could have various functions, and the same
space form returned later also in the building of living houses. Finally, the for-
mal concretisation rooting in an observation of nature present in the funeral
district of Saqqara was substituted in Giza by supernatural formal abstraction
and geometrism. This phenomenon finds only explanation in a different ap-
proach to nature, all those straight lines; the gaps left between the slabs of the
causeway, the pyramidal edges of temple pillars and pyramids seemed to imit-
ate the rays of the sun, of a sun whose cult took over the leading role in the
Egyptian pantheon at the time of Dynasty IV, and that raised the Pharaoh
to the dignity of a Sun-God. The difference might be expressed by a paradox:
In Zoser's funeral district the empathy of nature was an abstract process based
on the intermediary of concrete forms, in the tomb groups of Cheops, Chephren
and Mycerinus the concrete form was arrived at by way of abstraction. In the
former it is illusionism raised by the forms of nature, in the latter tectonic order
attained by geometry.

The coexistence of the two kinds of formal worlds in Egyptian arts was made
possible by the fact that they sprang up from a common root. That is why the
geometrism of Dynasty IV could dissolve and get mingled with "naturalism"
as early as in the tomb compositions of Dynasty V and this makes it possible
to understand the last act of monumental funeral architecture, the magic build-
ing of Queen Hatshepsut in Deir el Bahari. The abstract form of the terraces,
ramps and pillars of the temple separated from its tomb seemed to grow out of
the rock wall making out its background as a continuation of the natural relief.
The causeway passing through the temple did not come to a halt at the rock
wall but becoming imaginary, it led on to the Queen's tomb hidden behind the
hill, to the valley that had become the new burial place of the Pharaohs, above
whose secrets a pyramidal hill stood sentinel. The concreteness of nature was
interwoven with the abstraction of human effort, the abstraction of the work
of man effected the interpretation of the natural background.

It was only in the New Kingdom that the temple as an individual task of
architecture appeared. But shrines built earlier offer quite a number of data
that make it easier to understand the Egyptian space conception. One group
of archaic shrines, for instance, was related to the small constructions on the
decks of the ships, which bore the names of nomoi. Later the ship appeared in
its original form in architecture: the Giza pyramids, the Sun shrines of Abu
Gurob, the Sun barges along the causeway of Unas' tomb etc. were actual ex-
pressions of the idea of the road i.e. progress. In the following the linear con-
ception of space was realized first in frontal and cross-axis representations after
the example of the Giza pyramid compositions, in the temple of Kasr el Sagha,
in the chapel of Amenemhat III of Medinet Madi and also the terrace temple of
Hatshepsut and the festival hall of Thutmosis III at Karnak enfolded perpen-

dicularly to the direction of approach. In the golden age of Egyptian architecture, during the rule of Amenhotep III, linearity developed towards the depth had become the principle of arrangement of sacral buildings as well.

The linearity of the temple of Luxor and of other festival temples following its example, like the Ramesseum, the temples of Ramesses III at Medinet Habu and Karnak, the temples of Denderah, Edfu, etc. from the Ptolomeian era was the outcome of cultic practice. Also these temples realised the idea of the "Prozession-Bühne" that found expression in the pyramid compositions of Dynasty IV: they were composed on the departure and return of the barge symbolising the deity and placed into the barge hall of the building. Processions were characteristic also of the cultic life of the Near East, but they never had an existential influence on its architecture. Egypt's architecture, on the other hand, made the impression of a procession frozen to stone.

The idea of road and corridor was prevailing all over the temple and the direction of linearity led from inside to outside. It passed from the mystically unapproachable image hidden in the depth of the temple to the world, first to the world of the artificial: the festival temple. This part of the building resembled the sanctuary of Mesopotamia by giving a kind of imitation of the world. While, however, the Mesopotamian temple with its generalizations stood for the Cosmos, here the numberless concrete forms of nature were symbolised. Columns growing out of a soil-coloured ground raised with bud and blossom towards the ceiling that showed the firmament at night and at daytime together, giving expression to the temporal rhythm and dynamism of nature. From this gorgeous imitation of nature, the road led to nature herself between sphynxes, colonnades or trees lining up on its sides. Direction to outside was expressed also by the general methods of the extension of temple buildings: completion started, as a rule, before the original main entrance and extended towards the *dromos*. If vegetative growth was the structural principle of Egyptian architecture, this growth can be thought of only in a linear form.

Linear space composition found, so to speak, its caricature in the temple of Sety I at Abydos, where seven parallel galleries led to seven shrines. The juxtaposition of several axes was the peculiarity of the temple of Sety I in Thebes, near the Ramesseum, and also of the double shrine at Kom Ombo.

The unidirectional purposefulness of temple plans seems to have been broken by the courts: a court is an open space in which you can move to the right or to the left, which you may cross and which is oriented towards the sky in some way. The courts of the Sun chapels—Abu Gurob, Deir el Bahari—were actually of such a vertical direction; in general, however, the Egyptian court, unlike that of the Near East, was not placed concentrically but as a member of a space series having the only function to broaden the road. The Egyptian "peripteros" cannot be considered to be of a concentrical arrangement either. The station chapels set up along the route of processions were imitations of the

sacred barge, carved in stone; the volumes of the *mammisi*, the birth houses
of Isis, were surrounded by perforated frontal planes, while pavilions with a
continuous rolling over of corners tell about the influence of the Roman-
Hellenistic space conception.

There were a few groups of rooms, even buildings of actual concentric ar-
rangement. Concentricity became definite especially in the shrines of temples
(temple of Ramesses II at Abydos, Akhetaten: Great Shrine, Gematen, Edfu:
Horus' temple, Denderah: Hathor's temple) but similar tendencies are discern-
ible in the *cenotaph* of Sety I at Abydos, and the arrangement of the desert
altars at Akhetaten. These were either survivals of very old traditions, or
expressions of recurring effects from the Near East.

The strangest among the great variety of forms in Egyptian temples was the
speos, cut in the rock. In the pyramid the architect of the Valley of the Nile
created the volume almost void of interior and closed his temples accommodat-
ing inner space systems into the stocks of panel-like plane frontispieces, while
in the speos it contented himself by shaping but interior and front, the volume
was given by nature herself. This disorganisation of space, volume and façade,
the decomposition of the oeuvre to its components and its recomposition in an
articulated way, were manifestations in architecture of the specifically Egyptian
way of thinking.

Palaces and houses in Egypt were characterized by a lack of differentiation
according to form and function: their ground plans recalled those of the temples
in many respect. Similarity rooted in the identity of functions: the transfer
of the patterns of human life to buildings serving as abodes for the gods and
vice versa, was characteristic of ancient architecture for a long period after.
Thus, for example, the T-shaped space composition could be the backbone of
Chephren's valley temple, of living houses in Kahun and of the palace wings
of the Ramesseum alike.

Living houses were of a linear space composition even if the linear arrange-
ment of spaces could not be as consequent as in the temples composed on the
route of ritual processions. In several buildings of Akhetaten, however, linear-
ity was not even a secondary principle of arrangement in the ground plan
(North Palace: Hall of Foreign Tribute, etc.) but its place was taken by some
kind of concentric arrangement. The reaction following the Amarna period had
preserved much of these new ideas (Medinet Habu, the *migdol* of the palace
temple of Ramesses III, its stepped battlements, etc.) the common court of
palace and temple, however, was no more concentric, as two frontally inter-
preted spaces were united in one.

Egyptian buildings were space organisms built up of a multitude of units,
which, however, escaped being closed down or impossible to extend by virtue
of linear relationships and by the possibility to extend the axis of the building.
The function of rooms could have changed from time to time, but the formal

strength of the composition principle proved often more effective than functional sense.

CONSTRUCTIONS, DETAILS. The characteristic dualism of Egyptian architecture: concreteness in form hand in hand with abstraction of form and the analytic nature of methods of construction are most instructively illuminated also by structures and details.

Building materials were classified along a functional principle, depending on their use. The durability of stone was supposed to be infinite—it was even called "the eternal stone" and in the beginning it was used only in the construction of tombs. Bricks supplied the framework to passing life and came to a leading role especially in the architecture of the early periods. The buttress and niche wall system is probably a consequence of influence coming from the Near East and figures as a satisfaction of a living formal conception also in Zoser's funeral district. In the course of development the articulation by the buttress and niche system was abandoned causing the walls to loose their verticalism and give place to the usage of deflecting plain walls, probably as a formal survival of dam and channel construction.

Deflecting walls were characteristic also of the inner structures of pyramids. Their wall cores were built of stone layers placed side by side or one above the other. This method of "packaging" was pretty antitectonic, the pile of construction was covered by a special cladding layer. The technical conditions of walling did not define formal appearance in other spots either: the buttress and niche system in the court of Zoser's funeral district was not a consequence of a system of stone lines and stone binding, it was carved into the wall as an individual form; in Medinet Habu, the battlements of the palace temple of Ramesses II did not follow the logic of construction, the horizontal wall joint appeared in a haphazard way now in the middle, then towards the edge of the battlements. This analytical method of construction found another expression in the brick pyramids of the Middle Kingdom (Hawara, Kahun): the pyramid was built in a skeleton form and the gaps of the resulting system were filled in. The new method was much more of Egyptian character than the old method of packaging.

Egyptian architecture did not know façade in the strict sense of the word. The broad wall surfaces made the impression of panels, planeness, limitedness and independence from the interior were enhanced by their being framed in: the binding member of the cornice turned vertically downwards at the corners of the building. In spite of all, the first steps towards the development of a real façade were made by Egypt. The experiment was not successful, it is true, because it was taken up at a too early stage. In Saqqara, in Zoser's funeral district, the construction of the façade of chapels of the South and North House followed the methods of plane representation in every respect: details arranged in various ways in the space—colonnade, fencing wall—were syn-

thetized in a single surface creating the first illusory, engaged column façade in architecture. The engaged column reappeared in the Hellenistic-Roman tombs of Tunah el Gebel. Here the characteristic method of the Ptolemean period, the partial blocking up of bays by screen-walls was extended to the entire *intercolumnium*.

The dualism of formal concretisation and formal abstraction was characteristic of the development of supporting structures as well. One group imitated the forms of nature with bunched, half, threequarter palm and papyrus columns. These imitations were but slightly tectonic, flower cups and buds forming the capitals could not express the conflict of force transfer as did later the Greek capitals, the ceiling above them seemed to float because of the invisible *abacus* of small dimensions. In the other group of supports, with pillars of rectangular, oblong and polygonal shapes, stone was worked and used in its materiality, but geometrism made any statical play of forces impossible to express. The pillar-beam construction was often of the effect as if openings had been left in the wall surface. This wall-like connection between supporting structures and beam spanning was enforced not only in *pillar* but also in *column-architrave structures*: in spaces of supported roofing the bearing direction of architraves followed and marked out the system of space resolved into corridors.

In addition to column-beam roofing most characteristic of Egyptian architecture, also vaults were known and applied at spots of secondary importance, in channels and store houses. The arched line was associated with the idea of permanence and durability. That is why tomb panels were closed down by segmental arches, why the spaces of rock tombs were covered by vaults of segmental arches. Astral meaning associated with the vault was, however, less manifold in Egypt than in Mesopotamia, although sky and ceiling were identified also here as expressed in its presentation in the form of a starlit sky. Side by side with the stars there appeared also the winged sun disk fusing various phases of time.

The number of detail forms was comparatively small in Egyptian architecture. The *cornices* crowning the pylons and gates were also modelled after plants as the ancient crown of the building: the wreath of sedge leaves. The arch of the leaf-line bending forward and the reeding marking fixation cast rather deep shadows because of the constantly high orbit of the sun: the pronouncedly horizontal finish enhanced the panel-like appearance of the walls. The dimensions of the cornices were not determined by an inner system of proportions: the cornices above the planes of pylons of immense dimensions were lower than those crowning the gates of smaller dimensions between them. The Egyptians did not know the modular system, not even in its classic interpretation—columns of various heights were of the same diameter, the imitation of the accidentality of nature hindered the development of an autonomous

inner system of proportions in spite of the fact that attempts had been made to lay down a canonical system of the proportions of the human body.

An analytical disintegration was characteristic for the relationship of works of art and those of architecture. There was no tectonic interconnection between the two spheres, in spite of the fact that the way of interpretation—frontality in sculpture, the law of the largest surfaces in the relief—was favourable for the integration of works of art into the background of architecture. Caryatides and atlases were unknown to the art of the Valley of the Nile, figures were placed in front of the columns in a way that the statue rather concealed than enhanced tectonic expression. It was in a single case that an Egyptian architect has composed a human figure into the supporting element itself, in the case of the Hathor column, where the capital was surrounded by two or four similarly cut faces of the goddess. Linearity got emphasized in a strange way in Chephren's valley temple, where the statues lining up along the longitudinal border walls in the inner space do not fit into the bays of the pillars as if the three parallelly running parts of space had nothing to do with each other. The incertitude of the lateral interconnections of pillared and columnal spaces found expression in the rhythm of supporting rows: in Karnak, in the festival hall of Tuthmosis III and also in the large *hypostyle* hall the intercolumnia of the supports of the naves became identical only in the cross-axis of the space, i.e. it was only there that they met.

Building sculpture with its low spatial value, its graphic fitting-in onto the plane of representation with the striped, later raster-like arrangement of compositions adapted itself to the surface of walls handled in the planiform. In spite of this, the representations could almost be peeled off the walls because of their all-embracing intricacy. The wall paintings passed over surfaces like "a flow of pictures" (Figurenstrom), the horizontality of the rows of pictures cut through individual vertical elements, even through cylindrical columns. Representations on columns were often not even turned around but ornamented only the mantle looking at the main way of traffic in a *panneau*-like manner. Pictures placed this way and the bearing direction of architraves marked out the inner system disintegrated into corridors. In later periods, the placing of panneau pictures aimed at some kind of "optical corrections" with a view to visibility but even this meant only further means to enhance the axiality of space arrangement instead of breaking it up. The wall surfaces of interiors did not embrace a space considered a unity; space was a hiatus limited by framed-in planes. The way of representation not limited by space corners but flowing through them appeared first under Akhenaten's rule, and had never became a typical feature of architecture in the Valley of the Nile.

Summing up the essentials of the quality of details, it can be assumed that the concrete pictorial formations originated in an intimate relationship to nature, gave sense to the use of the "eternal stone" to plant-shaped columns

and cornices and another possibility of nature emphaty was responsible for geometrically elaborated details. The disorganization of structure and shape, the birth of the illusory frontispice, the panel-like character of the façade, the lack of proportion in the inner system, the individual existence of sculpture followed from the analytical spirit. Ultimately it was the same spirit that revealed itself in motifs stressing the linearity of space: in the continuity of architraves and wall paintings following the axes of corridors.

FINE ARTS, ORNAMENTS. The entirety of Egyptian art was characterised by some kind of reduction: as if, considering the hierarchy of spatial enfolding, the works had appeared in a form one scale lower than their spatial counterpart. Architectural volume closed down spaces and densely built parts like a dead, stereometric body while also its mass effect was curtailed by frontal positioning. The façade was no intermediary between interior and exterior, but a panel barrier between the world of architecture and that of nature. The inner space availed itself, so to speak, of two dimensions only: the Egyptian space was a corridor. And the same reduction in spatial value was characteristic of the methods of interpretation in sculpture and relief: the statue recalled the relief and the relief the drawing.

Sculpture moulded human figures in a frontal position, almost without exception. Sitting or walking figures made part of the background, of the wall, as if growing out of it, without doing any free movement in space, progressing into a single direction: forwards. This limitation in gesture and action of statues resulted in the fact that for their understanding it was sufficient to look at them from a single point of view, although they were born out of a strange synthesis of several points of view. The side view of the figure was drawn on the two sides, its frontal view to the front and its back to the back of the prismatic block. The forms were developed spatially, starting from these plane pictures. The result could not be any full-valued spatial organism as the graphicity of the start kept living on in the accentuated line-play and line-harmony of arms, legs and shoulders.

In statue compositions made up of several figures—or more exactly groups of statues—the figures were related to each other by parallel or perpendicular movement and the dynamically sculptured genre compositions of slaves showed the same restrictedness. Naturally, it happened sometimes that figures were represented in free postures and the figure itself could deviate from the symmetry of frontality: this indicates that the restricted representation of spatiality was not because of lack of ability but guided by some observation of principles.

Apart of this, a realistic interpretation of the human body was specific of artistic representation from the very beginning. It was just the faithfulness of the portrait, the moulding of the parts of the body with an anatomical exactness that represented the other, the concretising pole of descriptive art.

Idealized portraits were rather rare in Egypt, the recording of actual physical properties, the moulding of stunted, crippled, thin or stout man, Akhenaten far from being handsome made as characteristic a part of their art as did the statue of Chephren distilled to the immobility of the eternal.

Due to the small plastic value of reliefs, relief, picture and drawing differed but slightly. The peculiarity of interpretation in the plane according to the law of the largest surface originated in the artist's composing the picture of man or object from orthogonal part pictures taking immediate empirical experience and not appearance for the basis of his drawing. The execution of reliefs and pictures resembled that of statue making: figures and scenes were copied on the wall by quadratic rasters fitting the figure of spatiality to the plane and turning it almost into a sciagram. Behind was expressed as above or, by using coulisses of series, movement into the depth was substituted by moving the figures parallel to the background. This would-be "primitivism" made purport-richer, as it could represent together things separated in space and time.

The way of expansion of representations was through strips, the rows being joined by major figures of rulers or gods now and again. The execution of details revealed, however, an intent observation of nature that was specific in the interpretation of statues as well.

Representation according to the law of the largest surfaces with its enhanced value in purport makes the great number of drawings of buildings and ground plans especially precious. Spatiality was effected by copying ground plan and view into one in the plane of the drawing: walls appeared in ground plan cuts, doors and columns in elevation. The same was the procedure when illustrating natural forms: trees and plants, for example, were laid down around the pool. The most important were, however, the drawings of buildings on *ostracons*, as they expressed the essence of Egyptian architecture, linearity, in the idiom of the period: the axis of the building was never missing in the plans. It is also known that construction itself was invariably started by marking out the central axis and drawing it.

Reliefs, paintings and drawings were for the most part framed, a clear isolation that further enhanced the plane character of surfaces. Inscriptions seldom crossed the detailed forms of representations, they were always given a separate free room.

Ornamentation was characterized by adherence to the natural model, it was abstracted or stylized to a considerably smaller extent than e.g. in the Near East. Ornamentation was imbued by the expression of personification and activity: the sun disk had wings, it was rolled by a scarab, the rays of the sun ended in the life symbol held by a human hand, etc. In general, ornaments in side view were prevailing against those shown in top view, flower cups were more often shown in profile than rosette-like.

