

## **The Cosmology of the Architecture of Cities**

*Tilo Schabert*

### **On a Journey in A City, On A Journey in the World**

Let us imagine that we decided to visit cities at different places in the world. During our journey we would probably consult often one or more of these books known as “travel guides,” which, in our case, describe one or more cities for the benefit of the traveller who knows nothing about them or has only a slight idea of what they are like.

Presumably we would be told not infrequently that in the cities being described something is “reflected” – that the city architecture of Paris reflects the immortality–obsessed self-glorification of French kings, emperors, or national presidents; that the baroque layout of Rome reflects the triumphant Catholicism of the counter-Reformation; that the skyscrapers of Manhattan reflect the unbri-dled creativity of American civilization.

City architecture is reflection – reflection of a city in the mirror of its architecture. Such a descriptive model appears to be as illuminating as it is simple. The social, political, and economic conditions of a city form themselves into the architecture of the city as in a mirror, in which they then appear, like their image in a mirror, reflecting themselves – the city is mirrored in its architec-ture as the image of itself, as the reflection of the city that is mirroring itself in its architecture.

Travel guides are not unique in employing such a descriptive model. Historians of architec-ture also make use of it in writing the history of urban architecture,<sup>1</sup> as do architects who use it in the process of their self-interpretation. Louis H. Sullivan, the American prophet of modern architec-ture,<sup>2</sup> wrote in his *Kindergarten Chats* (1979 [1918]): “Our architecture reflects us as truly as in a mirror, even if we consider it apart from us,”<sup>3</sup> and “a city is but the material reflection of the charac-ter of its inhabitants.”<sup>4</sup>

But to speak of “reflection” is not the only way to interpret the mirroring of architecture. Vi-truvius, the author of the only ancient writing on architecture that has come down to us, formulated in five words the method of another interpretation. This interpretation penetrated quite deeply into the process of mirroring architecture. At the very beginning of the first of his *Ten Books on Archi-tecture* (22 B.C.) Vitruvius explained that in architecture, as in all areas, the following two things are to be found: “What is signified and what signifies” (*quod significatur et quod significat*).<sup>5</sup>

In the mirroring of architecture two things are to be seen: that which is reflected, and that which reflects itself in the thing reflected. That which is reflected is in most cases immediately visible, such as the military triumph of a Roman general in the victory arch erected in his honour, the spatial identity of a city in the city wall that encloses it or the orienting function of streets in the intersection toward which they lead and from which they lead away.

By contrast, that which reflects itself in the thing reflected escapes all immediate view and yet is fully present in the thing reflected.

Architecture, which mirrors something, points beyond itself – it is reflection and it is epiphany. The victory arch is still something wholly other than a monument for a victorious general, the city wall is still something wholly other than the enclosure of a city, and the street intersection is still something wholly other than the meeting place of converging and diverging streets.

Let us assume that upon our journey we arrive in China, in one of the central cities of the classical period – in Luoyang or Hangzhou, Xi'an or Beijing.<sup>6</sup> We have not prepared ourselves particularly well for our city tour but simply go out into the streets, strangers in a strange city. Yet, we will not be strangers in it very long. We realize very soon that the streets of the city follow a definite pattern – they cross each other at right angles, they form areas that are square in shape. We come upon a street lined with houses that we can presume are government buildings. We wander further along this street. It is late in the morning, the day is clear, and we follow the course of the sun through the light, which reflects itself from the buildings and in the shadows that recede more and more from them. The street, we notice, runs according to cosmic coordinates; in moving along the street, we move along a celestial axis from north to south. Where are we heading? Or, as we now believe we must ask, where are we being led?

We find ourselves upon the main axis of a Chinese imperial city, upon its “meridian.” We “see” the axis – in the design of the city, that represents itself in our consciousness. And yet we do not see it: on the path where it leads, the inner city walls, which open up one after the other, form ever-ascending steps in our journey, from gate to gate, from one place within the city grounds to another. Through the architecture of the street and the city we experience our journey in the city more and more as a *peregrinatio*. On the street where we walk we follow the scenic path in a drama of beholding. What will appear behind the next wall, behind the next building? Will it be another even larger gateway, or another square layed out even more magnificently than the previous one? The architectonic gradations along our path ascend toward something – toward a goal. In the colours and forms of the architecture that leads us onward, something intimates itself – a climax. We do not yet perceive the “whereto” of our journey, yet we “see” it in advance – in the discovery of the *anagoge* that the architecture of the city discloses. Finally, we see it and know that we have “as-

cended” to it – to the imperial palace in the center of the city, where the north-south axis upon which we came crosses the city, the axis from east to west.

Whatever has a center has a circumference. Again, at the midpoint of the city we “see” something and yet do not see it. We “see” the encirclement of the city because we are at its midpoint, and yet we do not see it because we have not yet traversed the city wall that encircles it.

The city wall, as we will discover by traveling along it, forms a path in geometry. It forms a square with each of its four sides broken off by three gateways, the position of which correspond to the positions of the gateways on the opposite side.

Let us again assume that we had continued with our imaginary journey, had leaped across vast territories and historical periods, and found ourselves in a city in the ancient civilization of India – in Mohenjo-dâro, Harappa, Śísúpālgarh, Śrīrangham, or Madurai.<sup>7</sup> In an entirely different and once again “strange” city we continued with our journeying and yet we went along the same path – along one of the main axes which goes east to west, or the other, from north to south. We followed this path to the center of the city, to – as we already knew – the crossroads of the two axes. Here, however, we did not behold an imperial palace, as in the Chinese city, but in the ancient Indian city we saw a hill or a hill-shaped tower – the architecture of our *anagoge*. In our tour of the city perimeter we also beheld a figure previously known to us – the city in the shape of a square. And once again we found a regular pattern in the placement of the gateways in the old Indian city; there are four of these, one on each side of the city quadrangle, at the point where the four street branches of the two main axes of the city run up against the city wall. If we left the city through one of its four gateways, we would proceed exactly toward the south, west, east, or north – we would indeed have left the city, but not the pathways of the world marked for us by the city.