Summing up the peculiarities of Egyptian fine arts it can be said that the

methods of sculpture, and the drawing and copying of plain figures were characterized by an analytic approach, parting into details was the result of the reduction of various viewpoints and times. Resolving in nature, formal concreteness called for the reproduction of age, beauty, ugliness, and lent vitality to the essentially stylized world of ornamentation. The disintegration of the body into surfaces and lines, the close relationship between relief and drawing, framing in, etc. were reflections of the same one-dimensioned space conception that has reduced multidimensional architectural space to linear as well.

IDEAS. History and culture of Egypt were characterised by a throbbing rhythm of vitality. The driving force of this dynamic attitude, an opposite to the static aspect of the Near East, was the Nile, the river responsible for the existence of the country and keeping it alive. This country, whose match has never been born ever since, was shaped by the river: it was the Valley of the Nile that constituted the country itself.

This geographical peculiarity was discovered by *Herodotus* calling Egypt a present of the Nile. This statement meant more than the idea that the river took care of the material conditions of the country's existence, it meant also that the river polarised the entire intellectual sphere of the country to some strange one-sided perspective, so much so that life and the Nile—the road—became identified in Egypt.

The river lined by all the riches of animal and vegetable kingdoms was the palpitating artery of this land that marked out an order of life with its rhythmically recurring floods and led to the realisation of continuity. It was quite natural that when giving a form to their ideas about the world, the Egyptians should simply project the Nile's world on the Cosmos with all its animation. The Sun floating in his barge across the sky reached the earth again at the First Cataract after his nocturnal passage along an underground Nile. The teaching about the "great revolution", although it may recall the idea of *Enuma elis*, was something quite different: there it was a static panorama, here a dynamical continuity.

The Nile determined first of all economic life, and it is natural that the fundament of life was irrigation with shepherding playing an important, yet secondary, role, especially in the early times and around the marshy Delta. Within the system of patriarchal slavery, industry and trade created a culture of urban character, although trade did not mark out the structure of economic life as pregnantly as it did in the Near East. Unilateral expeditions aiming at robbery and purchase were far from the effect of a regular transit, intermediate trade und thus agriculture was the actual base of economy and peasant culture the leading trait coloured by the characteristics of nomadic culture. Emphaty in nature, a meticulous observation of nature—formal concretisation—originated in a soil-bounded social consciousness, while the ability of abstract

thinking goes back to nomadic culture. It is known that it was just the two systems of economy that brought about the dualism of Egyptian culture, which may be supposed to root in an ethnic dualism of much earlier periods.

Egypt's history was also stamped by multiple dualisms: it was practically the history of the repeated union, disintegration and reunion of the two great provinces, of Upper and Lower Egypt. Up to the raid of the Hyksos union and disintegration of the autocratic rule followed by reintegration was caused by inner changes. The appearance of the foreign conqueror in the Nile Valley led, however, to a unity initiated by some kind of "national" consciousness. Driving out the enemy and chasing him far beyond the frontiers put Egypt in a position she never aspired to: the rule over the world fell into her hands. The time of Amenhotep III, when foreign influence was gaining in strength, enjoyed riches brought about by world power, it was Akhenaton who drew the ideological consequences of the situation created by world power, which, however, was becoming a fiction by the time, and it was he who heralded monotheism, the heavenly equivalent of monarchy here below. The Ramesseses lived in the illusion of bygone glory, till finally the world of Egypt was limited again to the local history of its nomoi. Inner fluctuation was an outcome of the rhythm of economic life, and the changing endeavours to centralization by state power and to decentralization by the nomoi. The form of power was the same in great and small dimensions alike: administration was characterised by bureaucratic methods everywhere.

Among the achievements of Egyptian culture religious thinking had a decisive impact on life in the Nile Valley. The picture is rich in colours but also in contradictions. The two poles may be indicated as the concreteness of zoolatry and the spirituality of monotheism, although they had also some elements in common. Zoolatry was a secondary phenomenon reflecting close connexion with nature that was in the background of the Osiris cult, and of the firm belief in the continuity of life. The monotheism of Akhenaton was not fully abstract either, as it worshipped the sun disk in its materiality.

The world of ethics was determined primarily by ideas about death. Pyramids, mastabas and rock tombs suggest that Egypt was the home of death but it was just its many tombs that made Egypt the home of life. The concept of death was unknown to the Egyptian, or to put it more exactly, it did not mean the end in his belief, but a new form of life that has changed its direction and found a somehow transcendented new form of existence. Thus the general conception of life—apart from dissonance caused now and again by political and social stresses—could be basically serene along the Nile.

As religion was characterised by formalism, so were morals tinted by ethical practicism. The best part of Egyptian literature is made up of "warnings" and the worshipped hero of Egypt was the educated man of letters, the *scribe*. The mentality of the Egyptian "philister" was imbued with the same sense

for meticulous observation that helped to organise economic life, to find the right methods of tax collection and to develop artistic thinking.

It is a peculiarity of Egyptian literature that although there are traces of monumental literature, of historiography as back as before the periods of Dynasties XVIII and XIX, it had never become a typical genre, as it lay in the nature of the Egyptian not to look back, not to search the womb of time. Lyric and epic poetry were nearer to him because they were more subjective and told about experiences and events. A similar attitude—formal concretisation—kept alive the pictorial form of writing till the end of development, in spite of the fact that other more abstract forms of writing had also been invented.

"Scientific" thinking was characterised by analysis. It is not a mere chance that in the field of arithmetics and geometry it were the Egyptians who created the co-ordinate system fixing the points of the plane by lengths, nor that goniometry had been made use of, applying linear measurements: the angle of inclination of the pyramid was defined by its cotangent. Mumification and anatomical information gained by it, together with biological observation, led to the rudiments of natural sciences. The source of trouble in the human body was typically put to the arteries, to disorders of the blood vessels. The analytical method was determinative not only for the methods of observation but also for the general aspect of man: it was not satisfied by mere dualism— that of body and soul—but discovered further factors, the shadow of man among them. This "schizophrenic" concept of man was both cause and reason of disorganised aspects and creative methods.

The "national" character in its ancient form was born out of the exclusive world of the Valley of the Nile. The several thousand years of emotional life of the Egyptian was wrapped in some kind of nostalgy for his fairy-tale country: there is hardly any literary work without longing or the pleasure of arriving home included. This slightly sentimental local patriotism was the reason why the Egyptian felt completely at ease only in his own background and testified the fact that its art was a "national" art, an exotic flower watered by the Nile.

Summing up the quality of various factors of the sense of position it may be said that the geographical sense of position played a very important role in world conception, it was primarily this component that ripened the forms of appearance of linearity in space and continuity in time. The natural sense of position—apart of the dynamical interpretation of continuity—was characterised by personification, pictoriality, substitution, identification of nature with Cosmos. Thinking and expression in concrete forms rooted in peasant culture, while the other factor of the social sense of position—generalisation—went back to the realm of imagination of nomadic culture. The roots of bureaucracy penetrating religion, administration etc. reach down to social motifs but were

realized in history: the inherent division of the country resulted in quite a number of dualisms, and atomized the Egyptian sense of historical position. In the cultural sense of position the analytical spirit was prevailing, in the ethnic sense of position a firm sticking to "national" features hampering the development of cosmopolitanism. Finally, frontal interpretation and an adherence to the law of large surfaces as a primitive way of expression, as the survival of an underdeveloped, childish attitude could hardly be interpreted as an Egyptian speciality of the psycho-physical sense of position. It finds no scientific support and looking at it in a very wide perspective—it was only a secondary phenomenon calling for intricate selection in spite of its concretising tendency.

SPACE AND IDEAS. A comparison of the space conception and ideas of the ancient Egyptian people indicates that linearity and axiality prevailing in settlements and works of architecture as well as the "road quality" of architectural space conception may be attributed to the geographical sense of position. The linear form of settlements and regional axial relationships were forced out by material compliance with the geographical background, but soon they became a general principle of space organisation. The enforcement of linearity was a temporally secondary phenomenon in Egyptian architecture and served as a convincing argument for the determinative force of background. The natural sense of position gave a further contribution to the "pictorialness" hidden in linearity—in the case of Egypt—primarily in the development of superstructures, in columns imitating plants and trees, and in the application of details of initiative quality.

The intimate relationship to the natural background resulted in the similarity, assimilation, interconnexion, even interchangeability of "natural" and man-made forms in the rock tombs, terrace temples, speos, hemispeos and also in the interpretation of the pyramid. This natural principle came forward in the structural quality of architecture, in vegetative growth that enabled a gradual extension of buildings.

Fundamentally, the intensity of concretisation permeating almost everything went back to the social sense of position. Even if the geometrical abstraction of the mastaba, the shape of the pyramid, the architecture of pillars, etc. could be an outcome of the abstractive realm of imagination of nomadic culture, behind the unbroken expression of the dynamics of existence coming through on every possible occasion, peasant culture bound to vegetative life was hidden, whose best examples are given in temples imitating nature. The social sense of position revealed itself directly in the subject matter, in the gradually diminishing dimensions of funeral buildings and in the tension between the huge dimensions of buildings and the comparatively primitive state of techniques.

The manifoldedness of Egyptian architecture was the manifestation of a bureaucratic spirit permeating life as a whole. The other specific quality of

the historical sense of position rooted in the "schizophrenia" showing as back as the start of Egyptian history. Its renewing survivals were kept alive—probably strengthened by recurring impulses—to the end of development. The disintegration of architectural space into its dimensions, the disorganisation of structure and form, the falling out of architectural objects to their components, the antiesthetical and anti-functional manner of composition, the reduced spatial value of statues and reliefs, the analysing quality of the methods of construction and the rather loose connection between works of art and their architectural frames was fed by an analytical thinking born of dualism. Scientific thinking strengthened the analytical quality of architecture by the co-ordinate system, by goniometry through linear measurement, by drawing plans to the axes and also constructing buildings starting from the axis, etc.

Finally, the "national" character of Egyptian architecture was a product of the acclimatising force that was able to adapt foreign forms to its own uses not by the generalizable but by the force of the specific trends of architecture. This artistic power of expression asserted itself also in periods when the original history of the Nile Valley was over.

Thus in Egyptian architecture the basic trend of space organisation found identical expression in the individual type of space—in the corridor space—and in architectural space composition—in linearity extended to the depth. This unity of the whole and its parts is in contradiction to all that has been said about the disorganisation of aspect, as a consequence of the determinative force of background on the various expressions of time and space conception, seldom encountered elsewhere. This is far from saying that the idea of axiality should be contributed to Egypt or more concretely to the Nile Valley, but it may be rightly said that there might have been several possibilities for the development of axiality. Among these Egypt developed axiality within one of the possible basic forms of space organisation, in dynamic linearity as set against static concentricity.
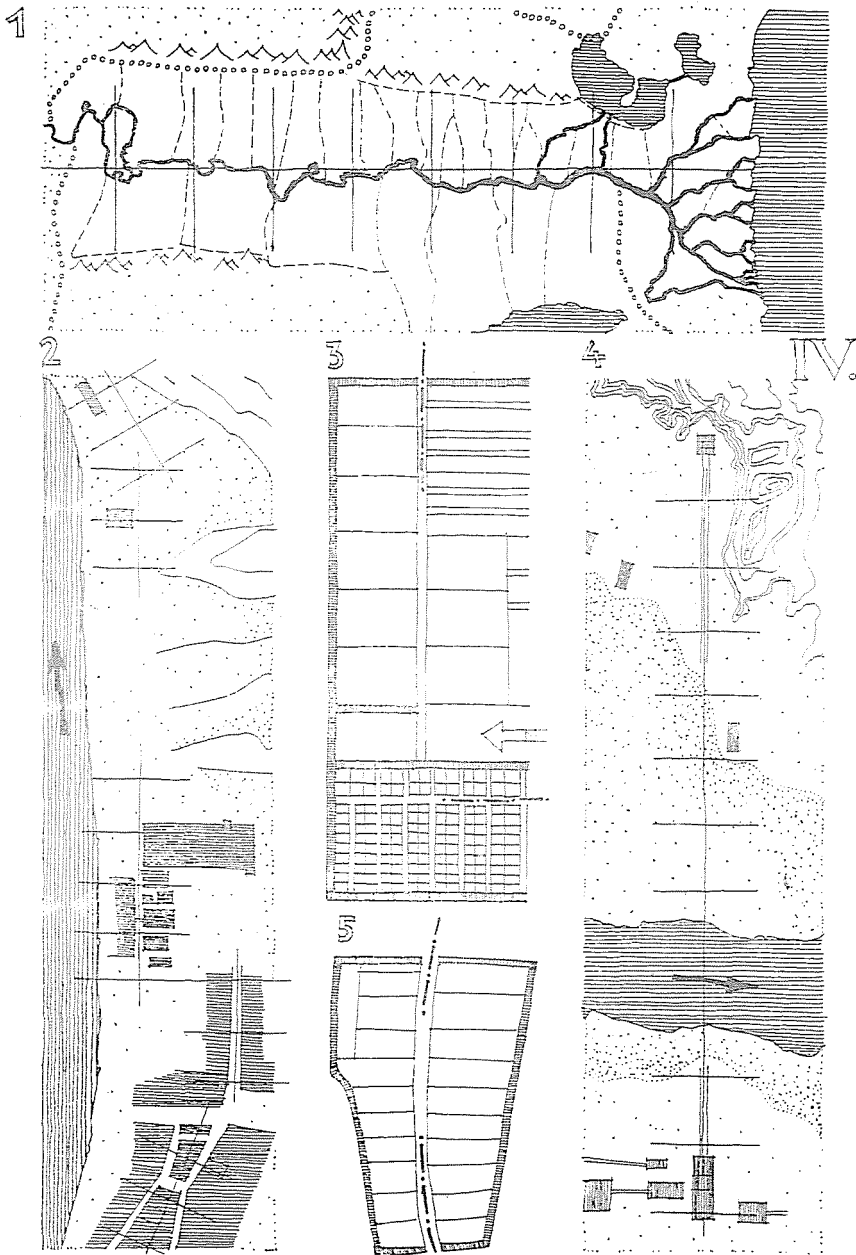
Plate IV. Egypt. Settlements.

1. Map of Egypt from 1765 (P. Duval); *2.* Ahet Aton, 18th Dyn.; *3.* Kahun, 12th Dyn.; *4.* Thebai. Relations between Der el Bahri and Karnak, 18th Dyn.; *5.* Der el Medine, 18th Dyn.
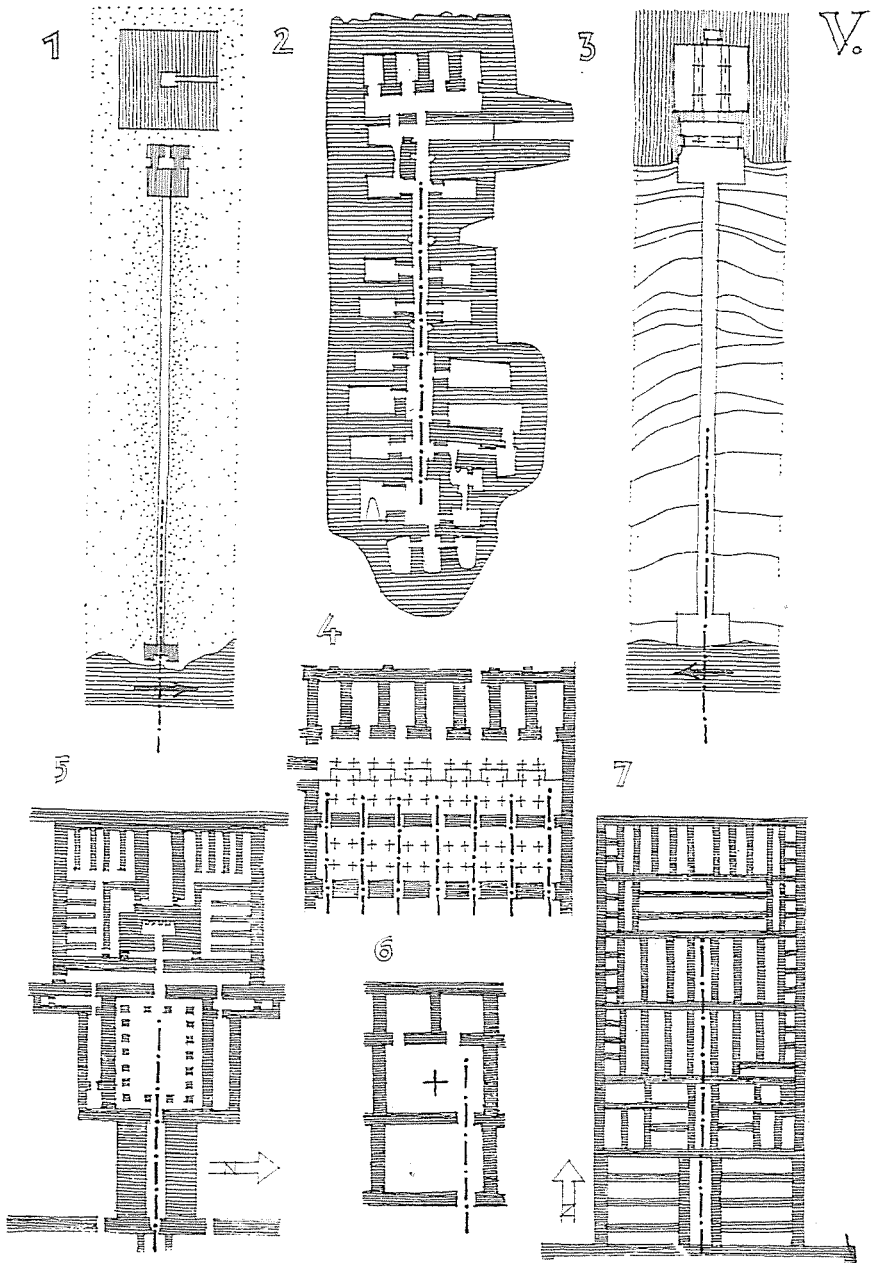
Plate V. Egypt. Buildings.

1. Scheme of pyramid complex, 4th Dyn.; *2*. Rock tomb of Saqqara, 2nd Dyn.; *3*. Scheme of rock tombs of Beni Hasan, 12th Dyn.; *4*. Abydos. Temple of Sethos I, 12th Dyn.; *5*. Abusir. Mortuary temple of Sahure, 5th Dyn.; *6*. House of Der el Medine, 18th dyn.; *7*. Luxor. Temple of Amenophis III, showing arrangement of the beams, 18th Dyn.
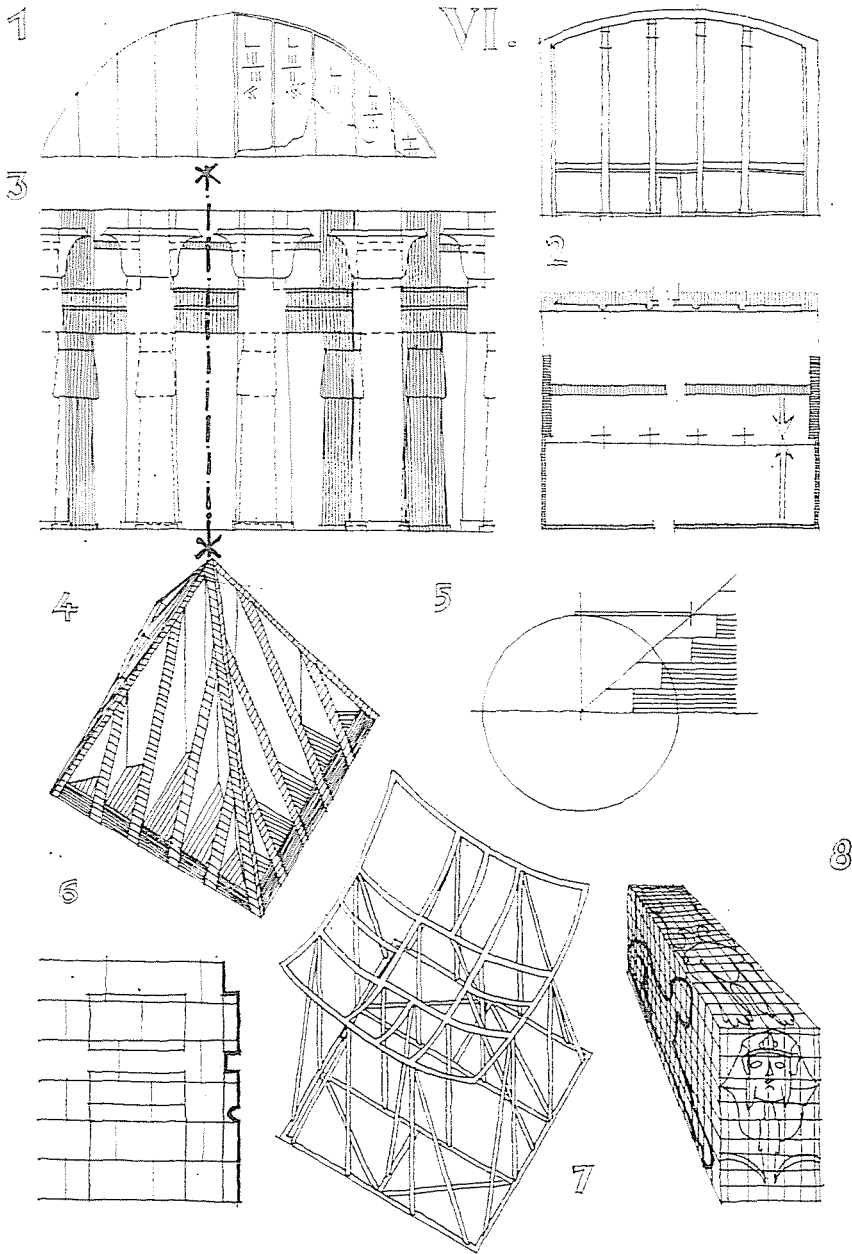
Plate VI. Egypt. Constructions. Details.

1. Saqqara. Representation of vault on ostrakon, 3rd Dyn.; *2.* Saqqara. Zoser's district. Façade of the North House, 3rd Dyn.; *3.* Karnak. Great Hypostyle Hall, 19th Dyn.; *4.* Hawara. Skeleton of brick pyramid, 12th Dyn.; *5.* Setting angle of pyramid; *6.* Saqqara. Zoser's district. Disorganisation of form and structure; *7.* Structure of Egyptian chair; *8.* Method of sculpting.
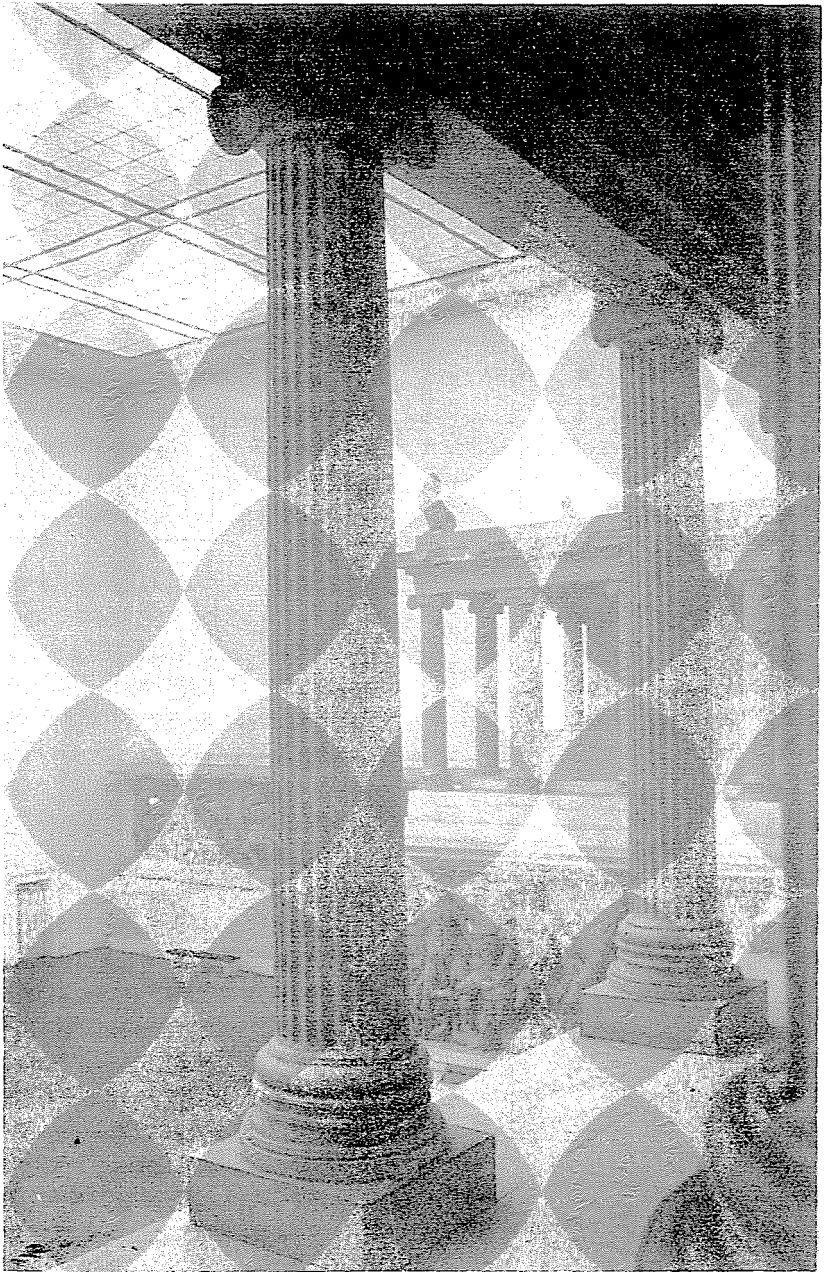
3. Pergamon. The Great Altar of Zeus. Ist century B.C.
Reconstruction. Berlin.

The beauty of all of them was almost archaic,
even then their youthfulness is fresh and new
even today

(*Plutarch*, Pericles 13)

The Greek Curvature

In the history of ancient Greeks the progress of humanity arrived at a road junction. The fundaments of the purport of human culture were practically given in the great cultures of the East in an economic, political and also in a cultural sense. The novelty added by the Greeks was the manner and form in which they interpreted and reasserted these values. Perhaps it was the new grade of intensity of abstraction in the explanation of phenomena that marked out the limit from where the road of humanity bifurcated. One road was the old one, those who followed it could not become judges of their environs and themselves to an extent that might have enabled them to gather a realistic knowledge about themselves and the surrounding world. The other road led through the new forms of human consciousness to the new vistas of a new world. This second road was marked out by the ancient Greeks in spite of the fact that they themselves often touched the borderline of the old one. The Greek world gains a special importance by being double-faced: one of these faces has become alien to us while the other one seems to mirror our own features.

At first sight one might conclude that architecture did not share the almost inexhaustible riches of Greek culture. This approach finds expression in an attitude—wide-spread even today—, according to which Greek architecture was practically a one-sided "Körper-Stil" and no "Raum-Stil", meaning that it did not create a genuine architecture, did not bring about any space forming. Instead of an evaluation based on the exaggeration of the volume-like traits of Greek architecture, we had better talk about a new form of space conception that created a conscious harmony of architectural interior space brought about by artificial means—which goes beyond the volume of the building—and the surrounding natural space, in which the two were imagined in conjunction and also made the impression of unity. Thus the basic tendency of space organization in Greek architecture may be summed up in the formula of architectonic space open to one side, as a transitory appearance of artificial and natural world. The relationship between nature and building was close and necessary yet absolutely general and that is why Greek buildings were not linked up with a given landscape but could be erected at any point of the world.

SETTLEMENTS. In the early stage of Greek architecture the frame of monumental constructions was not the town. The major compositions of the early days were handed down to posterity by the *temene*, the sacred groves. This is, perhaps, apart from morphology and temple construction, the subject most

thoroughly discussed, as the volume-like character of Greek architecture could be best demonstrated just with the positioning of buildings in the temene. Science has said about the buildings of the temene that their free position in the area of the sacred grove was the result of conscious artistic thought: the place of the objects was marked out upon optical considerations. Knowing the Greek theory of perspective and the practice based on it and being acquainted with optical corrections carried out in sculpture and architecture, we may find such examinations correct. It must, however, also be borne in mind that the arrangement of buildings in the temenos—at least in the beginning—was not based on optical but on cultic considerations. The arrangement of temple districts was bound by adaptation to sacred places and objects like a brook, a blasted tree, a hole cut by meteorites, a cave, etc. Inside the temenos the temples were oriented in the closer sense of the word, with the main elevation looking invariably to the east, a position that was but seldom changed in the course of renovation or rebuilding, as like offerings placed in the grove, they were considered immovable. The unboundedness of the temene was, in fact, the result of the observance of various limitations. It is only in the knowledge of adaption to nature in this sense that we may say that in the composition of temene cultic demands faded out in later periods giving way to a respect to "aesthetic" impression on man.

The crux of this composition was to group the buildings of the temenos in a way that space between them was left open to one side. It was only in a concealed form that this was enforced in the temple district of Olympia but it came to full expression at Argos where the edges of the terrace of the terrain were hardly built in at all. Hellenism seems to have changed this system as the temple was not placed free in the temple district but its place was determined by an axis, as in the case of the temple district of Asclepios on the Isle of Kos. The appearance of this axiality, probably of eastern origin, did not interfere with the structure of Greek architecture: the temenos was situated in a U-form court—open to one side—ensuring the connection of object and natural space in spite of axiality. In Pergamon, the temenos was a result of conscious archaism, the temple of the fort was not adjusted to the central axis of the peristyle court but—following the example of the model, the Parthenon in Athens—it was left at the edge of the terrace, facing the sphere of open space.

A characteristic trait of urban squares is the *stoa* with its columns and verandas, derived from the temene. The ideas of space organisation realized in the temene were reflected in the general arrangement of settlements. Written sources telling about ideas of city planning as well as realized objects indicate and prove the creation of the right relationship to the setting, the harmony of natural and artificial forms. Writing about city planning in his Politica, *Aristotle* speaks about the time when in addition to the old-type organic forms

of settlements with irregular plans also new ones along the rectangular arrange-
ment, suggested by *Hippodamos*, were present. Aristotle thought that the
best terrain for a town was a slightly inclined slope and, with a view to health,
administrative, strategic and trade considerations, prescribed close contact
with land, sea and the surrounding country. He also suggested that both
methods—irregularity and regularity—should come to word in the develop-
ment of a town if we want the settlement to comply with the demands of
security and good taste. These principles are in almost full harmony with one
of the basic problems of Greek philosophy, the determination of the relation-
ship between nature and norm—*physis* and *nomos*.

The arrangement of ancient Greek towns was not far from the Aristotelian
definition. Olynthus from the 4th century B.C., the earliest Greek town known
to us, is an amalgamation of natural and systematic order: the best part of
the city was built along a network of roads cutting in the rectangular, while
the protecting wall around the periphery faithfully followed the demands of
the terrain and dissolved in the surroundings in the form of an unbound con-
tour. The systematic building method of the East changed in meaning and form
in the hands of the Greek as geometry served the rational realisation of settling
even if the inclined slope led to forced solutions of regularity. It was not only
the outline of the city that became more resolved but its interior did not remain
closed in the oriental sense of the word, either: also in Olynthus it was only
one wing of the houses that was raised to several floors, as found most con-
venient with a view to the weather. Closed building-in became loser also in
the columned courts. Like the courts, the *porticos*, typical features of the streets
of Hellenistic towns, lent an inner openness to the townscape and the urban
squares, *agoras*, were similarly of an open character: historians of town plan-
ning consider the horse-shoe curve of the agora as typical and general. The
market place open on one side looked at the sea in Cnidus, and part of the
northern agora of Miletos also resembled that of Cnidus by turning towards
the port. Even Priene's agora that seemed to be closed in at four sides was
practically U-shaped as the fourth side was closed down by the monumental
Hiera Stoa differing from the rest by its elevation. Thus even in this seemingly
irregular example the Greek conception of space, open at one side, came into
full display.

BUILDINGS. The model of the interwovenness of nature and man-made crea-
tion was perhaps the *theatre*, this most congenious masterpiece of Greek archi-
tecture. Situated in the hollows of hills and mounts, the semicircular theatres,
the rows of seats for the audience and the small storehouse was formed from the
composition of a convex and a concave element. The scene built opposite to the
horse-shoe of the stands was later also hollowed by the two small projections,
the parascenes added to its ends so that the architectural frame of the drama,
this chef d'oeuvre of Greek literature was created by the opposition of two

U-shaped elements. The space enclosed, the round *orchestra* was not hermetically closed in by the two elements, as sitting at any spot of the theatre—perhaps with the exception of the lowest seats—, the view was open, the background of the action being given by nature and not by the low scene. In an inverse ratio, space relationships were similar as choir and actors playing in the space hollow of the *proscenion* faced the bay of the stands that were also dissolving into nature. The two parts—theatre and scene—did not fall apart in spite of the fact that they were in no architectural connection, as they were bound together by the suggestivity of dramatic action.

The elegant connection between the compositional elements of the theatre, the balance of natural and systematic order, the reversion of signs between convex and concave, together with the antithetic opposition of the two concave elements, further the clearness of the functional solution of the building, ingenuity serving as a model for long centuries to come, and finally, the social and political importance of performances in the theatre, are all virtues that make doubtful the primacy of the *peripteros temple*, the work of Greek architecture that has found the highest estimation, and put this other temple, the magnificent and natural sanctuary of the Dyonisian cult in its place.

Making use of natural facts by minor artificial corrections was not an isolated practice in the world of Greek architecture: as shown by Hellenistic ritual objects found in southern Italy, nymphea cut as a semicircle into the rock and open in front, were pretty often made. The idea expressed in the theatre, the "theatre composition", was applied also elsewhere: although functional considerations called for an oblong shape in the case of *stadions* and *hippodroms*, their fundamental arrangement reminded of those of theatres.

Be it in the form of a semicircle or rectangular in shape, the theatre composition became the starting point for the arrangement of inner space for assemblies as well. In spite of the fact that these buildings were roofed—that must have been made most troublesome by the limitations of timber beams—the interiors still preserved their open character, even if only symbolically, as the stepwise raising rows of seats surrounded the free central space only on three sides. It was in this sense that the Telesterium, the sanctuary of the Demeter cult in Eleusis was originally built. The rows of seats were cut out of the rock and the stands were led around all the four sides of the space only in the course of a later rebuilding. In the Thersilium at Megalopolis attempts were made to improve the inner visibility by arranging the supporting columns of the roof radially—unlike the rectangular arrangement in the Telesterium. The lines connecting the columns united in a square shifted from the centre, making the centre of gravity shift towards the side open towards the scene. Thus, the assembly hall became an image of the adjacent theatre, whose auditorium was divided into cunei by radially running steps, while the inside of the hall was cut up into space-wedges by the colonnades.

The Ecclesiasterion of Priene was characterized by its inner space being closed down on three sides and left open on the fourth. The gradine stands were U-formed, their two ends being closed down by abutments and separated from the opening section of the fourth side, which was ornamented with an arched opening. Controlled space was emphasized by the roof-supporting pillars lining up along the walls only on three sides.

In the Bouleuterion of Miletos, the Greek architect found further means to create and suggest the connection of inner and outer space. The plan of the stands was arched in the form of a horse-shoe more than a semicircle, and the corridor at the open side of the hollow seemed to be separated from the middle part as the scene-front execution of the back wall of the corridor made the illusion of free space. The elevation of the building repeated the structure of the inner space: above the wall footing corresponding to the height of the theatre, engaged columns were lining up, whose length corresponded to the height of space above the stands. Windows were broken through the walls of the intercolumnia on three sides thus the column system representing the tectonic order of inside and outside joined the system of windows, which really did link up inside and outside. It is not accidental that this first consciously developed example for a really architectural façade in the world-history of architecture should have been realized in a building in which a space organism originally uncovered was forced among enclosed limitations. The rest of Greek buildings did not follow the theatre composition in form but in principle all of them were related to it, even the best-known object of Greek architecture, the peripteros temple.

What the temenos meant for architectural composition that was the meaning of the Greek temple for a single building. The placing of most of the temples was namely determined by fixation to a given spot and object, its nearness to nature originated in cultic traditions. Its form was determined by the Greek gods interfering with human affairs in a human way, who coming from one direction or another liked to take a rest at places where the—initially objective—memories of their first visit were faithfully preserved. In accordance with the archaic regularity of formal—functional—articulation the building selected for a god's abode could not differ from the home of man, the *megaron*. Later the conception of god's house faded out and the temple became an architectural framework to receive the deity. In the beginning the image inside the temple had some "instrumental" meaning: it was first made of wood and not of stone, as stone had no soul. This interpretation soon became generalised and the Greek considered the *agalma*, the image of the deity only a form, a replica and not a reality or a possible reality. No ceremonies were held around the *agalma*. The portraits of Zeus or Athene were one among the precious pieces of a collection in a museum and sacrifices were offered in the open—usually in front of the main elevation of the temple. Temple and altar had no architectural rela-

tionship, the two separate parts were united by religious action only—analogous to the relationship between theatre and scene—the agalma standing in the deep *naos* could witness through a large door the ceremony and people taking offerings.