The architecture of cities reflects an ever-recurring structure of the city, and this structure, this mirror city reflects a constantly reappearing pattern – the *mandala*.<sup>8</sup> In the architecture of the cities, there is the one city reflected that is the mirror of the one architecture – that architecture which reoccurs in the architecture of the city, from city to city, in the structure of many city structures. Journeys through cities are journeys through the world; they are excursions into the architecture of our world ascertainment, of our search for the origins that sustain us, for the pathways that are the pathways of our life, for the places that are the sites of our experience.

Let us imagine we were once again upon our travels, and had the opportunities to examine the buildings and city layouts from the second millenium B.C. which were excavated in the years following 1969 in North Afghanistan.<sup>9</sup> We would see an architecture in which the architecture of the mandala appears.

The excavation in Sapalli-Tepa, for example, brought to light a square-shaped layout that measured exactly 82 meters by 82 meters. From each side of the square, there project outwards two

T-shaped corridors, from which in each case the more leftward one, through an elongated left flank over the square side, overlaps the next square side, so that the corridors follow one another as in a leftward encirclement of the square. In the oasis Daschly-3, a square-shaped city layout was uncovered with each side measuring 150 meters. Out of the middle of the square arises a circular building that has a diameter of 35 meters, a corridor construction with nine square towers. This circular building is surrounded by two rings of buildings, which are themselves enclosed by walls.

The square in the circle, the circle in the square – these are the basic forms of *mandala*-architecture, which we have come to see in our seeing the city, seeing the architecture of cities.

### World Reflections, City Reflections

The architecture of the city is the mirror of *one* architecture that appears in *many* city architectures. In the architecture of the city, the architecture of the world reoccurs, reflected in the architecture of many cities. “The content of the world,” as the Swiss art historian Heinrich Wölfflin remarked in his work *Kunstgeschichtliche Grundbegriffe* (1915), “does not crystalize before our view in a single form that always remains the same, but a living power of apprehension that has its own inner history and has gone through many stages of development.”<sup>10</sup> The city has always been a reflection of the world; in the architecture of cities world architecture reflected itself; in the mirror of the city the world appeared. The thing reflected, however – the city architecture that was a mirror – was not always the same. The city reflections, which are world reflections, have “their own inner history in which they have gone through many stages of development.”

Aristides of Mydia, a Greek rhetorician of the second century A.D., saw the world in the city of Rome:

Your [Rome’s] territory coincides with the path of the sun and it is only your land that it illuminates in its course. The sea which extends outward from the middle of the world as a belt, forms at the same time the middle of your empire. Every land and sea produces just what the seasons permit to grow and whatever all lands, rivers, and seas, as well as the arts of Greeks and barbarians, bring forth. If someone wants to see all this, then he must either tour the entire earth to view it in this manner, or he must come into this city.<sup>11</sup>

John the Apostle saw the world, the redeemed world, in the New Jerusalem:

And in the Spirit he carried me away to a great, high mountain, and showed me the holy city Jerusalem coming down out of heaven from God. It had a great, high wall with twelve gates, and at the gates twelve angels. On the east three gates, on the north three gates, on the south three gates, and on the west three gates. And he who talked to me had a measuring rod of gold to

measure the city and its gates and walls. The city lies foursquare, its length the same as its breadth. And I saw no temple in the city, for its temple is the Lord the Almighty and the Lamb. And the city has no need of sun or moon to shine upon it, for the glory of God is its light, and its lamp is the Lamb. By its light shall the nations walk; and the kings of the earth shall bring their glory into it.<sup>12</sup>

An architect in the twentieth century, Paul Bommersheim, saw the world in the city of the architectural philosopher:

That the city is a model of the universe, this is a necessary intention which arises when the city is conceived upon a fundamental principle. If the circumstances of the universe, the relations of the earth, of the place approaching the surrounding whole; if the permeation of man by the great superhuman – if all of these are to be built into the city, then knowledge of universals is required. This knowledge is philosophy. And this knowledge in relation to its embodiment in building construction is the philosophy of architecture.<sup>13</sup>

Rhetoric, apocalypse, architectural philosophy – these are three very different modes of city architectonic visions. And yet in each case is in *urbe mundus*, there is in a city the world beheld.

Cities are epiphanies of the world because each city is a city in the world and the world is the model for every city.

Let us imagine ourselves in the city of Rome at the mythic time of its founding. At this time the model that the founder of the city Romulus used is immediately visible in the city layout: the world itself. According to the view of reality found in Roman Myths, the world emerges from its midpoint; from this midpoint the world axis proceeds outward, extending “below” and “above” into the earth and the sky, thus binding them together. At its horizons the world is round and has four corners – east and west, north and south; between these poles run the two main axes of the world, which intersect at the world’s midpoint. The world is thus divided into four parts.<sup>14</sup>

In order to know the place where they were to found the city, according to Rome’s foundation myth, Romulus and his brother Remus sought a *signum ex caelo* – the appearance of birds in the sky – through a cultic act of augury.<sup>15</sup> At a certain spot on the Palatine there appeared to Romulus the *augurium maximum*: twelve vultures. At this place, where the axis of the appearance in the sky touched the earth, Romulus dug a circular pit and thus marked the midpoint of Rome. “Donations of all good and necessary things,” among them fruits, were laid into the pit, and the new settlers threw into it the earth that they had brought with them from their previous places of residence. The pit was called *mundus* and thus bore the same name as the world.<sup>16</sup> Where Rome was, was the world.<sup>17</sup>



Figure 1: “Roma quadrata a Romulo condita” (etching, 1527).