Artificially created architectural space surrounding the agalma reached completeness so to say only together with part of the free natural space; Nature itself became one boundary of the architectonic space: hence the temple was constituted by the building with altar and free environment in front of it, rather than by the building alone.

As regards the purport, the god constantly changing his place and form and the division of functions between inside and outside were almost enough to determine among themselves the general form of a temple, the application of columned porticos, the peripteros. The development of the peripteros was promoted also by religious ideas raised by the columns themselves—the ancient images, the wooden *xoanona* were cylindrical symbols of gods. Thus a column meant for the Greek temple what the spire for a Christian church: it was an expression and a symbol of the cultic character of the building.

The Greek temple—as we have seen—was the result of clear and unequivocal development. The megaron with its simple design, with the synthesis of the open and the closed bore in itself the germs of almost the entire message of Greek architecture. In the peripteros this message came to full bloom double-faced: as space formation the *naos*, *pronaos* and *pleroma* of the temple expanded towards Nature. Without the natural space all of the rooms would have become areas of no importance. As a plastic work of art the temple united with the outside world through the pierced *peristasis* that seemed to penetrate it. All this comes from the single-spaced quality of Greek architecture. The development of an intricate system of space-linking was hindered by the aim to have access to the rooms directly from outside. A specific form of temple building, the double-temple—Apollo Temple in Corinth, Parthenon, Athens—proves the correctness of the argument: the two sanctuaries closed into a single building block could join the outer world individually as they were coupled back to back. Finally, the interior of the naos itself was a true reflection of typical Greek space shaping: the double naos (Thermon: Apollon temple, Paestum: "Basilica") was left open at the front part in full width, in those of three-nave design: Athens: Parthenon, Hephaisteion—the inner order of columns embraced the agalma in a U-shaped arrangement.

It is on hand of the analysis of the interior space structure of the Greek temple that regional differences of temple construction can be pointed out. The typical way of Greek space conception found its clearest realisation in the Doric temples of the mother land. The Ionic diptera of Asia Minor—Ephesos: Artemision, Miletus: Didymaion—with their colossality, many-columnedness, a special emphasis given to the portico, their dromoi, in short axiality and fron-

tality, joined the original particularities in a secondary way. In the temples of Magna Graecia, the completion of the pronaos to a "Sicilian prostasis", the absence of *opisthodomos* and *adyton* opening from the naos bore the germs of a linear space system, a quality of space forming not typical of the Greek character. This may be explained by the vicinity of the Etruscans (Syracuse: Apollo temple, Selinis: Temple "C").

In the Hellenistic era the *altar* became an architectural object in itself: the ritual of offering the sacrifice took place in a building surrounded by *porticos* on three sides. In Magnesia and Priene the U-shaped altar faced the eastern front of the temple, while the Zeus altar in Pergamon was erected in a *temenos* of its own, uniting the usual, divided function of the temple where openness could actually prevail. In buildings of smaller dimensions there are many of a similar conception of the half-open space: the temene of Epidaurus and Delphoi were full of free-standing *exedrae* and also *tomb aediculae* showed this transitory form of space conception, as well as worldly buildings and parts of buildings, like *porticos, stoas*, the small projections, joining the stoas or the *vestibule* of the Propylaea in Athens, forming a kind of "cour d'honneur", etc. The same idea was expressed in living houses, these works of Greek architecture comprising the greatest number of space elements in spite of the fact that their final form shows traces of influence coming from the Near East. The „palace" of Larissa was nothing but a conjunction of several megarons. In the Pastas house of Olynthos the portico of the megaron was transformed into a corridor to arrive finally at the general type: the *peristylos*. The peristylos court was never in the middle of the plot but took an eccentric position: being embraced by the rooms opening directly from the court only on three sides, while the fourth side was closed down by a fencing wall (Priene, Delos). The structural openness of the living house asserted itself in addition to the eccentricity of the court also in the columned verandah, whose space effect in relation to the house stood for that of the porticos in the case of streets and agorae. Also parts of houses are known in which the court was open at one side: in the terraced living houses of Piraeus.

CONSTRUCTIONS AND DETAILS. The space conception realized in the buildings was the guiding principle of details as well. Details and space are generally correlated, because in periods with a preference for interior, the plastic value is decreasing, while in periods with a stronger sense of connections with the exterior, details become more marked in space: the first instance finds illustration in Byzantium or in the late Gothic, the second in Greek architecture itself. All this is completed by another component: the survival of the ancient way of construction of the Greeks, of the elementary role of the wooden structure that preserved its skeleton character also when transferred to the stone of the Mediterranean.

The development of walls was not typically plastic. The Greek idea of the wall was monolithic. Stone masonry joints were concealed, just as for the co-

lumn drums. The skeleton of the ancient wall was preserved, however, in the
early temples, primarily in the Heraion (Olympia), and it is possible that the
naos of the Apollo temple in Phigalia built in the 5th century cherished this old
tradition of construction in its wall projections and three-quarter columns.
From the Hellenism on, walls articulated by engaged columns became general.
They bore a closer kinship to the ancient half-timbered wall than did the mono-
lithic wall surfaces of the Golden Age.

The *order*—the structure, the form composition that has made the brightest
career in the history of architecture—is a guide in itself through the progress of
Greek architecture. As it has been demonstrated, in addition to their structural
role, the columns played an important part in evoking religious concepts. It was
just these concepts associated with the column that initiated peripteros temples.
The meaning of this important element of the column-beam structure under-
vent important changes as the aim was to make it antropomorphic in appear-
ance both in the objective and the subjective sense of the word.

The first attempt aiming at an objective interpretation resulted in descrip-
tions formulated in Antiquity, that called the Doric order masculine and spoke
about the feminine proportions of the Ionic order. The same attempt solved the
inner relationship of the proportions of the order. Like Polycleitos' canon of
sculpture, the modular system of architecture was born with the endeavour to
lend the construction the appearance of organic origin and development even
if the properties of the material, of stone, should be observed by the architect.
The other trend of progress went farther than accepting the function of the
order to act as a live organism, to comply with the tectonics of bearing and
supporting, and to express it in an objective way. It expanded relationships
between man and building from the point of the impression made on man, in
a subjective way, by making use of optical observations.

This anthropomorphism of the order realized in two ways lent the structure
an ability that made it suitable to be built in the greatest variety of dimensions,
and it was just because of the anthropomorphic elements that dialectics could
remain human even in enlarged form. The transplantation of the cultic into the
aesthetical; the objective expression of function and its correction for the sub-
jective; the material-boundedness of dimension and proportion while it was
transformed in an anthropomorphic sense, in short: the specific synthesis of the
absolute and the relative give the keyword to understand the Greek order and
its thousands of years of career. In final analyis, the last word in the case of
the order was a dialectical interlacing of the space-like and the volume-like:
the negative spots of the *intercolumnia* fading out in the background like a
series of noble-lined vases and shining, positive *columns* were components of
similar importance of the *peristasis*, and the hollows of the *cannelures* marvell-
ously helping the expression of the column were elements of this palpitating
dialectics. This is supported also by the method of construction that usually

marked out the place of columns intercolumnarily and not interaxially, defining the distance between the two plastic elements by the dimensions of the gap between them.

The *entablature* of the Greek order was neither mere structure nor applied ornamentation. Neither the battlements of the Near East, nor the crown of Egyptian buildings were indicative of the interior of the building, of ist structure and thus to space shaping. Unlike the former, the Greek *cornice* was spatial also because it protruded in volume from the frontal plane of the building and also because it revealed the system of the roofing of the object and even that of covering the inner space. This connecting role of the cornice is proved also by the widespread application of string cornice: in Hellenistic buildings the cornice indicating the outside division of the surface gave an idea about the inside system as well. The completing ornaments of the cornice played a similar intermediate role: the freely expanding forms of the *acroteria* created a connection between building and surroundings in the same way as battlements used to do, whereas the *antefixes*, the discs and lion heads of the gutters projected to the façade of the building a function coming from inside.

Spaces were consistently covered by plane ceilings, not only because the Greeks were sticking to their ancient building customs, but also because their sense of space and form demanded well-arranged lucidity. They never used vaults because a vaulted space awoke in them a feeling of insecurity and lack of structure although the vault was known to them and theoretically discussed. It found application as an ornamental arch or as a gate. The plane ceiling was often *coffered* and the *rosettes* in the empty fields had preserved their astral meaning: an identification of roof and sky may be assumed even with the Greeks. Several Greek buildings are supposed to have been covered by opentruss roofs, others were left uncovered, of *hypethral* illumination. The spreading of hypethral illumination was promoted by several factors: the flue on the roof in the megaron and uncovered courts of eastern character replacing the naos. The opening of the space upwards was not contrary to the spirit of Greek spaceshaping as, in their eyes, it was a vertical variant of the interior space left open on one side.

In the relationship between buildings and applied works of fine art the skeleton character of the building and the elementary quality of the structure marked out the place of ornaments; spaces that seemed to invite filling-in. Statues and reliefs in the *tympani*, *metope* and *friezes* gave the illusion of placing in free space. The plasticity of the idiom of works of art complied with this freedom. This free union of tectonics and descriptive arts was broken only by eastern influence: the *columna coelata* of the Artemision in Ephesus, the *pedestal frieze* of the Zeus altar in Pergamon may have been suggested by the nearby *orthostats* of the Near East. The image of the deity in the naos was similarly set in the spirit of free expression in space. Its place was sometimes marked out by

the pattern of the floor and it also happened that it was framed in a horizontal sense like in the Parthenon, where it stood embraced by columns arranged in U-shape. It never got, however, any vertical, niche-like framing: the Zeus statue of Olympos almost burst open the naos. The *atlas* and the *caryatid* were in contradiction to the principle of applying sculpture at neutral points of the structure, since here the human figure was applied as a structural part. This composition suggested some sense of stress as expressed by the name given to this type of support by the Greeks themselves, who called it atlas and looked at the caryatides as woman slaves.

The anthropomorphism of the column and beam structure, its dialectics, the volume-like modelling of details and progress from the inside to the outside, the suggestion of the interrelations of inside and outside by making use of the details in a similar sense, the lucidity of rooms covered by plane ceilings, the hypethral connection between interior and exterior atmosphere, the unbound connection between tectonic and artistic forms was the realization of space conception in the field of details.

FINE ARTS AND ORNAMENTS. The Greek works of architecture and also the details were characterized in purport and form by the transformation generally valid for Greek life. Everything was transubstantiated in this world, man and even man's universe, thus it is not surprising that the last quoted sphere of Greek space conception, descriptive art, bears a similar duality.

The inherent contradiction of descriptive art was born of the *democratism* of the form—realistic representation and comprehensible forms—and of *aristocratism* in purport: mythological scenes were replaced by real subjects only in the late periods, historical events were for the most part wrapped in the mist of mythology. Instead of continuous interpretation common in the East, Greek art aimed at emphasizing the essential, at presenting the typical. Its wish to typify was, however, an idealistic concept, as the artist often composed the figure of the "beautiful girl" from the features of several models without giving up the interpretation of ethnic characteristics: an ideally beautiful girl was invariably a Greek girl. Thus the principles of Greek descriptive art were outlined by democratism and aristocratism, by focussing on the essential and numbness to concretisation in the historical sense of the world, by juxtaposed and superposed anatomical and ethnical reality and idealistic generalisation. The methods of formal expression were similarly permeated by Greek transformation. By rendering the standstills of change perceptible, the Greek artist amalgamated space-like and volume-like, movement and immobility in sculpture and relief.

The Greek *statue* was an important, even revolutionary step in artistic interpretation. The figure shown in contrapposto standing or stepping out, at the verge of motion and immobility became an actual form of space, an organism developed from inside, that could be understood only from several aspects: by

walking around it. Dualism permeated also the anatomic structure of the figure: the limply drooping arm was on the side of the taut leg, the just released leg, ready to step forward was on the same side as the shoulder bearing the weight. In other cases the change in motion found another expression, a discus thrower was caught at the standstill of reaching back and starting off, a flying figure was depicted in the floating moment of reaching ground, etc. These transitions took place according to the Greek *measure*, when the subject called for great motion the artist appeased it by a setting akin to the frontal.

Reliefs and drawing give perhaps an even better idea of the space conception of the Greek than the statues do. The figures lived and moved against a background left neutral and perspective was restricted to the figures themselves, leaving the background out of consideration. The composition found its meaning not in the perspective of a depicted milieu, but by its connection to the outside, real space, making the impression that the figures were not separated from natural world and referred to an artificial one, but appealed to the presence of the former. Some depth of perspective was created sometimes by a few objects, like furniture, a loom, a tree-trunk—but even that became indifferent because of the ornamental quality of the staffage. Thus the fundamental tendency of Greek space organisation came forward also in descriptive art; the world created came to full value by its intimate relationship to the existing world. Finally, even secondary phenomena support this specific space relationship: Greek reliefs were generally not framed in, the peripheries of the representation ran free even in the case of tomb aediculae of architectural execution: their frames were pretty often covered by the contours of the figures, the back of a chair, etc.

Greek fine arts were generally characterized by the interpretation of perspective effects reduced to some extent. Yet there was a single field where the representation of space—in its depth— became more marked than usual by forming the background of the composition also along the principles of the perspective. There appeared in the theatres painted scenes that called forth the illusion of space. This perspective interpretation was known as *scenography*. As if the illusory spirit of the drama had drawn to itself the representation of the scene of the play: the transposition of the events of life into the world of imagination called for an extatic milieu. In the beginning, the scenographic milieu was just a frame to scenes taken from the world of the theatre—subject and representation techniques were interconnected—and it was only later that the two parted and perspective was adapted also by other genres, first of all —of course— by mural painting. Development may be followed in this instance almost step by step: "incrustational" wall picture was practically a coloured layer of stucco imitating a cladding of brick or stone in a slightly protruding form. Later the shade falling into the flute was only painted, the wall became smooth, plastic only in effect. Also representation in perspective proper was

applied on walls generally where there was some opening: in details underlining windows and light openings.

No architectural plan and very few pictures of buildings have been left to posterity, it may be assumed that not many were prepared at all. What we know, supports the plasticity of Greek architecture: it is probable that *paradigmae*, models were made of buildings and statues. The inscriptions on buildings, like the unframed relief, spread free on the surfaces, the sculptors cut line after line without any special arrangement or emphasis.

The basic achievement of Greek descriptive art was that it took possession of space. The various genres express the basic trend of making spatiality understood and expressed. A figure represented in contrapposto became animated not only in itself but forced the viewer to move, filling statue and the space around it with dynamics. A relationship between created and natural space was manifest also in reliefs and drawings, in the beginning quite equivocally, as a consequence of the neutral background, later when perspective came to a universal force including the background, to a smaller extent, for at this time the representation was closed down, existing for its own sake. This method was not entirely of the Greek type, as scenography could be invented only by the Greek, but it was just the Greek who could not employ it unrestricted as it would have contradicted a principle more important than any appearance, any optical play in his eyes: crystal-clear lucidity.

IDEAS. The overall picture of the Greek world was also characterized by a long line of transformations—transitory phenomena—because every manifestation of their life was governed by some wavering concept of space and time. This wavering was present in the acts of beginning and end alike, as transformation did not mean some chronological sequence but juxtaposition. We may consider the life of the Greeks as a unity since the components contributing to the formation of their aspect of the world never underwent important changes.

Geographical background was a decisive factor in the Greek aspect of life. These men of the North descending to the shores of the Mediterranean seemed to be always aware of the experience of their arrival to the new world. Every work of art is trembling with the dazzling sensation of stepping out from the dark to the light, the shock of catching sight of a southern sea.

The sea, or more exactly the seashore, became the home of those arriving in groups. It was the sea that linked up the life of dispersed tribes and it was also the sea that separated them: *Platon* was right when he said in jest that the Greek states surround the sea like frogs crouching around a pool. This specific geographical framework affected economic and social establishment directly, but indirectly it influenced also the formation of the consciousness of the Greek. Greek people were not fond of infinite sea—it was only its openness that appealed to them. They seldom went far from the shores: they remained coasters shipping to the East or to the West, because their sense of security demanded

the safe base of land in the vicinity. They never penetrated into the depth of land, the Greek world crystallized at the borderline of sea and land as expressed by the *horror vacui* or the *Hass des Unbestimmten* to complete this criticism of Greek art by further formulations.

The forming of concepts on nature must have been influenced by geographic factors: it was not accidental that *Thales* considered water the first principle. Nature, as we see, was understood in its materiality and not as a personified god, but at the same time, Poseidon lived on for a long time—maybe for ever— in the consciousness of the Greek man. The dualism of *mythos* and *ratio*, *physis* and *nomos* was—for a long time—the fundamental problem not only of Greek philosophy but of Greek culture as a whole. This duality rooted in the new relationship of man to the world, or more correctly, in the connection of world to man: in the anthropocentric philosophy of the Greek.

The basic conditions of relation to nature were, of course, determined by economic and social structure also in this case. The Greeks of the old times living at the cultural level of nomadic peoples, founded their home at the instance when the tribal structure was decaying and economic forms began to appear after settling down. Agriculture and animal husbandry put the landed aristocracy at the summit of society. With the development of trade and the beginning of colonisation there appeared also artisans and businessmen—the depositaries of the economic life of the *polis*—whose interest was to support the tyrannos against aristocracy. Having fulfilled its equalizing role, tyranny was overthrown and the country was divided among two types of polis: agricultural, aristocratic, of retarding culture and democratic, progressive city states of democratic artisans and businessmen.

Both formations bore a peculiar contradiction, transformation, as neither could boast of a clear structure. Administration was carried out in the name of the people in the democratic states but the spirit of administration was aristocratic. On the other hand, in states where some kind of free competition, economic individualism was prevailing, such as in Athens, soon imperialistic attempts were made. The power of the landowner classes of aristocratic states was not unlimited: Hellas never knew latifundia of Roman dimensions. Even slavery was double-faced, as it was the Greeks themselves who condemned—if only in literature and philosophy—this inhuman institution. The most important motifs of the development of social consciousness rooted in trade. The start—the ancient shepherding culture—created favourable conditions for the abstract way of thinking of the later Greek businessman. Money economy gave a new impetus to this process of abstraction which was crowned finally by scientific thinking, in the first line by pilosophy.

The ancient history of Greece was practically that of the almost isolated history of city states. Each of them was a world in itself both as regards inner structure and outside conditions: the great cultural inheritance in the East,

the neighbourhood of Carthagians and Etruscans in the West, added new shades
to the autochton characteristics of dispersed Greeks. There was one thing,
however, in which they were one: affinity bound the souls to the polis, the
interest, fame and honour of the polis was respected above all. The local patrio-
tism of polis-consciousness dissolved, however, in the wider patriotism of Pan-
Greek consciousness. Visible signs of this affinity were the live contacts between
metropolis and settlers, national games, oracles, and political alliances against
non-Greek intruders. But that was all. The thirst for freedom of the polis hin-
dered any lasting union in the Greek world. The Greek was a "zoon politikon"
but never a bureaucrat. Thus his political power of organisation never went
beyond the frames of the city-state and it needed a half-stranger—Alexander
the Great—to create the Greek hegemony, a hegemony that foreshadowed the
end.