The city had its midpoint but not yet its circumference. Romulus walked around the Palatine with his companions and marked out according to an Etruscan ritual the boundaries of the future city. With a bronze plow that was pulled by a white cow and a white ox, he drew around Rome the *sulcus primigenus*, the primeval furrow. The procession moved in a leftward direction, the cow proceeded on the inside, the ox on the outside of the line that the plow furrowed, and the plow was slanted in such a manner that none of the earth that was plowed fell toward the outside, but all fell inside, into the city.<sup>18</sup>

With this the city had its circumference, the *pomerium*, though not yet a design for its interior. According to the ritual of Roman land surveyors – which, once again, is of Etruscan origin – the inner design of a city would be determined as follows: a bronze spike (known as a *sciotherum* or *gnomon*) would be placed perpendicular to the ground in the middle of a circle, and then the two points on the circle marked off which the tip of the spike touched as it followed the sun before and after midday. Between these two points a line would be drawn and under the name of *decumanus maximus* it formed the east-west axis of the city, the more important of its two main axes. The line from north to south drawn at right angles to this line through the midpoint of the circle was given the name *cardo maximus*, and formed the second main axis of the city.<sup>19</sup>

The Roman foundation myth, as it has come down to us, gives no specific information on whether or not Romulus, as he dug the *mundus* and plowed up the circular *pomerium*, also layed out the two main axes of Rome – the *cardo* and *decumanus maximus* – according to the ritual just described. But a connection is established between the *mundus* and the intersection point of the two axes, the *decussis*. There is also mention of Romulus’ crook, the *lituus*, which he is supposed to have used to divide Rome up into four parts at the time of its founding. And in the walls of the city

there were supposed to be at the time of Romulus's death four gateways, corresponding exactly to a four-part division of Rome through two intersecting axes.

There are similar mythic tales and interpretations of how cities were founded and laid out – or at least the corresponding archaeological finds – from other civilizations: from the Chinese, the ancient Indian, and the Celtic-Germanic civilizations; from the civilization of the Khmers in Cambodia, and the Mayas in pre-Columbian Mesoamerica; from ancient Iranian, Mycenaean, Scythian, and Hellenistic civilizations; from the civilization of ancient Israel and from the civilization of medieval Europe.<sup>20</sup>

The city was viewed as city in the world – in a world in which winds blow, and water flows, and the sun takes its course, and stars form constellations, and points and lines are found sketched out in the four quarters of the heavens. To know the world meant to know architecture, to have knowledge about the structuring of a city based on the *constitutio mundi*. Vitruvius described this world-architectonic, city-architectonic knowledge:

As therefore the situation of the world in relation to the region of earth is by nature arranged with unequal properties through the inclination of the Zodiac and the orbit of the sun, so too it appears in like manner that the arrangement of buildings must be determined by the property of the region and the various climatic conditions. For it appears that the manner of building houses must be determined one way in Egypt, another in Spain, still another in Pontus, and again differently in Rome. In the North it appears that the buildings, which are furnished with the shallow vaulted ceiling, must be as closed as possible rather than open, and face the warm direction of the heavens. By contrast in the southern region, under the impact of the sun, they have to be laid out in an open manner and face the north and northeast because of the oppressive heat.<sup>21</sup>

If the main streets are laid out in the direction of the major winds, then the gale winds and frequent gusts coming from the open sky, pressed together in the narrow streets, will pass through with greater force. For this reason the direction of the rows of houses must be turned away from the direction of the wind so that the wind, when it strikes the corners of the blocks of houses, will be broken up and bounce backward, scatter and dissipate itself.<sup>22</sup>

The same world-architectonic, city-architectonic knowledge was practiced by the city builders of ancient China. They too arranged the city and building layout to conform to the existing climatic and geomorphological conditions, to the focal emanations (*hsing-shih*) of the force (*ch'i*) that animates the world. In their city architecture – in their efforts, that is, to construct cities out of the various preexisting structures of the world – they performed world architecture, i.e., *fêng-shui*, the knowledge concerning the founding of cities that is named after *fêng*, the wind, the floodtide of the sky, and *shui*, the water, the floodtide of the earth.<sup>23</sup>

Another cross-civilization concurrence is to be found in the idea of an opening of the world at its center that connects it to its interior – an opening marked out by the middle of the city or by

the city in the middle of the territory, e.g., *mundus* and *umbilicus urbis Romae* (world-pit and navel of Rome) in ancient Rome; *bhuvanasya nābhim* (navel of the world) and *garbha grha* (womb of the temple) in ancient India; *ṭabbūr ereṣ* (Navel of the earth) in ancient Israel; Jerusalem as *umbilicus terrarum in orbis medio* (navel of the world in the middle of the terrestrial orb) in the worldview of medieval Europe; Mecca as *ṣurrat al-arḍ* (navel of the earth) in Islam; *gēs omphalos* (navel of the earth) in Greek thought.<sup>24</sup>

And closely tied to this is the idea held in various places that from the middle of the city there stretches outward the axis of the world. In the imperial cities of China this idea found its architectonic symbol in the imperial palace at the center (*fang-ti*) of the city. For the palace stood upon the world axis, *ti chung*, at the “place where earth and sky meet one another, where the four seasons become one, where wind and rain are drawn off, and where *yin* and *yang* are in agreement.”<sup>25</sup> Or to give another example, in the middle of his city one of the royal city-founders in Cambodia, Udayadityavarman II (1040–1065), created a temple mount (*stupa*) and erected a column at its base. Upon this column he states the reason why he created the temple mount. He knows, he says, that the midpoint of the world is marked by the mountain *Meru*. And therefore he believes it to be right that a *Meru* is at the center of his capital city.<sup>26</sup>

Examples of the most fundamental concurrences I have already given, namely, in the cross-civilization concurrence of city architecture in the architecture of the *mandala* – i.e., the square and the circle, the square within the circle, the circle within the square, the four points (the quadrangle) and another point as fifth point (midpoint) in the decussation of the *Quincunx*. A few examples can be added that further stress this concurrence.



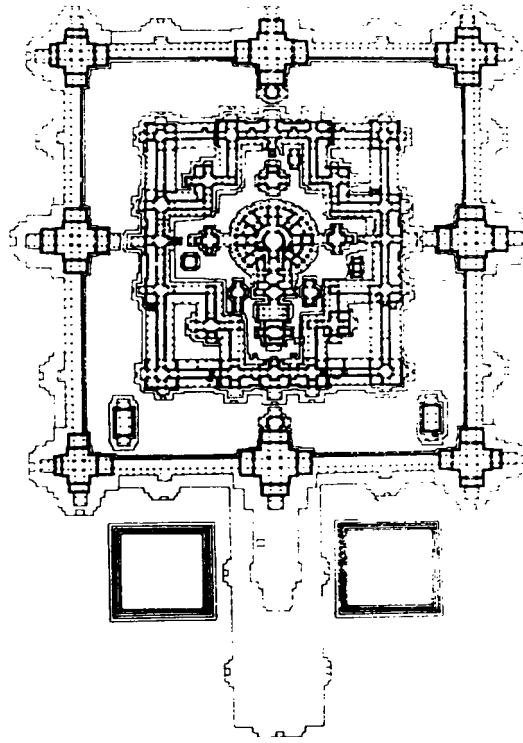


Figure 2: Plan of a temple (*stupa*) in Angkor (Cambodia), twelfth century.

Gūr, the capital of the Sassanians( 226-651 B.C.), was laid out as a circular city enclosed within three circular walls. Within the innermost and outermost of these circular walls were placed four gateways. The inner structure of the city was determined by two pairs of axes intersecting each other at right angles.

Mount Albán, a city of the Zapotecs and later of the Mixtecs in Mesoamerica, formed a quadrangle of 50 square kilometers, which was laid out according to four quarters of the heavens, and in its center was a square place with an elevated-step temple, 37 meters wide and 12 meters high.

Ecbatan, the first capital city of the Indo-European Medes, was centered upon a city fortress, around which, according to Herodotus, were seven circular walls.<sup>27</sup>

In medieval European cartography city layouts were always shaped according to two basic forms: the circular enclosure of the city and the four-part division of the circle – of the city interior – through two main streets that crossed each other at right angles.<sup>28</sup>

During the High Middle Ages numerous new cities were founded in various parts of Europe, or older cities were rebuilt (and indeed as we know today, this was done entirely independently of the remains of Roman cities that were still in existence then – i.e., still known at the time). And once again there prevailed in the architecture of these newly formed or newly restructured cities a four-part division of the city interior and a circular enclosure.<sup>29</sup>

And let us quote again the passage from the Apocalypse of St. John:

“And the city lies foursquare, its length the same as its breadth. It had a great high wall. On the east three gates, on the north three gates, on the south three gates and on the west three gates.”<sup>30</sup>

This passage corresponds exactly to the description of the design of Chinese capital cities to be found in the *K'ao-kung-Chi* (a part of the *Chou Li*): “The capital city is a rectangle of nine square *li* [Chinese mile]. On each side of the wall are three gates.”<sup>31</sup>

Let us once again journey through the architecture of the city into the world of our existence.

a. Cities are the sites of our world ascertainment. Outside, upon the open territory, they form points upon which we orient ourselves in our coming and going. Our movements in open space are movements within the space between cities. Within the unending expanse of nature, cities mark off sections that can be traversed and they designate goals that can be reached. The network of cities is the map of our world.

When we enter a city, we enter a determinate space that has been set off from indeterminate space – a city within its borders. Outside the city, wherever we might be, we are nowhere; within the city we are “here,” at the one and only place that this city marks out. The city always tell us where we are. And wherever we go within it, we are within the city – within circumscribed surroundings and not in an open expanse, along familiar pathways and not along strange roads, upon well-surveyed stretches and not before unexplored distances. The city is our world.

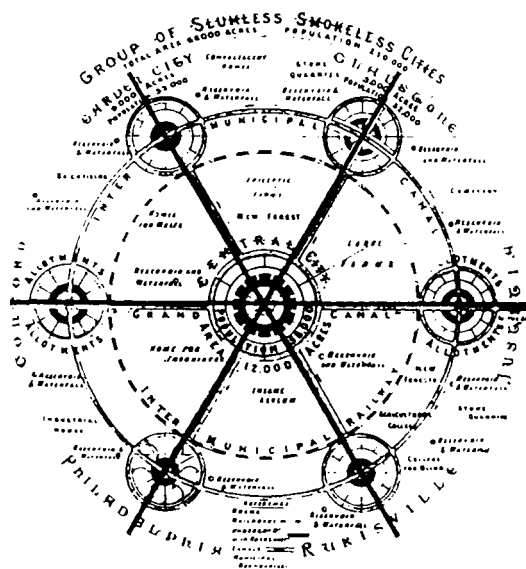


Figure 3: Ebenezer Howard, “The Social City” (1898).