   The intricacy of the Greek world came from two basic properties: one was
the approach to modern thinking, the other the polarisation of statements
between two extremes. Transubstantiation was expressed in religious thinking
already. In the consciousness of the Greek the creation of the world was also
a reverse process. Contrary to earlier belief, man created his gods to his image.
The projection of the *ego* into the universe and the identity of the two worlds
parted the world of the Greek into its own microcosmos and the macrocosmos
of the universe, yet he was sure that both were directed by the same norms
and thus he needed no mistification for the interpretation of phenomena.

   The universal order of morality was determined by the anthropocentric way
of thinking as well. Investigations into the nature of man, the wish to "know
thyself" was responsible for this dualistic aspect, for the various possibilities
of moral behaviour between the poles of idealistic rationalism and materialistic
hedonism. Body cult is another illustration of the double face of the Greek:
contests connected with the cult of the dead became an abstract form of struggle
for life: *sport*, which was considered later an aristocratically enervated pastime.
This reversion of signs took place also in literature, primarily in drama: drama
developed from the extatic cult of Dionysos became a guiding tool of social
life to turn into comedy putting even obsolete religion on the stocks. And all
this was made in the sign of the *agon*, the competition so characteristic of the
Greek man, that raised admiration for the abilities of creative man, though
could not become excessive as it was protected against boastfulness and show-
ing off by Aristotle, who said: up to this point: and not further, and by the old
hybris concept of the ancestors. Almost all manifestations of Greek culture
were characterised by self-conscious self-assurance and right measure.

   In Greek culture autonomic scientific thinking was almost unlimited. The
riches of thought as well as its contradictions were expressed in the differences
of philosophical systems. The starting point, natural philosophy came from
the Ionic market towns of Asia Minor. The materialism of Miletos had a strange

by-taste, as this doctrine was hylozoistic at the same time. As an antithesis to materialism, the numerology of the Pythagoreans meant the birth of idealism. Even the eternally flowing river of Heraclitus ran dry at the dam built by the Eleatics, as it froze the world to immobility. Aristotle, the great realist, accused Platon of futility as it was superfluous to double the world with his ideas, while he himself did the same to reality by the concept-pairs of material and form, cause and end. The same spirit was reigning also in the theory of arts; categories and postulates:

—purport and form;
—the majority of people are interested in purport and have less sense for the form;
—typifying art reflects reality more perfectly than philosophy does;
—the role of the accidental in art;
—art is imitation;
—beauty is only in the geometrical forms of abstraction

are all statements illustrating the hesitation between the absolute and the relative. The well-developed ability of abstraction proved fruitful also in other fields of science, primarily in theory. Theory and practice were separated by the same tension as intellectual and physical work: the Greeks did despise applied science—like physical work—and had a higher estimation for theory for theory's sake.

The survey of the Greek world is not complete without clearing up the role of ethnical factors. The birth of a nation, the scientific formula for its concept came very much later but all that the Greek culture had ripened under the conditions of the ancient world was national. And what is more, the national could break through the closed limits and raise the results of its culture to aims expressing the universal progress of mankind.

The origin and characteristics of the factors moulding the ideas of the Greek people could be summed up in the following: Their seaside country formed the geographical sense of position of the Greeks transitory and called to life the concepts of the formulae *freedom—boundedness, separation—affinity, security—insecurity*. The natural sense of position was based on almost scientific thoughts by assuming a materialistic world and by discovering the rules governing this universe. Social sense of position was characterised by polarity—a democracy within the frames of slavery—and the intensity of abstraction never seen before had common roots. Some superiority to the historical, an anti-bureaucratic spirit, local patriotism and some helpless nostalgia for a great unity gave the keynote to historical sense of position. Cultural sense of position was almost universally defined by anthropomorphism, the ethnic sense of position came from a unity of the national and generally human aspect. The possibility that the discovery of scenography marks some refined, perfect stage of the sense

of position cannot be verified but is an important counter-argument to the theory of the "Körper-Stil".

SPACE AND IDEAS. There never was a period that would have changed human life to such an extent as the Greek period did: the essential point of the age was transubstantiation. Thus—quite generally speaking—it is almost natural that architecture was also characterised by transitionality.

The geographical sense of position had a great impact on the architectural aspect even at such an advanced stage of social development, and it may be assumed that it supported the interpretation of space as some kind of natural gulf. The character of natural sense of position was in the beginning hardly different from that of Eastern people, until the Greeks discovered the regularities of nature. All phenomena that are known as an amalgamation of the natural and the systematic in the arrangement of the temene, in town building, in the theatre, in the interconnection between artistic and tectonic forms go back to this element.

Among the characteristics rooting in the social sense of position, rationalism is the most typical. Rational thinking found expression in Greek architecture not in the clever solution of some intricate problem—there was no opportunity to do so because of the single-space character of architecture—but in the creation of individual tectonic forms as required by various functions: in the degeneration of the lack of differentiation between form and function. A statistical comparison between the spheres of Eastern and Greek architectures reveals that the number of types of building hardly amounted to half a dozen in the East, while in Greek architecture the number was more than doubled, although as to ground plan, the constructions of the latter were much simpler than those of the former. Social conditions resulted in putting an end to construction works done by great masses under physical oppression: buildings were constructed upon contracts. This was accompanied by a harmony between the size of buildings and the standard of technical progress.

Neither fine arts nor architecture bore the marks of the "monumentality" known to Eastern people: in the arts, the concrete *hic et nunc* was concealed in mythology and the expression of individual features and age in idealism. In architecture "the setting up of a monument"—a literal interpretation of the word "monumentality" was a privilege granted only to the gods, buildings like the Mausoleion or the Philippeion erected in honour of a mortal appeared only in the late periods. The political and social ability to organise of the Greeks being exhausted by the creation of the polis, their architecture did not become bureaucratically over-organised either, this was the cause of single-space buildings, the lack of composition, the small number of components of the clarity of composition principles, the horror from closed frames, unboundedness,—in short: of freedom. Political aims at expanding polis-consciousness were reflected also in architecture by the amalgamation of style elements of various

origin as back as the 5th century, but a synthesis could be brought about but partially even in the Hellenistic period.

The anthropocentric aspect was responsible for all features that made Greek architecture organic and similar to a live organism. This directed scientific interest to the "epistemology" of seeing that passing through optics and sceno-graphy resulted in aesthetics, the science of perception. The recognition of regularities gave the genres some unity: the numericality discovered in natural forms and organism developed in artificial formations initiated the canon of sculpture and the modulus of architecture alike. Finally the firm adherence to national characteristics resulted in architectural details preserving their orig-inal—in final analysis tribal—properties and also in keeping up the single-space concept to the very last: it took a long struggle even to the megaron to merge with the system of the house with a peristyle court.

A brief summary of the foregoing permits the statement that the funda-mental trend of space organisation in Greek architecture was a kind of space-contrapposto, a dialectical interference of space-like and volume-like, of natural and artificial, that expressed the general truths of architecture in a human and national idiom.
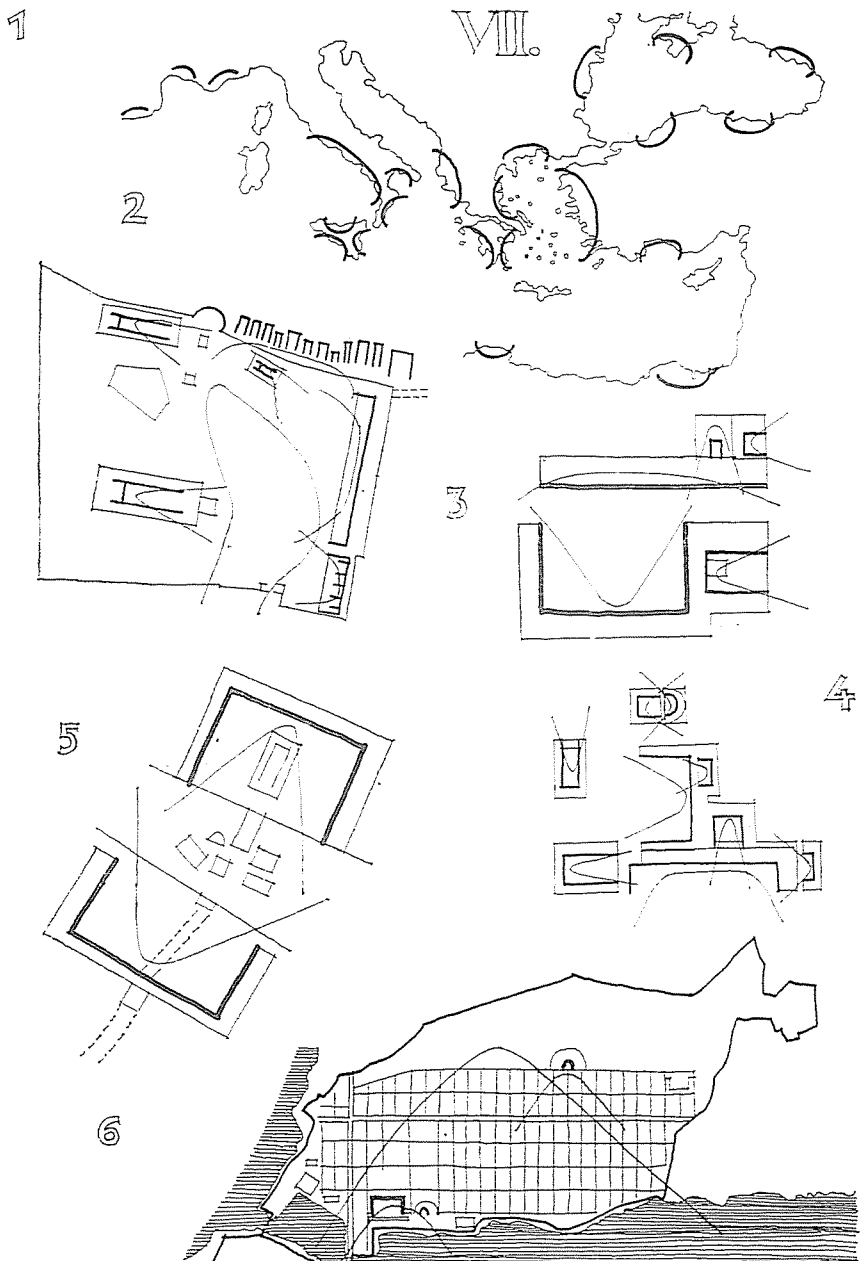
Plate VII. Hellas. Settlements.
1. Greek colonies around Mediterranean; *2.* Olympia, Temenos, 5th century B.C.; *3.* Priené,
Agora, 2nd century B.C.; *4.* Miletos, Agora, 3rd century B.C.; *5.* Kos, Temenos of Askle-
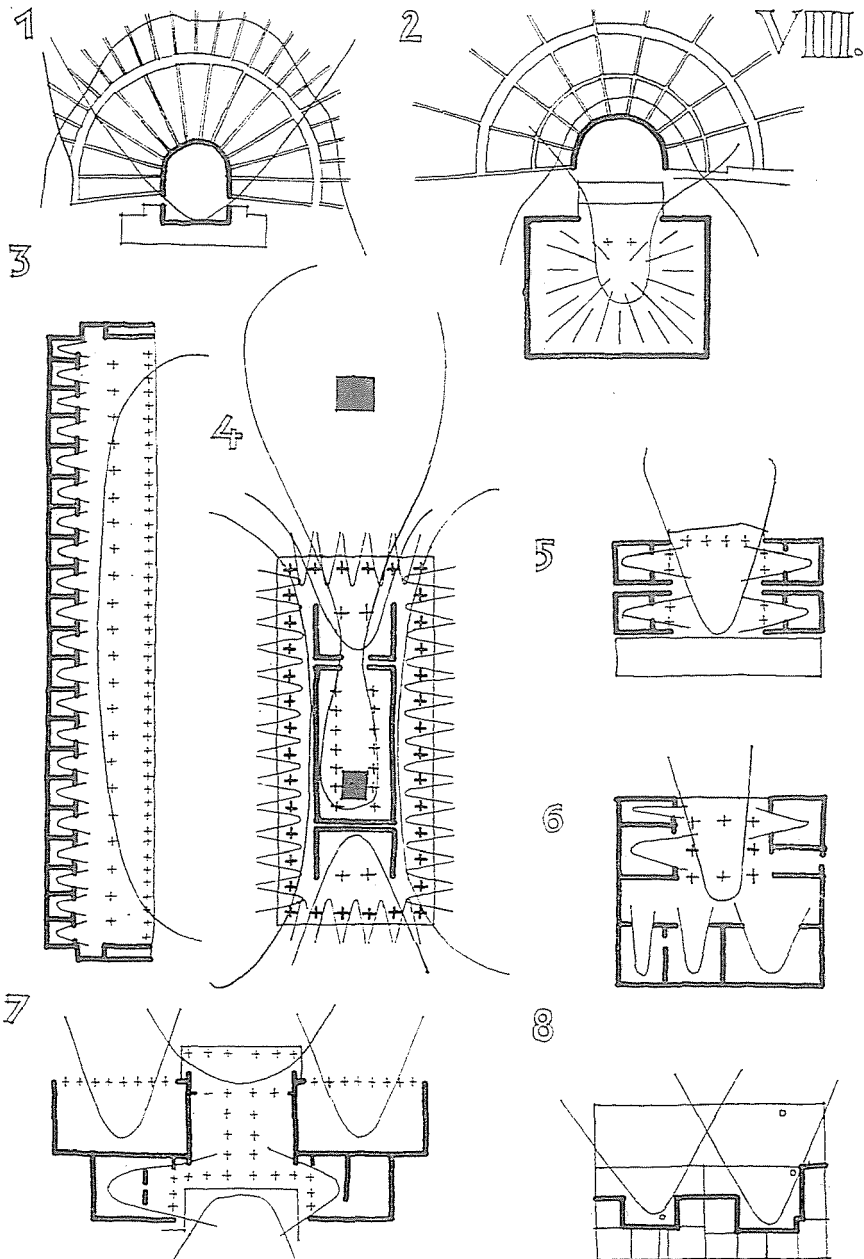pios, 3rd century B.C.; *6.* Knidos.

Plate VIII. Hellas. Buildings.

1. Athens, Theatre of Dionysos, 4th century B.C.; *2.* Megalopolis, Thersilion. 4th century B.C.; *3.* Athens, Stoa of Attalos, 2nd century B.C.; *4.* Peripteros temple; *5.* Larissa, "Palace", 5th century B.C.; *6.* Olynthos, the Pastas house; *7.* Athens, Akropolis, Propylaia, 5th century B.C.; *8.* Piraeus, house, 5th century B.C.
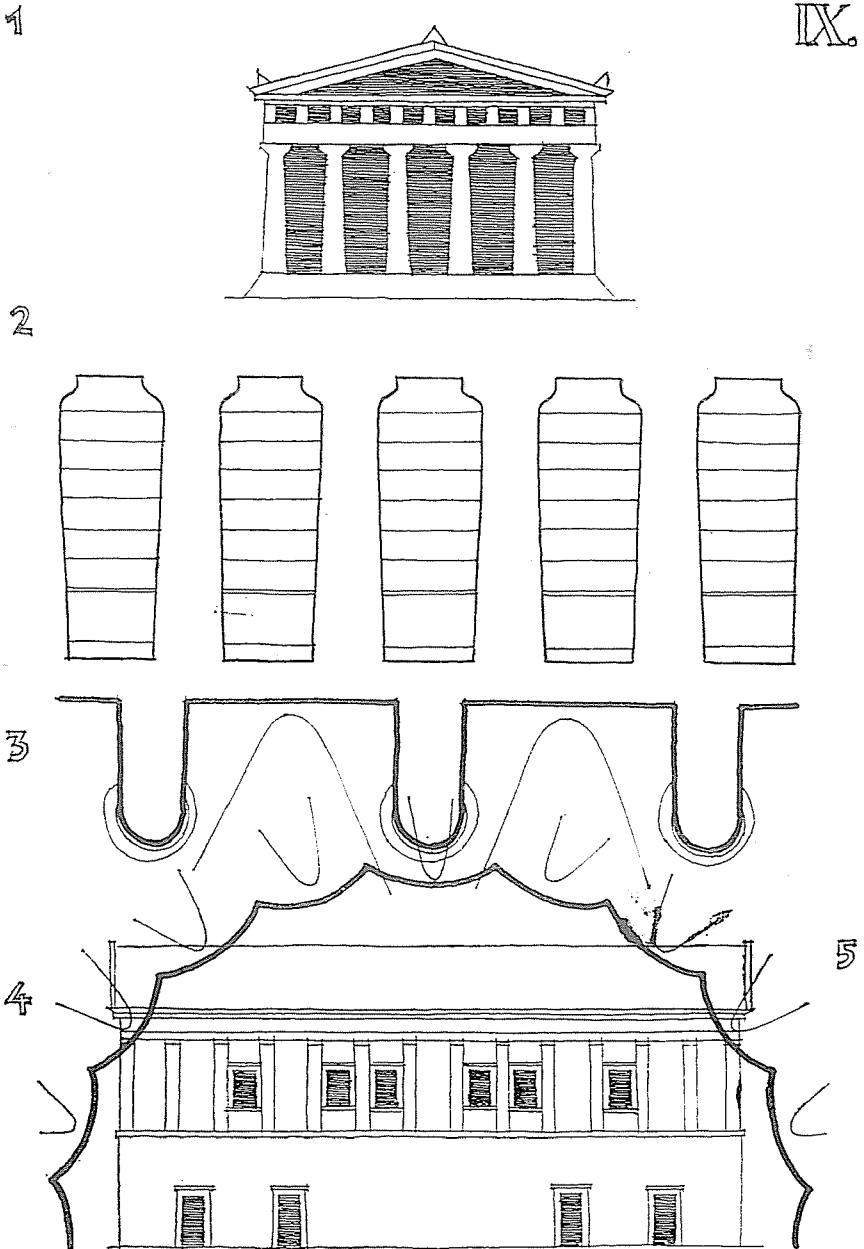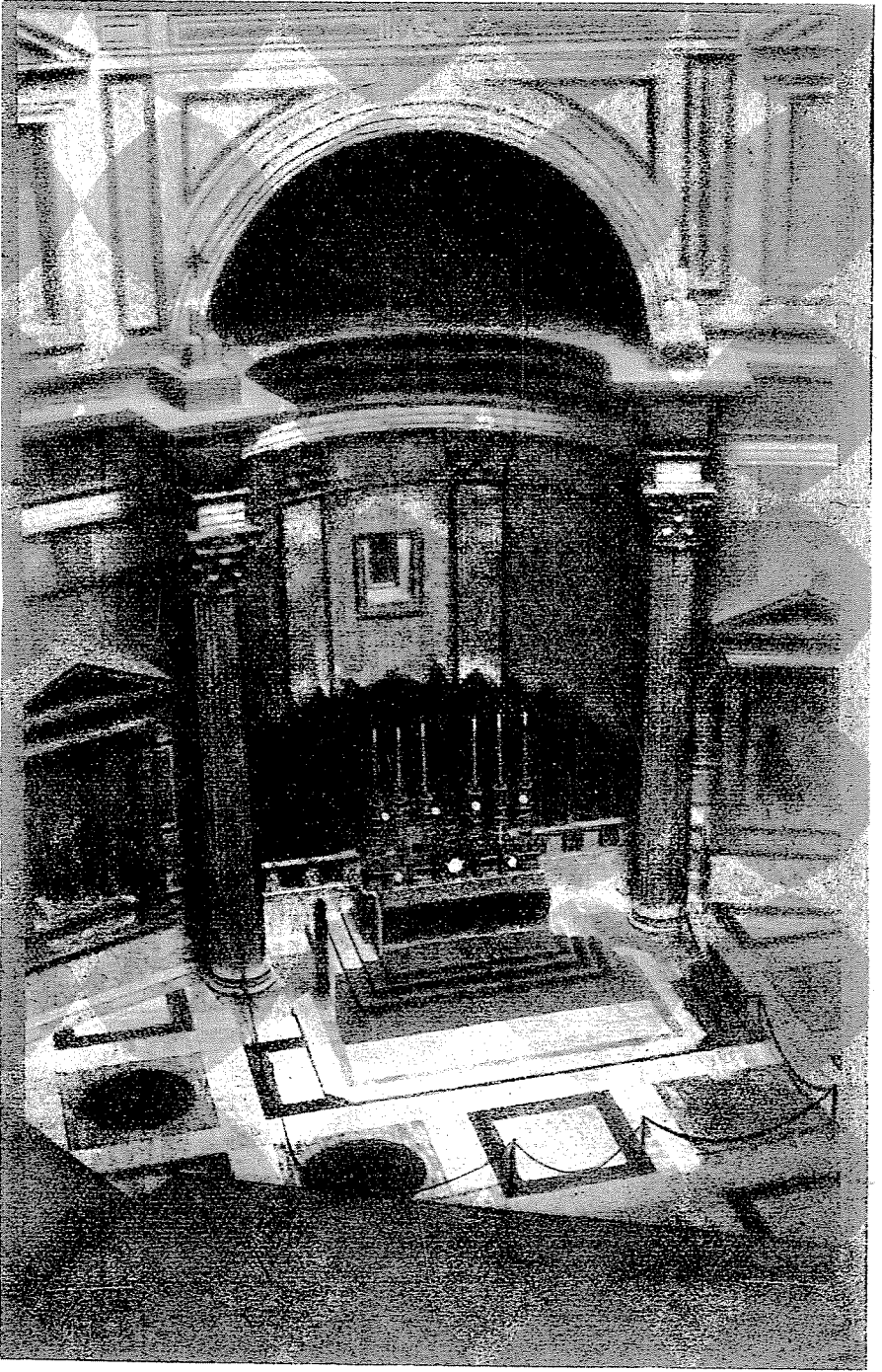
Plate IX. Hellas. Constructions. Details.

1. The skeleton-like structure of peripteros; *2.* Intercolumnia as independent forms;
3. Phigalea, wall-nishes of Apollo temple, 5th century B.C.; *4.* Rhabdosis as an expression
between volume-like and space-like; *5.* Miletos, Bouleuterion, the first "real" bulding
façade in history, 2nd century B.C.

4. Roma. Pantheon. 2nd century A.D.

"... nunc quoque confusae quondam nota
parva securae: ante quod est in me postque
videtur idem."

(Ovid: Fasti I. 113—114; Janus feast)

The Roman Cross

Roman architecture was an organic completion. the consummation of the architecture of Antiquity. Approaching the works of Rome from either the qualitative or the quantitative point of view, it may be said that it went further than its forerunners, and surpassed the achievements of earlier periods. The most characteristic property of the age is that this step forward was definitely made just in architecture and not in any other manifestation of the arts, whose originality may be rightly argued. This unequivocally shows that matter-of-factness was the gist of the Roman era. The Roman knew it and was proud of it, praising his common sense as his greatest virtue and using it as an excuse when accused with lack of originality.

It was, however, not only in the sphere of architecture that the period displayed new traits but also in the *theory of art*. The process of abstraction started by the Greek came to completion with the Romans: from the instrumental form of the descriptive art, art for art's sake was born. This new—so to speak modern European—relationship to art became manifest in a passion to collect and the delight in art. The Romans created new relationships also in space shaping. There are many who attribute to them only the creation of interior space "proper", but their merits are greater than that. In compliance with the empiric character of their space conception, they arrived at a synthesis of the basic trends in space organisation of previous periods—concentric, linear and transformed—and by this to a most differentiated dimensioning of architecture.

SETTLEMENTS. Direct information about the purposeful ways of settling Roman towns is found in *Vitruvius' Ten Books*, an encyclopaedia of architecture. His instructions are practical related to healthy surroundings, good living conditions, near roads as facts to be considered in selecting the place of a new town. He pays special attention to interconnections between the winds and the orientation of the settlement and if some scientific demand turns his eyes to the sky it is always survivals of very old customs and atavic rites he makes return, clad in utilitarianism in his pieces of advice.

The Etruscans marked the place of their ritual districts and settlements on the hand of augural symbols, a rite to point out the *templum* or *pomerium*, whose sense was a belief in the interrelation of subhuman and human matters and its form the practice of the augurs to divide the sky in four parts and read their prophecies from the direction of flight, number and be-

haviour of birds. It is possible that it was this rite and not the tradition of terramare settlements that led to the first town of the Mediterranean built with a rectangular system of roads: the Etruscan Marzabotto. It can be almost taken for sure that the Romans adapted this multidirectional, wide-spreading yet limited way of orientation from the Etruscans.

It is with the division of thousand-faced universe into parts that starts Roman history and also the history of their settlements: with the modest, poorly walled Palatine village of Romulus, the *Roma quadrata*. Without intending to testify it by etymology, it is probable that that ancient and modest core of the Eternal City has preserved its dividedness into four parts in its name, rather than to be a reference of the quadrangular form, although a regular bordering-in of the peripheries of a settlement was typical of the Romans. One of the stages in the organically growing capital—the period of the "four regions"—also kept up this quadripartition in its structure. Between the districts of irregular shape, the Suburana, Esquiliana, Collina and the Palatinus, however, a single axis is discernible, running against the hill of the Capitolium in the valley of the Forum Romanum. The two axes dividing into four came to free expression giving the skeleton of the settlement in the *castrum* form, a form of settlement amalgamated into the structure of any town built in Roman times.

The scheme of the castrum found many forms of realization: the road-cross of the castrum marked out the arrangement of overnight resting places of marching legions, just as that of the *castra stativa*. The *cardo* and the *decumanus*, together with the *forum* built at the meeting point of the two became the leading principle of arrangement of veterans' colonies in Ostia as well as in Emona and even the cities of Romanised local population—from Calleva Atrebatum to Thamugadi—followed the same model of settlement structure. Some forced anachronism caused the Salona residence of Diocletian to take the form of castrum. The reasons for this uniformisation were primarily strategical, but the importance of strategic considerations was almost superseded by the aims of publicity: the settlements imitated the capital of the Empire. and the temple in the forum was a replica of Jupiter's sanctuary on the Capitolium.

This multiplication of the Urbs was accompanied by the development of a network of roads connecting the towns. This enlarged the system realized in the towns to regional, even to continental dimensions. Distances marked out with meticulous accuracy, road-forks and by-passes with their technically deducted system served more than a comfortable facility to approach every point of the huge empire: they wanted to make the realm ready for division and administration as well. It may be no exaggeration to say that the tetrarchy at the end of Roman history hoped for an improvement by the reforms of administration and its reasonable dividedness—from the extension of inter-

secting axes to enormous scales. The result, however, was instead of improvement a falling apart of the Empire: the birth of the Western and the Eastern empires. Starting point and goal of the roads was, naturally, Rome—"All roads lead to Rome" was more than a mere platitude without meaning. The Umbilicus Urbis Romae, the origo of all distances, the insignificant Roma quadrata of yore played—so to speak—the role of Greenwich in Antiquity.

Roman towns were developed in two main dimensions, different in value. This resulted instead of a static equilibrium in an inner tension caused by the attempt to reconcile concentric and linear space organisation. In the golden age camps and towns were but seldom built in square form, for the most part they were elongated rectangles and even if their contours were necessarily made irregular by the environs, they were separated from the milieu and lived a life of their own.

Limitation, introspection and inner tension were the characteristics of the urbanistically most important elements, the forums themselves. Pompei gives the best illustration of the development of a *forum*: first a U-shaped, agora-like place was built with a tangential main street. Later the place became elongated and closed down by prohibiting vehicles to cross it. Unlike in the agoras, a temple making part of the forum was subordinated to the "interior" of the forum as it was placed in the depth lending its area a unidirectional character. In the course of development the Forum Romanum became less regular than that of Pompei, still more Roman in spirit, as unidirectional space was resolved by the "piazzetta" of the comitium, which, like the shape of the *atria* of the living houses marked out a cross axis perpendicular to the main direction. This play of dimensions as a result of conscious endeavour was characteristic only for the composition of the imperial forums—primarily those of Augustus and Trajan—even if the effect of the *exedrae* marking out the transversal axis was rather of a ground plan or decoration than giving the impression of a superstructure, although the transverse axial position of the Basilica Ulpica marked not only a fictive cross direction. The character and interrelation of the imperial forums gave a comprehensible idea about the space organising methods of the Romans—and also its deviation from the Greek conception. While in the Greek temene the place of the temples was governed by orientation, a principle observed without exception and yet the setting and environs of the building made the impression of unboundedness and freedom, the orientation of the sanctuaries of the Roman forums depended on actual facts —the temple of Venus Genitrix is set otherwise than that of Mars Ultor, since the situation of the templum as well as urban conditions were different from town to town in spite of the fact that the space system showed a limited yet guided uniformity.

BUILDINGS. Limitation and control were the guiding principles in spaces and space systems realized in the buildings. Limitation is generally considered

one of the most characteristic features of Roman architecture. And indeed some kind of limitation was conspicuous even in buildings adapted from other nations, like in *theatres*—that were originally of an open character. The form of limitation—the shape of space—was more variegated than ever before, as Roman architects have developed in addition to longhouse spaces almost all variants of the concentric space forms: circle, hexagon, octagon, decagon, various exedra combinations, the Greek cross, etc. In the sense of expansion of the space, in its control the fundamental principle of Roman space organisation became manifest: the central character in longhouse spaces and the axiality in concentric ones, the trend of an interferential impact that projected into either of the different forms of space the characteristics of the other. This almost universally valid principle—and the lucidity of manifold Roman buildings—make it reasonable to follow the typological system of space forms, rather than to survey by genres, as applied in the previous chapters.

In the *atrium*, the central room of the house of Etruscan origin the Roman patrician built himself, directions in depth and transversally to it were synthetised. The most typical feature of the atrium was not the occurrence and number of columns supporting the roof; neither its being hypethrally illuminated or not—as Vitruvius thought it to be—,but its having been extended by the *alae*, the two side-wings. It was indicated even by the finish of the superstructure that the wings of the atrium meant more than additional rooms. They had no doors; the corners of the atrium and the alae were shaped like antepillars because they marked out the cross-axis of the space oriented towards the *tablinum*, the main room of the house. The importance of the cross-axis became even more conspicuous in atria in which the alae were in the middle of the space, like in the Faun's House and Epidius Rufus' house in Pompei.

The ancient principle of systematization preserved in the atrium composition was the starting point for one group of longitudinal space forms; of spaces completed by *niches* and side-spaces. Niches of various forms and wall articulations by *pseudo orders* applied the rhythm to "expand" the side walls of the space virtually or optically (Rome: Maecenas' auditorium, Rome: Domus Flavia, Aula Regia, etc.) and a change in the niche system or in wall articulation could raise the impression of an axis perpendicular to the main direction (Praeneste: Fortuna's sanctuary, Baiae: Tempio di Mercurio). In the square spaces extended by side spaces, dimensions were even more equalized, although they could not fully resolve the tension caused by space relationships. The middle space of the imperial thermae overroofed by three cross-vaults, the huge alcoves accommodating the basins, and the space of the two passages between them were not far from making the impression of a central space system, and this hidden tendency became manifest for the thermae of Diocletian and Constantine, the central cross-vaulted sections of which were built larger and this way set off from the other two, giving a special emphasis to the centre of the system.

The offspring of the *cellae mediae*, the Basilica Nova was not even in its original form clearly longitudinal because the large openings of the side spaces acted to widen the central space: from the middle of the middle nave almost all rooms of the space composition could be overlooked. The interior synthetized the longhouse and the concentric character and the rebuilding of the Basilica in the Constantian era—the addition of a side entrance and a side apsis—made use only of given facts.

Another group of longhouse spaces, that of spaces divided by inner lines of support also goes back to house building, to the shape of the *oecus*. The oecus was a dining hall of Greek origin, which preserved its Greek character by a columnal articulation of space and by its open front. Vitruvius mentions a variant of Egyptian—basilical—origin and that such buildings were constructed in Italy is verified by relics found in Herculaneum. An oecus space was very seldom built for other purposes. Some nymphea, the vestibule of the Bagno Suburbano in Herculaneum, the Bibliotheca at the foot of the Palatinus, the later Santa Maria Antica may be considered as such but also the *basilica*, this most significant among the works of Roman architecture is nothing but an oecus developed to immense scale. Without going into details about theories concerning the origin of this type of building, it may be stated that both interior and setting of the basilica—main direction of approach—show the same wavering trends counteracting each other's effect that we have seen in the examples discussed in the foregoing. One group of basilicas was of the longhouse arrangement, the other of transverse axis: Vitruvius' remarks about them refer to the longhouse variant, while in the basilica at Fanum, built by himself, he realized the transverse axis arrangement. In the longhouse basilica of Pompei the two side entrances built in the midline of the main axis of the plan are facing each other and create a cross axis. In the Basilica Ulpia of transverse axis the main traffic passed across the longer axis; the Basilica Iulia on the Forum Romanum did not represent either of the two types unequivocally as the main side of approach was leaning against the edge of the forum and the main entrance was opened at one of the narrower sides of the building, etc.

The various kinds of directions and relationships included in longhouse spaces had a peculiar moderating and equalizing effect on the dynamics inherently given in this space form. A similar thing happened to concentric spaces—in an opposite sense—because concentricity was moved out of its static rest either by accentuated frontality or by a conspicuous horizontal axis.

A perfectly central building or architectural space is only an idea as in this case the space or space system ought to be approached from the direction of the vertical axis—from the top or from the bottom. This absurd requirement can, of course, be never satisfied, because a part or side of the *rotunda* or *poligon* must serve as an entrance making the building more or less frontal. Unilateral-

ity had become, however, more definite in Roman architecture than it would have been necessary. This rooted in the survival of ancient building habits — to raise the building on a platform, to use steps—and was caused also by the demand that the object should smoothly fit in the urban surroundings not to speak of inevitable aesthetical considerations. One of the earliest rotundae, temple "B" of the Largo Argentina in Rome, was completed by a portico at the entrance side and this coupling of the *quadrangle* of the portico with the *cylinder* became the model of the Pantheon, this best-known among the constructions of Roman architecture but also of the composition of funeral temples built in the 4th and 5th centuries. The frontal and axial "interference" with the concentricity of the rotunda of the Pantheon went beyond the addition of a portico recalling the tympanum façade of the longhouse temple but it became manifest in the interior as well, as the niche opposite the entrance was bigger than the rest. This effect was enhanced by a *quarter-dome cupola* cutting through the cornice of the *drum*. A similar axiality was applied in the ground-floor interior of the Roccabruna in Tivoli, and a start from the transverse axis gave the Augusteum of Ostia its special character. In this case it was not only the broad vestibule but also the cross-axial court that preceded the rotunda. Similar was the arrangement in Romulus' *heroon* and in the Santa Costanza. The latter is a strange mixture of the passing — Roman — and the coming — early Christian—features: of the radial dimension relationships of a concentric space and the cross-axis, marked out by the major niches and the broader intercolumnia. This combination was not far from a caricature of the fundamental principle of Roman space conception.

Poligonal spaces showed features similar to those of the rotunda. A fact that finds only partial explanation in their making part of a larger space system and not being built in themselves. In the *octagons* of the Domus Aurea and of the lower level of the Domus Augustana only five sides of the space being enlarged by niches, the space became asymmetric. Also the Minerva Medica and the octagon of the villa of the Piazza Armerina could be approached through a transverse axial vestibule, etc. The various exedra combinations, primarily the three-lobe spaces: Tivoli: Casino, Sardi: the tomb of Claudia Antonia Sabina, Ardea: Santa Maria, Piazza Armerina: triclinium—were all such hybrid formations, but also fully concentrically designed combinations could be cut through a horizontal axis perceptible visually or only graphically (Tivoli: Teatro marittimo) or could be rendered one-sided by some eccentric motif (Tivoli: the central space of the Piazza d'oro and the flat exedra behind it).

Simply aligning designs of Roman buildings demonstrates the expansion of their architecture in a variety and riches never seen before. It was the Roman architect who was the first to design—stimulated by the formal possibilities of geometry—ground plans of decorative character. All this was made possible by *curvilinearity*—the most important among the innovations of Roman archi-

tecture. It was the general application of the *architettura curvilinea romana* that became almost in itself a differentiating symbol of their architectural culture. Never had any architectural period experimented before with limiting walls of circular, semi-circular, convex, concave, elliptic or inflexed design, never had been undertaken to interpret and document multidimensional space in such variety. In the course of development curvilinear and angular plans were synthetized as if to limit multidimensionalism, as mentioned above, and this has had a decisive influence on European architecture as a whole.