“The capital of Siáng” (Shang), so it says in a Chinese ode,

was arranged [according to the world]  
the center of the four quarters [of the world].  
Glorious was its name,  
Curative [was] its divine power, Visible in the long life and peace  
And protection for us, posterity.”<sup>32</sup>

b. Our world ascertainment in the city occurs as an increasing insight into the texture of the world: cities are places where we ascend to knowledge. Our passage from the open land through the gate of a city, along its great axes, past universities, libraries, and museums, to its center, is a passage “upward,” into the center of our existence – to the shrine upon the temple mount, to the *Acropolis*, to the concentration of power in the ruler’s palace, to the citadel, to the cathedral that rises above the houses, to the seat of government in the capitol building. The city is a form of the *anagoge*.

c. Our ascent to knowledge in the city is carried out in geometric figures: on the grounds of the city, through the alternation between rectangular and circular spaces; on its streets and alleyways, through the alternation between straight lines and diagonals, curves and intersections. Cities are the locations of our existence in the middle between earth and heaven, mortality and immortality, time and eternity, dissipation and in-gathering, seeking and finding, hope and redemption.

In this alternation of the geometric figures of the city we discover the conditions of our existence – between one and the other, the other and the one, in the continuous between of the movement. The city is a form of the *metaxy*.<sup>33</sup>

### **World Architecture and City Design**

In architecture men participate in the divine: God is an architect. “Thou hast arranged everything according to size, number, and weight,” the author of the *Book of Wisdom* says to his God.<sup>34</sup> In the *Timaeus*, Plato speaks of the creator and father of the cosmos as an architect (*tektainomenos*, but he also calls him God, *theos*), who has brought forth the things of the world from their original disorder into a state of harmony (*symmetria*) – i.e., into proportions by means of which each thing in itself, as well as in its relationship to all other things, is symmetrical.<sup>35</sup> And in the *Odyssey*, Homer relates the story of the “god-like” Nausithoos, the king of the Phaeacians and the founder of the city of Scheria. The Phaeacians, Homer reports, had lived in Hypereia in Thrinacia “near the land of the Cyclopes, land of superhuman men. These did them harm and were superior in strength.” Nausithoos decided to move away from Hypereia with his people and to found a new city elsewhere. As he is “god-like,” so is Nausithoos king, city founder – and city architect.

He summons the Phaeacians to “migrate”:

He settled them in Scheria far removed from men who toil,  
About the city he had built a wall, constructed houses,  
Created too a temple to the gods and divided up the fields.<sup>36</sup>

The prophet, the philosopher, the poet, they have seen into the truth of architecture. Architecture is the way of creation. The original disorder of things becomes a cosmos – a harmonious order of the world – through the *theos tektonikos*, through the divine architect who created the “world,” the textured spaces of our perception, as he brought things out of chaos into the architecture of symmetrical and proportional measures.

Architecture is no arbitrary science. One cannot, Vitruvius taught, practice architecture like any other science. For it is the highest of all sciences. Only those persons can truly call themselves architects who from the time of their earliest youth have ascended the scale of the sciences and through the knowledge of many different arts and sciences have finally arrived at the very highest level, *ad summum templum*: the science of architecture.<sup>37</sup>

Within Western civilization, only once since the ancient times would architecture be understood again as a “divine” science and practiced as the possibility of an encounter between God and man: in the Gothic era.<sup>38</sup> The teachers of Gothic culture – the philosophers of Chartres, the monks of Clairvaux – exerted their influence upon the world of men through their picture of a future world, of the New Jerusalem. In their view, all human existence was existence directed toward divine salvation, the way of man was the way toward the heavenly city, the city of God.

The faithful had to become builders, builders of a divine architecture. From the prophets Isaiah and Ezekiel, from the *Book of Wisdom*, and from the *Revelation of St. John*, such figures as Thierry of Chartres, William of Conches, Hugo of St. Victor, the abbot Suger of Saint-Denis, and Bernard of Clairvaux had taken over the cosmological tale wherein the divine creation, and especially the divine plan of salvation, were presented as manifestations of the God who orders things according to measure, of the *elegans architectus*, as Alanus ab Insulis called him. Architecture was for men, in so far as they made use of the divine measure, the gateway to creation, and more importantly, the portal of the revelation of Christ.

In their theology of architecture the teachers of Gothic culture drew upon those fragments of Plato’s *Timaeus* that were then known to them, upon the works of individual church fathers such as Augustine, Origen, and Clement of Alexandria, as well as upon the general understanding, already documented very early, of Christian church architecture. The conception of the Christian church as a “heavenly city” had a long tradition. We know from Eusebius that during his dedication address in the year 314 he praised the early Christian temple of Tyrus as the “city of the Lord of Hosts [*polis kyriou*], as city of our God [*polis tou theou emon*].”<sup>39</sup>

In the Gothic cathedral the medieval theology of architecture found its concrete realization. In the view of those who built them, what emerged in the Gothic cathedral was the “heavenly city,” the “New Jerusalem.” For according to the belief of their architects, the Gothic cathedral was created according to the measure of God – it was the form of the city in which, as it was said in the prophetic books, God desired to dwell among his people.