Unlike the Greek, Romans returned to multi-space architecture, and, guided by the analogy of the decorative, they coupled space elements in accordance with the rules of symmetry. In symmetrical compositions the central element towered above the rest, a hierarchical arrangement characteristic of the ground plan of buildings as well as of volumes, of façades and even of ornamentation. The guiding principle of majestic space compositions was the cross-axis, defining also the system of the imperial *thermae*, these most intricate among Roman constructions. The main rooms of the thermae followed the line of the shorter axis, the longitudinal axis was closed down by columned courts at both ends: the side dimensions of the block were greater than those of depth. At the meeting point of the two axes the *cella media* was set—similarly in transversal direction—and the rest of spaces or space groups fitted into the co-ordinate made up of a complicated system of axes of traceable, perceptible or only graphical expression, as relatively isolated units. The partial compositions, however, were not fully self-contained, as *enfilados*, large passages, even illusional effects brought them in some kind of connection. This type of expansion of space goes back practically to house building. Writing about his country house, Pliny the Younger speaks about the various vistas opening through doors and windows on the sea or through the atrium on the wooded hills at the back...

The fixation of relationships in space was not the only task of Roman architecture; the expression of fixation in time was held as important as the former. The wish to master also the "fourth dimension" is reflected by triumphal architecture—the erection of *triumphal arches and columns*—and by developed funeral architecture.

CONSTRUCTIONS, DETAILS. The great sphere of architecture comprising more than a score of individual buildings different in form—more than European architecture was able to ripen till the 19th century—could only be realized with advanced constructions, organised *techniques* and reasonable *technology*. Rome possessed all these means to such an extent that there are many who find the specific importance of the era for cultural history just in this high technical knowledge: in *aquaeducts, bridges, roads*, and the like. It would be unjust to stop here: in the hands of Rome—as in the hands of any era—construction was just the means to attain its goals, but Rome availed itself of

almost all possible means known before and brought them to such a perfection that—similarly to differentiation in subject—it could be superseded but quite recently.

Among supporting constructions all possible kinds of walls were made use of: the various "opera" complied with different requirements in a reasonable, economical and tasteful manner and were—just because of their space-limiting quality—of a more general use than columns. Naturally, columns were applied too, on the basis of the Greek orders and even their preference for synthetization has led to the creation of a new, composite order. Yet the typically Roman variant of the column is the half or three-quarter *engaged column* leaning against the wall, a pseudo-order not complying with but representative of tectonics. These pseudo-columns often remained spatial but were set up so close to the wall that they could not be of any reasonable use—at the triumphal arches. at the forum of Nerva it was but a "decoration"—but in such a way that it still made the impression of some kind of function as it was bearing a *broken cornice*. This peculiar tectonic make-it-appear, this "structural" decoration became a speciality of Roman methods of construction and appeared also in other forms.

The development and sense of cornice elements underwent important changes. The natural ease of Greek profile lines was substituted by a geometrical character to be constructed by compass, the elements to be decorated had unproportionately grown: even structural elements were crammed with ornaments.

The specifically Roman conception of space had an impact also on the development of lintel and roof structures. The significance of the architettura curvilinea for the ground plan of buildings was repeated in the case of superstructure by a variety of vaults, such as barrel-, cross-, cloister-vaults, domes, half-domes, intersecting domes and the spandrel. Upon the common effect of the two, architecture underwent a structural-formal revolution during the Roman era. Among vaults, the cross-vault seems to have translated the Roman conception of space literally into the idiom of structure, the spandrel resolved the conflict between the angular and the curved (Via Nomentana: Sedia del Diavolo) and with the intersecting dome (Tivoli: Canopus) *the inverse of structural decoration: decorative structure*, was born.

Similar were the results of uniting curvilinear and column-beam structures successfully solved by the Romans, however incompatible or absurd the experiment sounded at first. The "Colosseum-motif" was a synthesis of pseudo-order and arch, with the arcature acting structurally, tectonical aesthetics being represented by the order. A less manifest counter-effect of the two structures was also started, because straight vaults composed of wedge-shaped stones applied to relieve openings and also to replace the architrave above the pseudo-columns. The opposite effect found a most characteristic expression in

one of the direct offsprings of the beam structure i.e. of plane roofing, coffering being transferred to the vault—originally as an element of articulation and decoration but later with an influence on the structure of the vault as the shells of domes, barrels, etc. were developed as rasters woven of ribs and rings, creating in this way a coffer structure on spherical and cylindrical surfaces. The manyfold composition of the two essentially different structures—the arched and the beamed—was an expression of the *encyclopaedic spirit* of the Romans that controlled the treatment of the material means of architecture.

The carateristics discussed of the Roman methods of construction were reflected also in the wall forms: structures supporting wide-spanning vaults were not left bare, their stability was proved by pseudo-orders evoking the sense of sturdiness completed by articulation with aediculae or niches. In the cellae mediae of the thermae and in the Basilica Nova the cross-vault did not lean close against the walls—although it could have been solved—the diagonals ran out to broken cornice stubs held by real, spatial columns and the same accentuated role was lent to the consoles supporting the cross-vault shoulders in the large aula of the Mercati Trajani. In other instances tectonics had no individual expression, it was the total impression of the wall that expressed it often in a way in which the specific Roman conception of space ruled tectonics: non-load-bearing front walls were given the heavy motivation of structural side walls. In this case the properties of concentric space were projected in the longitudinal one (Domus Flavia: Aula Regia).

A synthesis of constructive and ornamental principles is reflected in another characteristic way of wall articulation, in the *niche* system. As is known, the Romans often used walled-in arches to improve the stability of the walls and also the primary task of niches was similar, in addition to complying with one of the demands of typical Roman space conception, the expansion of the space even if only by modest means. It was presumably in the rotundae that the alternating sequence of niches—angular in the main axes, semicircular in the diagonals—came to perfection, transferred later to the octagons and then to straight-line walls, resulting in the rows of niches of arched-angular crowning that became general since the rule of the Flavii. This playful alternation was developed also in a vertical sense, as e.g. in the two small nymphaea of the upper floor of the Domus Augustana. It was even taken to the open, as in the colonnade of the Canopus in Tivoli, that continued in the open the arched-straight shoulderline of the intersecting dome of the exedra closing the pool imitating the Nile. In the Pantheon it was not only the form of the alcoves that underwent changes of this kind but also the closing line of the tympani of the aediculae. The square coffers of the ceiling accommodated rosettes and this play of contrast was reflected by the squares-and-circles pattern of the floor.

6*

The niche and its almost equivalent, the framing also had a special task in Roman architecture and art. Statues, contrary to the free setting of the Greek ones — were set up in niches giving them a space of expansion of their own, separating them from the outer space in some respect. The same method was followed in case of reliefs too. The same effect was provoked by the fictive, illusory form of Roman space expansion, as illustrated by many examples of mural painting and also by the refined method to lend reality an illusory appearance. The spaces attached to the octagon of the Domus Aurea received illumination from their own upper and hidden *opaions* whose light-curtain made its effect illusory for those in the central space, who could look at space framed in by the openings as if looking at pictures. To use a slightly absurd expression: the Romans "framed" the space proper.

Our discussion of constructions and details would not be complete if we did not mention the durability of Roman buildings. Durable and safe workmanship was not simply a practical demand but a way to express the idea of "monumentality", that Rome builds for eternity.

FINE ARTS AND ORNAMENTS. The relation of the Romans to works of art meant a new grade of abstraction: a new form of the instrumentality of statues and reliefs was born and conditions for the delight in art were created in the modern sense of the word. All this originated, first of all, in the sense of want that filled the Romans when looking at the beauty of Greek art and that was cruelly resolved first by taking home a prey of masterpieces. With the passing of time such — not quite ethical — actions and feelings matured into a yearning for civilisation and replicas of Greek statues and reliefs were made in great numbers. They have preserved for posterity many a piece of art that would have remained unknown for ever without the intermediary of the Romans. The Greeks liberated art from the shackles of instrumentality almost instinctively; with the Romans it generalized into part of civilisation, a condition to attain Roman humanity.

Descriptive art was represented by two characteristic genres, *portrait sculpture* and *relief* representing historical events. Both of them reflected the Roman sense of reality and sensitivity to the historical. As a matter of fact, neither of them was new but it was just these two of the many possibilities of artistic expression, among the many forms seen and known that came to perfection, because the Roman could give himself in them.

A faithful presentation of the physiological properties of man, of his age and character, the representation of the *hic et nunc* of some historic event endowed this art with the most conspicuous marks of realism in the common sense of the word. The road to it led through a specific process of archeolatry: survivals of the respect for the ancestors, the preservation of the waxen masks of family members, the annales paving the ground for historiography, and the survival of their methods of exact and epic reporting. Greek typifying was substituted

by the concrete and the individual; Greek emphasis on the essential by a continuous way of presentation fixing every detail.

This often contradictory amalgamation of various possibilities of expression was characteristic for Roman art as a whole not only in an inner sense but also as regards the outward, formal side of arts. A typical example for this, in sculpture, is the statue of Augustus at Prima Porta, not only because the Doryphoros was moulded in one with an actual portrait but also by the changes caused by the manner of setting. The figure was presented in contrapposto, but its right arm limply hanging in the original was swung out to space following the gesture of the Apoxyomenos. In this manner activity was concentrated to one side of the body, and the contrapposto lost its original meaning, its crosswise undulation, i.e. perfect spatiality. A similar element was characteristic of the equestrian monument of Marcus Aurelius admired also by Michelangelo, in which the identical, almost parallel movement of horse and rider moderated the force of spatiality.

In reliefs similar elements modifying each other's effect were prevailing. All reliefs were framed in and artificial world was clearly bordered off. As a consequence of framing-in, presentation in relief called for individual inner space and environs for its expansion: the place of Greek reliefs without a background was taken by forms that made perspective in depth and detailed staffage perceptible. It was only in classicizing periods—and in provincial works of art influenced by Greek models—that the background of the picture became void. It was in this isolated inner world that figures of realistic conception represented scenes from genuine history in the course of a continuous demonstration of the events, the characters appearing again and again. On Trajan's column the Emperor was modelled ninety times. It was in this way that the new possibility of realism mingled with illusory impression and some archaizing tint. The illusionism of the background of the reliefs reproducing space in its entirety was characteristic also of mural painting in which scenography came to full rights in spite of the fact that the ways of expression were hesitating between the plane-like and the space-like and the reception of the paintings was not unequivocal among contemporaries either: as it is known, Vitruvius flatly refused illusionism.

Roman ornamentation was especially accentuated in the arts, perhaps not by any speciality of the ornament itself, but because the principle of ornamentality permeated all of the arts and transformed even nature in the parks where trees and bushes were cut to geometrical forms, creating the "French" style of landscape gardening in Antiquity. The best part of the elements of ornamentation was adapted from the Greeks but it surpassed its model in riches and became more naturalistic. Among orders the Corynthian with its luxuriously propagating capital was the most preferred. The relationship between tectonics and ornamentation was also changed in Roman arts: even structural parts

were adorned: the lower plane of the *geisons* as well as the soffites of the archi-
trave or the surfaces of pedestals and door frames.

Writing, as a means of expression, gives a good idea of Roman space con-
ception. Unlike the Greek one, the Roman inscription was "lapidary"—suitable
to be carved in stone—because it called for clearcut letters and a lucid arran-
gement, often for symmetry, the accentuation of essential parts by formal
means, the stereotype abbreviation of ideas and titles familiar to everybody
and, naturally, for framing-in. Fragmentary inscriptions on Roman buildings
or tombs are easy to complete because the systematic built-up of the inscrip-
tion makes it possible to make use of similar solutions.

As we see, the Roman descriptive and ornamental arts had the same pecu-
liarities as architecture: in the expression of space the intercrossing, often
mutually moderating effects, a definite marking out of frames, a general preva-
lence of ornamentality. interwoven ornamental and tectonic elements—all
coming from an encyclopaedic aspect that covered and united immense ranges
both in space and time.

IDEAS. The fundamental difference between the Roman pattern of life and
those of other ancient people can be explained by the fact that its history went
along almost the entire road set behind by its predecessors and was completed
by new forms, whose conditions of existence were not yet present in previous
periods: Roman society started with patriarchal slavery, passed through the
"classical" form of the Hellenistic-Roman stage to the pre-feudalism of the
colonus system. At the time of Rome's foundation the town and palace of
Sarrukinu II did not yet exist in the Near East; in Egypt the period of archai-
zation which was the last step in progress had not yet begun, in Olympia,
Hellas, wooden structure of an early sanctuary might have been standing at
the place of the later Heraion and Jupiter's temple stood earlier on the peak of
the Capitolium than the Parthenon did crown the Acropolis. A certain simul-
taneity with more or less creative periods of the other leading peoples of Anti-
quity, a relatively long latent period, and then, all of a sudden, a comet-like
conquest of the world and the creation of an Empire so manyfold in its econo-
mic, political and cultural features that survived even a historically perceptible
decay give the answer to questions raised in connection with the material and
intellectual construction of Roman life.

As compared to the Eastern people, the relationship of man to his environs
had undergone important changes also with the Greeks, as more advanced so-
cial conditions started a process of getting independent. This was even more
characteristic of Rome also because the Empire united spots of greatly different
geographical and natural character. Still, the effect of the geographical milieu
cannot be disregarded. The situation and facts of Italy influenced the life of
her inhabitants both directly and indirectly. The fact that hegemony was put
to the hands of a people whose home fell in the central line of the Mediterra-

nean—the Appenine peninsula crossed the sea like a huge *cardo* running from North Africa to the Alps—was of primary importance as it could control almost the whole world both strategically and commercially. The central position of Italy,—and even more exactly, of the original home: Latium—could define the consciousness of the inhabitants from the very beginning. They had every right to believe that their country was the centre of the world and the Romans belonged to the exceptional few, who could turn this atavic belief into reality. It goes without saying that the milieu initiated also thoughts more realistic than that, because the Romans viewed also nature with a practical eye. Their main problem was to turn their environs into a civilised world in order to enjoy it as a home of health and delight in nature's beauty. The Roman was the first among humans to enjoy nature as the man of the 19th and 20th centuries has enjoyed it. Delight in arts was thus extended also to delight in nature.

Economic life in Rome exhibited all branches of production known in Antiquity: horticulture was prospering all over the country. Italy could boast of high standard animal husbandry, her industry was famous, and her trade took an active part in the business network developed by the Greeks, Phoenicians and the Eastern people extending it westwards with trade lines reaching Britannia and the North Sea. The decisive factor in the formation of Roman social, political, historical and educational life was agriculture: at the summit of his world power the Roman was still a land-hungry peasant. He was the bearer of the power of expansion that pushed out the borders of his country ever farther, and it was he who turned victory by the sword immediately to conquest by the plough, as creator of an agricultural civilization. No doubt, artisans and tradesmen developed an advanced urban culture but the final causes of events rested with the land, governed by changes in the possession relations of the latifundia. This duality: the amalgamation of advanced urban culture and agricultural civilisation with peasants constantly watching their rights made Roman life double-faced and gives also the key to contradictory phenomena like the resolution of barren practical mentality and an often primitive sense for the decorative.

Expansive trends were fed, in addition to economic reasons, also by the Roman notion of historical vocation. Such ideas are generally fruits of given historical situations—taking the shape of some subsequent ideology, like Virgil's Aeneis. Still, it is a fact that respect for the past, a conscious keeping alive of remarkable events ripened a historical aspect of guiding force for administration and individual behaviour. Roman history was rendered monumental by the manner in which administration and army were organized, foreign peoples subjugated, trophees put on show at the triumphal marches, as Curtius sacrified himself for his city, as Mucius Scaevola put his fist in the fire and as Brutus fell on his sword—a pathetic grandezza that was kept alive till the very end. *Virtus, pietas, fides* were the fundamental principles of Roman moral, beha-

viour in this spirit was the guarantee for the existence and prosperity of the Empire: the legionary falling asleep at his post or leaving it was stoned to death by his own comrades.

The keynote of Roman culture was the demand for civilisation coming from practicism in all questions of life. Also religion was characterised by practicism and formalism: in general, it depended on the keeping to rites whether gods gave an ear to wishes or accepted gratitude. Rome was tolerant with other religions, ready to take up in its unity the "provinces" of the local gods of conquered peoples without aiming at their annihilation. This religious syncretism refused Christianity in the beginning just because of its absolutism, but later accustomed itself to it when Christianity amalgamated the Jewish religion, the Neo-Platonism of the late Roman era, and other Eastern religious motifs. Curiously, the cross as symbol of the new religion, the Christianity, and the ancestral symbol of the auguri were formally nearly identical, and though this happened merely by chance, practically, Christianity assumed Rome's ancient vocation: both symbols expressed identically the idea of expansivity.

Practicism was the source of Roman legislation, this undoubtedly greatest achievement of Roman culture. Roman legislation has given the fundamental theses of human relations a formulation surpassing all earlier codices. *Lex romana* could only be created by the "common sense" and sense for the formal of the Roman mind. This made the language of the one-time peasant folk universal and created a Latin language that could serve as "prime material" to Caesar's crystal clear "shoal-free" style, to Cicero's periods, because of its tersity and with its infinite variability of expression. Literature itself was governed by realism and a sense for the timely—not only in political pamphlets, oratories, historiography but also in fiction: in Plautus' comedies as well as in Catullus' epigrams, in the satyres of Horace up to the climax: Virgil's Aeneid, the Bible of the Romans.

Utilitarian attitude was an obstacle in the way of the development of speculative thinking for its own sake, that of science in the Greek sense and turned instead to "applied" science, which the Romans did not despise as a necessary evil like the Greeks did. It became a characteristic symbol of their intellectual life, because instead of investigating into the normative element in phenomena, their aim was to make the possibly best use of knowledge acquired. In Rome, philosophy was transformed into "sapientia" that set Roman science the tasks to systematize, collect, and preserve knowledge, to reveal the possibilities of its utilization, to disseminate it; in short to create the *encyclopaedia*.

Encyclopaedias have always been born from the necessity to have a quick survey over accumulated knowledge: in the atmosphere of Hellenism, Rome set to the task to make up for lost time against the subjugated peoples—primarily against the Greeks and the Eastern peoples—with the greed of the newly rich. This thirst for civilisation penetrated into almost every field of knowledge—

into literature, natural sciences, medicine, agriculture, etc. setting the norms for the behaviour of the individual and creating a "renaissance" personality like Hadrian, and giving education its most characteristic criterion. It was not only Italy that profited from the results of this encyclopaedic process: it followed the Romans wherever they went gaining over for civilisation realms where it had been unknown before.

Summing up, it may be said that the Roman geographical and natural sense of position was characterised by motifs more abstract than before and also by very old beliefs: the awareness of the geopolitical key position of the country, the possibility to enjoy nature and to rule over it, and at the same time the identification of Rome, the *Urbs* with the world. The Janus-face of the social sense of position was born out of the juxtaposition and struggle of the tradesman-artisan and the agricultural strata that made it abstractly practicist and concretely pictoral-decorative.

The same element was responsible for expansivity. The historical sense of position was filled by a sense of vocation to spread all over the world the wealth and peace realized in the strategy, economy and administration of the Empire with the know-how of the genius and made coherent by law, the Latin language and strict morality. It was among these monumental limits that the cultural sense of position gained its synthetic character in religious syncretism, in the encyclopaedia of arts and sciences. And finally the ethnic sense of position, synthetic in its roots, was defined by a similar compromising quality: putting one's own self above all coupled with tolerance for strangers: "O Romans, be it your care to rule the nations with imperial sway; this shall be your arts: to impose the rule of peace, to spare the humbled and to crash the proud." (*Virgil, Aeneid,* VI. 851)

SPACE AND IDEAS. The geographical-natural sense of position contributed to the perfection of the interior space, one of the most significant achievements of Roman architecture, primarily in a material sense, simply because the architectural culture fostering the general progress of architecture was thriving under climatic conditions more severe than those of earlier periods. The same component of sense of position was responsible for the novel relation between man and nature—for delight in nature— that was favourable for *differenciated* and *fastidious home-building.*

The social sense of position of the Romans was even more contradictory than that of the Greeks as it is best reflected in the subject of architecture starting with the *villa rustica* and arriving at the *insula,* the multi-storey block of flats. The demands set to architecture had incredibly increased and got differenciated, but technical means could meet these demands without the tension between technical knowledge and workmanship experienced in the East. The large-scale construction programmes could not be realized by Greek artisanal methods either. They called for mass production and it is probable that the

building methods of the legions who created the best part of provincial Roman architecture had an impact on the practice of Roman construction works in general. The economic-political sense of position came to word also directly, as dictated by the given dualism, in two directions. The many kinds of buildings, their reasonable arrangement, their construction with purposeful structures and equipment was due to the *artisan-merchant mind*. At the same time, architecture thrived to decorative, ornamentality penetrated floor plans, façades, even structures calling to life paradoxal solutions like decorative structure and structural decoration—phenomena reflecting the visual imagination, the story-telling and ornamental spirit of *peasant culture*. The way of presentation of arts became more archaic than the Greek manner, because instead of concentrating on the essentials, events were presented in the spirit of the annales, in a true order of happenings, with the characters appearing again and again.

The most characteristic features of the historical sense of position were marked out by organization, expansivity and monumentality. The sense of organization in administration, strategy and politics that was able to hold together the heterogenous elements of the Empire for a relatively long period of time, was reflected in architecture by a return to the conception of interconnected multispatiality other than the Greek conception of one-space arrangement, keeping, however, to clearly delimited, "framed" units. The impact of a hierarchically organised political system suggested super- and subordination of space compositions, while the expansions of space and cross axes were tectonic counterparts of the strive continuously to extend the borders of the Empire which found a formal expression in the enormous co-ordinate intercontinental trade and war road systems. The demand for monumentality was omnipresent, initiating new genres and new ways of expression—triumphal architecture, funeral architecture, reliefs of historical events, continuous presentation—the wish to set a monument, the yearning for durability affected even the quality of workmanship.

The cultural sense of position was characterised by the pursuit of usefulness, by a thirst for civilisation—this utilitarian variant of culture—and by the encyclopaedia. As to the subject, these ideas were expressed in advanced technics, in the variety of public buildings, and in general in making architecture exceptionally rich by adapting almost every element of the past, space forms as well as building types, methods of ornamentation as well as structure, re-shaping them in its architectural encyclopaedia to turn them essentially Roman. Works of art appear in this world of commonplace and commonsense with a new instrumentality: they adapted themselves to the demands of taste and delight in art. Roman humanity demanded even the commodities of life to be useful and tasteful, as *Vitruvius* wanted buildings to be constructed with a view to durability, purposefulness and taste. A wish that reflects the encyclopaedic quality of his own work and of the entire Roman art. This picture is

organically completed by realism seen in the fine arts that found its specific idiom in the portrait, in a marked interpretation of age and character. Scenography with a universal expression of the perspective and a clear separation of picture and outer world counted ever more as a realistic way of interpretation in spite of its illusory past.

Discussing the ethnic sense of position it is customary to divide the progress of Roman art into periods according to the rhythmic alternation and repetition of classicizing Greek and original, Latin characteristics — although classicization had always been a superficial phenomenon. It is general knowledge, that even the start of Roman life was intricate and complex, and it was this fact that developed in the Romans an ability to synthetize also later, without denying themselves. The survival of ancient, atavistic properties is testified by the basic trends of space organization of Roman architecture: the expansion of space in the sign of the cross goes back to the augural rite to divide the sky, and the *templum*, the *cardo* and *decumanus* of the city plans, the cross-axis of the *atrium* marked out by a figure, the symmetrical arrangement of *forums* and *thermae*, all support this suggestion. The symbol of Rome was the cross even before its turning Christian.
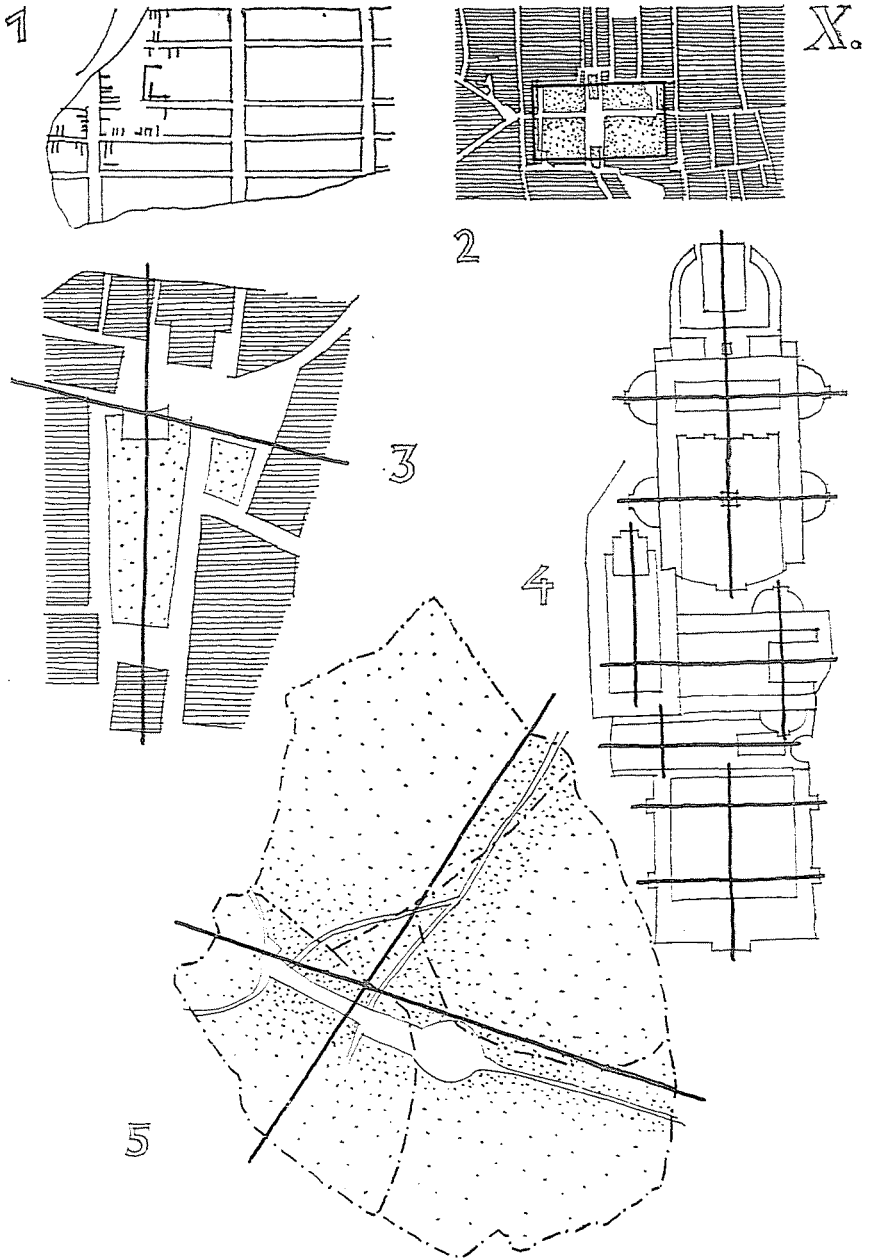
Plate X. Rome. Settlements.

1. Marzabotto, 6th century B.C.; *2.* Castrum as the "city" of Ostia; *3.* Rome, Forum Romanum and Comitium; *4.* Rome, Fori Caesariani; *5.* Rome, period of the four regions.
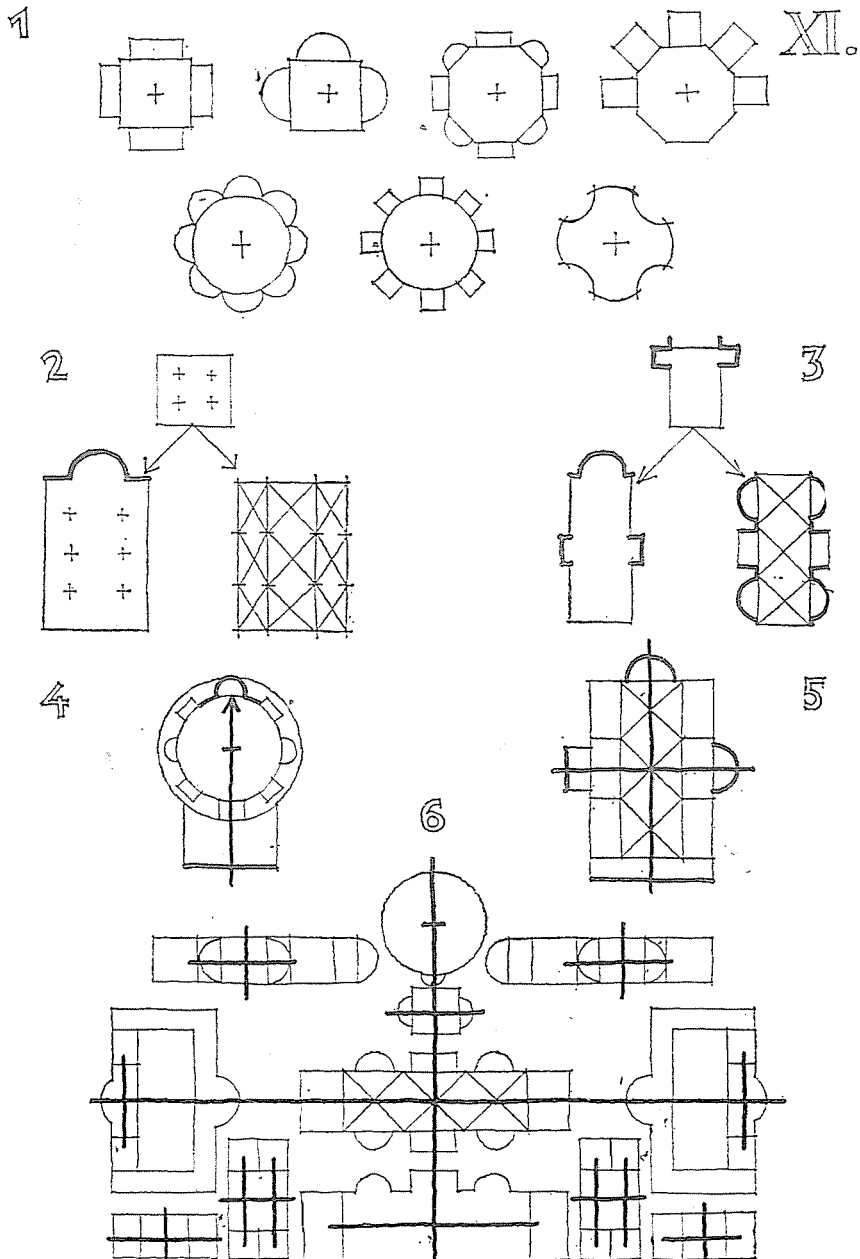
Plate XI. Rome. Buildings.

1. Concentrical space and building forms; *2.* Oecus and its offsprings; *3.* Atrium and its offsprings; *4.* Rome, Pantheon. Linearity in concentrical space, 2nd century A.D.; *5.* Rome, Basilica Nova. Concentricity in long-house space; 4th century A.D.; *6.* Rome, Thermae of Caracalla. Symmetrical space composition organised by cross-axis, 3rd century A.D.
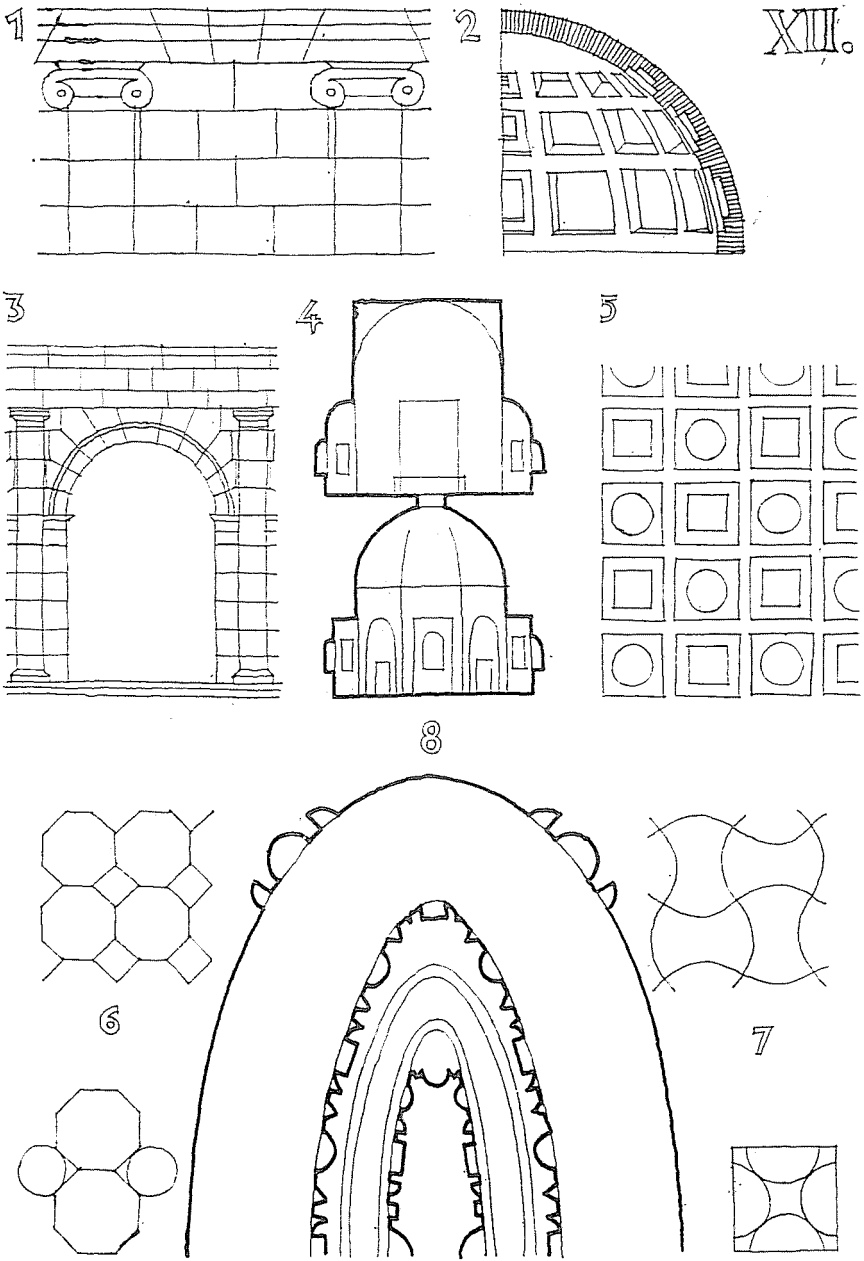
Plate XII. Rome. Constructions. Details.

1., *2.* Relations between post and lintel and vaulted systems; *3.* Rome, Colosseum. Amalgamation of post and lintel and vaulted systems, 1st century A.D.; *4.* Rome, Domus Augustiana. Alternation of straight-linear and curvilinear forms, 1st century A.D.; *5.* Rome, Floor of Pantheon. Alternation of straight-linear and curvilinear forms, 2nd century A.D.; *6.*, *7.* Motives of pavements and space forms; *8.* Rome, Domus Flavia, Coenatio Iovis, Nymphaeum, 1st century A.D.

Epilogue

It was the concentric, linear, transformed and transversal—linearly concentric and concentrically linear—space conceptions that found realization in the architecture of the Near East, Egypt, Greece and Rome. The beginnings were characterized by a global, *multidimensional* space conception, that was forced among limits in the course of progress to enfold itself later again preserving the traces of earlier limitations. Giving this route of progress a dialectic expression we may say that the *concentric* space system is the thesis, the *linear* the antithesis and the *transformed* and *transversal* are two variants of a possible synthesis. *Certainly it is not by mere chance that this assumed trend of development of architectural space organization coincides with the global structural variation of human culture, the stages of which can be denoted as star, chain and net structure, respectively.* This recognition made it possible to understand the features of early Egyptian architecture so different from what came later, by making use of the special features of space organization, and we could also change the one-sided estimation of Greek architecture with its help.

It is beyond the objective set to define the basic tendencies of architectural space organization in periods following Antiquity and it falls also beyond the field of research of the author. Without entering into hasty generalizations it can be stated that from a quantitative point of view it is not difficult to discern some characteristic elements—primarily the reflections of the historical sense of position. After the fall of the Roman Empire, Byzantium kept up multi-spatial architecture, while architecture in the Christian West got simpler: there a large-scale organization of religion and administration, here disintegration into smaller political units, atomization. The changes brought in the West by the Renaissance were not significant in this field, it was only absolutism, the first period after ancient Rome in Europe—the Baroque—that began thinking in many spaces again and created intricate space compositions.

Naturally, it would be possible to discuss qualitative characteristics only on the basis of analyses applied in the present study. Quite generally speaking a variation of changing intensity of concentric and linear space organization was needed for the appearance of possibilities beyond the two basic schemes: the agglomerative stacking-up of space elements of similar value. A "three-dimensional linearity" seems to be one of the characteristics of modern space conception.

Summary

Historical development of architectural creations have been considered even by recent research so that initially, volume-like buildings prevailed and development of space formation was only a secondary phenomenon. Global aspect of the architecture of the eras, however, does not support this view, since the fundamental trend of the architectural space organization has been characteristic for any architecture, from the very beginning on. Thus, in the Antiquity, concentrical space organization featured the architecture of the Near East, linearity that of Egypt, while Hellas architecture could be characterized by transformed space system — intergrowth of outer and inner spaces — and Rome by crosswise developed spaces.

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