The Gothic architects developed their architecture from a single basic form – from the rectangle, and above all from the square, the basic form of divine architecture, as the Bible had taught them. Through pure geometry they knew how to determine from this one ground plan all the other measurements for the ground plan and elevation of a cathedral. Matthew Roriczer, the architect of the Regensburg cathedral, shows in his *Buechlein der Fialen Gerechtigkeit* (1486) how, through the aid of a single square, one can derive the vertical projection from the ground plan.<sup>40</sup> In the sketchbook of the French architect Villard de Honnecourt, which contains a sample collection of Gothic architecture and building techniques, it is explained how one divides a square in half in order to grasp the “true” proportions of a building.<sup>41</sup> And Villard de Honnecourt has also shown, using as an example the steeples of the cathedral of Laon, how his doctrine of proportion is to be applied.<sup>42</sup>

In the architecture of Gothic cathedrals divine architecture was practiced. One who entered the cathedral was supposed to enter the world of God, or, more precisely stated, the edifice of the world that had been built by God, the world architect and creator of worlds. And one was supposed to enter upon the city of God – more precisely, upon the *porta coeli*, upon the gateway to the heavenly city that had been built by the faithful in the *ecclesia*.

At the beginning of the period of Gothic architecture, we encounter the abbot Suger of Saint-Denis (1081-1151), who built a new Gothic church for the abbey of Saint Denis in the fourth decade of the twelfth century. Upon the gold-plated bronze door of his church, Suger affixed the following inscription for the benefit of those who entered:

Of whomever you require to praise the splendor of the gates,  
do not be amazed at the gold and the great expense, but at the labor.  
So magnificently does the edifice shine, but the edifice that shines so magnificently,  
may it shine light upon the spirits, thus truly enlightening them.  
Come to the true light where Christ in truth is the doorway.  
What truly is, is shown here through the golden portal.  
By means of matter the weak spirit rises to truth,  
and extricates itself from the earthly, as it is irradiated all around with light.<sup>43</sup>

### Infinite Space, Divine Man

Upon our journey we approach closer to our own time and thereby distance ourselves from the world of the architectural mirror – from the mirrors of the world, from the appearance of the world (its epiphany) in architecture. Through modernity the mirror of architecture has become distorted.

The mirror play between a world-mirroring and world-distorting architecture first began with the architecture of the Renaissance. The architects and architectural theorists of the Renaissance did not doubt that architecture had to be grounded cosmologically, and therefore geometrically, according to the “right measure.” They also worked using the basic measures of square and circle. Nevertheless, in their textbooks and in their building construction they primarily concerned themselves with determining the principles of an architecture that would be most suitable to man. They sought, it is true, the measure of the world, but they found it in the figure of man. Man for them was the measure of an architecture that was to be constructed by man and for man.

The classical stimulus to a doctrine of proportions based not on the cosmos but on man had been provided by Vitruvius. In the first chapter of Book III of his work *De Architectura*, he showed that the human body as a geometrically conceived figure with its arms and legs outstretched fit in well with the geometric figure of the square as well as with the circle. Vitruvius only elaborated his idea of the “symmetry of the temple.” With this, however, he formulated the notion of an architecture developed out of man (*homo ad quadratum* and *homo ad circulum*).<sup>44</sup>

The architects of the Renaissance took up Vitruvius’s doctrine of proportions and made it the basis of their own architectural theory.<sup>45</sup> Through a careful study of the proportions of the human body Alberti and Francesco di Giorgio, Leonardo da Vinci, and Palladio worked out an “anthropometric” architecture, one according to human measure. Architecture was anthropometric – or “rational” as Giorgio formulated it – when carried out according to the following principles: (a) The proportions of the human body would be expressed in quantitative-mathematical relationships, that is objectively. (b) In the dimensions of a building, these quantitative relationships must repeat themselves. (c) Architectonic creations are the mirrors of perfect beauty. (d) They are such when the geometric arrangement of their parts corresponds to the proportions of the human body. (e) This one perfection reflects itself in many different forms – that is in a variety of architectonic works – and yet is always to be grasped within a simple system of mathematical proportions. (f) Architecture carried out according to the measures of man is thus the objective, geometric-mathematical definition of perfect beauty. According to Alberti, the beauty of a building derives from its proportions by

virtue of which all its constituent parts are in so perfect a relationship to each other that nothing can be added or subtracted without destroying the harmony of the whole.

To the question of how best to create the architectonic environment of man, the architects of the Renaissance found an anthropomorphic answer: The measurements of man were also to be the measurements of architecture, or, expressed in another way, the proportions of architectonic creations were to correspond with the proportions of the human body.

The anthropomorphic doctrine of proportions as propagated by the Renaissance architects remained in force in Europe into the eighteenth century. It was applied to the design of individual buildings as well as to the construction and restructuring of cities, though the doctrine was increasingly adhered to by habit and tradition rather than by understanding or knowledge. At the end of the eighteenth century, the knowledge of Vitruvius, Alberti and Palladio had been lost. In 1792 the English artist and cleric William Gilpin, in his *Time Essays on Picturesque Beauty, on Picturesque Travel, and on Sketching Landscape*, could only declare: “And a *rule of proportion* there certainly is, but we may inquire after it in vain. The secret is lost. The ancients had it. They well knew the principles of beauty, and had that unerring rule, which in all things adjusted their taste. We see it even in their slightest vases. In *their* works proportion, though varied through a thousand lines, is still the same; and if we could only discover their *principles of proportions*, we should have the arcanum of this science, and might settle our disputes about taste with great ease.”<sup>46</sup>

This insight did not come really as a surprise. Already in 1683 the French architect and theorist of art Claude Perrault, in his *Ordonnance des cinq espèces de colonnes*, had stated that the correct proportions in architecture strike us as correct only because we perceive them so out of habit (*accoutumance*); whatever our standards of measurement in architecture may be, they are in principle arbitrary.<sup>47</sup>

While the Baroque period still brought forth the enclosed, perspicuous, organically arranged building ensemble of the Baroque cities, something was to take place in another field that eventually would greatly disturb architecture, and especially city architecture for a long time to come – something that would overthrow all its proportions and wrench it completely from its world-setting. Man saw himself propelled from the earth into the infinite space of modern physics. In the universe of Newton the world of boundaries, of the center, of the intersecting axes, of above, of below, the world of cosmic architecture – this world, which was the architecture of the world of men, was broken up. In the new universe there might be one world, or several worlds, as the French philosopher Bernard le Bovier de Fontenelle told an enlightened Europe in his book on the *pluralité des mondes*.<sup>48</sup> And tomorrow it could still be there, but then again, it might not be, as Hume argued on behalf of the new world-skepticism.<sup>49</sup> In addition, it is really empty, as Voltaire reported to his contemporaries from Newton’s England.<sup>50</sup>

By the end of the eighteenth century architecture would be affected by the results of this revolution in man's understanding of reality. As the Austrian art historian Emil Kaufmann wrote, there had occurred "one of the most important processes in architectural history – the destruction of the Baroque unity. In a remarkable parallel to the general historical development, the Baroque unity came to be replaced by the pavilion system, which from then on would be dominant – the free union of independent existences. Each of the constituent buildings could in its powerful compactness and block-like concreteness stand on its own wherever it might be. None is dependent upon the others. By contrast the constituent members of Baroque organisms lose their meaning when one detaches them from their connection to the whole."<sup>51</sup>

Architecture, however, creates cohesions; it defines itself in doing this. It puts things together, making walls out of bricks, houses out of walls, cities out of houses. Yet, how is it supposed to form a city in a space where every point is equally meaningful – or equally irrelevant?

How could architecture still relate to something – and thus be what it is, measure according to measure- if everything to which it could relate is for its part related to nothing, and is itself only a relation?

"The essence of space as it is conceived today," wrote the Swiss historian of architecture Siegfried Giedion, summarizing the situation in modern architecture in his influential book *Space, Time and Architecture* (1941), "is its mansidedness, the infinite potentiality for relations within it. Exhaustive description of an area from one point of reference is, accordingly, impossible; its character changes with the point from which it is viewed. In order to grasp the true nature of space the observer must project himself through it."<sup>52</sup>

The observer – in other words, man – still exists, the infinite possibilities for inner relations within an infinite space have not infinitized him. On the contrary, it is on him that infinite space is centered to the degree that he "himself" moves in it and draws it up into himself in its infinite multiplicity. He is the one observer who alone in the universe always remains the same, the sole reference point for its infinity.

In the universe of infinite space architecture could relate itself to something – i.e., to the architect, to man. Insofar as man – the architect – understood himself as sole reference point for the universe, the things in the universe would be given a measure – the architecture of his gaze.

In the mode of their self-assertion when confronted with infinite space – an infinitely empty, infinitely silent, infinitely meaningless space – modern architects, like modern poets and modern philosophers, were to reach for the outermost point of rescue: they demanded a god-like status.

Charles Fourier founded and inspired one of the social movements of the nineteenth century, which at the same time was a movement for an urban architecture through which a "universal harmony" of human community would allegedly be brought about. Victor Considérant, a student of



Fourier's, and after the latter's death the head of the Fourierist movement, published in 1840 his *Description du Phalanstère et considérations sociales sur l'architectonique*. In this work he describes his vision of a future "industrial city." It is, he says, a place of a "thousand magnificent activities," this *ville industrielle*. And it is more than this – it is a mirror of the "God of the earth," of man, the "new" God of the future following after the "old" God, who Considérant still calls the *premier Créateur*, the first Creator:

In the most anterior circle of the industrial city a row of factories, large work places, department stores and warehouses form walls opposite in the Phalanstère. The motors and the powerful machines reveal here their strength: with their metal implements they crush, shape and transform raw materials and perform for the benefit of the [community of men in] the Phalange a thousand magnificent activities. This is the arsenal of the productive and living inventions of human intelligence, the ark upon which the products of industry – augmented by the creative power of man – are gathered together with plants and animals, those machines of the first Creator which he used for his inventions. In this arsenal are found all the tamed elements, all the controlled liquids, all the secret powers, all the forces of nature, all the gods of the old Olympus who in service to the will of the god of the earth [Dieu de la terre], conquered by him, are subordinated to him, obeying his voice, willing servants, they proclaim his kingdom.<sup>53</sup>

### **An Architecture of Mirrors and the World Beyond**

Considérant described *his* vision of a future city; among the modern city-philosophers and city-architects many others described *their* visions of a city. The cultural landscape of the nineteenth and twentieth centuries is glutted with city visions: one can choose from among the Metropolis, the Futuropolis, the Megalopolis, the Aquapolis, the Ecopolis, the Thalassopolis, the Heliopolis; or from the *Gartenstadt*, the *Parkstadt*, the *Satellitenstadt*; from Broadacre City, Sea City, Tetra City, Prospective City, Instant City; from the *Turmstadt*, the *Stahlstadt*, the *Atomstadt*, the *Mondstadt*, the *Weltraumstadt*; or from the *Ville cosmique*, the *Cité totale*, the *ville galaxie*, the *ville solaire*, or – one sees it now – *New Babylon*.<sup>54</sup>

Where was the city in New Babylon, *the city*? Within the freedom of the architectonic imagination itself, it was not to be found. For the architecture of this freedom only reflected its unbounded infinity; it was an architecture of mirrors, the reflection of the infinite inventiveness – and infinite bizarreness – of the human imagination.

Beyond this architecture of mirrors, however, there was a world – the world of modern cities, which were becoming ever more ugly and inhuman. How could city architecture, from out of the thousands of city worlds with which it dazzled itself, arrive at the one city world?

## In Search of the World – The Conquest of the World

In the theory of modern city architecture three paths would be marked out and then incorporated in different ways into the practice of urban architecture.

First, the disintegration of the cities would be accepted as the unalterable consequences of the modern world view. In his work, *Elémens et théorie de l'architecture*, which appeared between 1901 and 1904, the French architect and theorist of architecture Julien Guadet postulated what was apparently inevitable: “Les proportions, c’est l’infini” (“The proportions, that is infinity.”)<sup>55</sup> It was hardly of any use anymore, the German architect and urban planner Bruno Taut remarked in 1915, to speak of the symptoms of city disintegration. “Disintegration of cities,” he maintained, is a negation. “But in truth,” he went on to write, “it is a case rather of affirmation than of negation. Man has his earth once again; he will no longer be a mere traveler upon it; he will live upon it as an inhabitant.”<sup>56</sup> In 1932 F. L. Wright proclaimed the approaching death of the cities in his book, *The Disappearing City*,<sup>57</sup> and in 1943 Eliel Saarinen in another book could say nothing else about the fate of the city.<sup>58</sup>

Second, the possibility that architecture might have the ability to “speak” would be ignored from the very beginning, and instead its pure quality as a mirror would be stressed. Architecture, it was said, mirrors just what is reflected in it. And significantly, in related pronouncements, the talk was of “projection” and “reflection,” and not of the world, but of the “world of the spirit.” In 1914 the Italian architect Antonio Sant’Elia declared in a work about the *architettura futurista* that “by architecture is to be understood the effort to bring, in a free and bold manner, the physical environment into harmony with man – that is, to reproduce the world of things as a direct projection of the world of the spirit.”<sup>59</sup> F. L. Wright expressed the same idea: “The building as architecture is borne from the heart of man; it is the constant companion of the ground, comrade of the trees, true reflection of man in the realm of his own spirit.”<sup>60</sup>

Third, architects appointed themselves to be, in words of Claude-Nicolas Ledoux, “the Titans of the earth,” the “rivals of the Creator.”<sup>61</sup> This path was the most consequential and it would be followed in the twentieth century by numerous architects and city builders - though more discretely in most instances than in the drastic manner of Le Corbusier, who openly demanded that “a man with an iron hand” come forward to solve the problem of the city.<sup>62</sup>

Among the works of architectural theory published by Bruno Taut under the title *Frühlicht* (works intended, as it says, to further “the implementation of new ideas in building construction”), there is a text from Alfred Brust that without euphemism or equivocation described the way of the modern architect as that of the messianic creator, through whose activity man, in a world uniquely his own, comes to know himself as God.

Nature is so constructed that man, wherever he finds himself, sees himself as the midpoint of the universe. Whether he is upon the sea or in the desert, he is the exact midpoint of the area. And the heavenly vault day and night continues to call out to man: This is *your* hall! Only around *you* is this great rotation! Only for *you*! I hear that there are architects at work who once again want to give to mankind the grand vision. They want to create structures that will not permit the individual to forget for one moment that he is the midpoint of the universe and must continuously conduct himself as such. Every means that is used to etch more deeply into man’s consciousness the fact that he and *he alone* is the midpoint of the universe is justified. That is an axiom!<sup>63</sup>

How could city architecture, from out of the thousands of city worlds with which it dazzled itself, arrive at the one city world? The answer that modern architects discovered would be put into practice thousands of times in the twentieth century. Old cities would be destroyed or left to decay, and instead of rebuilding them, there would be new things constructed – new parts of cities and new cities. What is manifested in the city, Le Corbusier proclaimed, is “the seizure of nature by man. It’s an action by man against nature.”<sup>64</sup> And this was the standard of measure: the new city as proof of the new God, architect and midpoint of the world.

### **The Esoteric Architecture of Modern Cities**

Men think that no structured world would exist but for the world structured by them. Architects imagine that no model for a city would exist but for the one they themselves have constructed. But they deceive themselves. For insofar as they structure a world or construct a city, they enter into the structure of the world, into the model for cities.

The infinite freedom of the human imagination has limits, at least to the extent that it is practical. Even within the realm of the practical, it can disregard limits – if it is prepared to destroy. If it seeks to be creative, however, it must achieve within definite limits the object that it pursues – that is within the forms that it uses, the intended design; within the solutions that it has discovered, the sought-after perfection; within the structures that it has created, the desired cohesiveness. Each person who is creative creates what he creates into distinctive forms, solutions and structures that he

need not be acquainted with or know anything about, as long as he does not set out to produce, to structure, or to build anything. Once he sets out to do these things, however, he enters into the creative process. Out of something infinite he makes something definite; out of something disconnected, something connected; out of what is diverse, something unified. He enters, for example, into the creative process of an architect who shapes materials of the earth into the form of a house, or who marks out upon the expanse of a territory the enclosure of a city.

Even the freedom of modern city architects has known limits. They, too, in the process of their building built according to definite forms. For they, too, wanted to structure something, to perfect something, and to form cohesive connections. Only in their proclamations did they construct out of nothing like gods. In their actual practice, however, they entered into the structure of the world, into the model for cities, and thus remained men. They entered into the world of the circle, of the rectangle, of the world-axis, of the coordinate axis, of the heavenly city.

They were also to a certain degree previously instructed in this. Recent research has uncovered more and more the theosophical, spiritualistic, and mystical sources upon which the most influential architects and city builders of the twentieth century have drawn – Le Corbusier, F. L. Wright, Walter Burley Griffin, Patrick Geddes, Hannes Meyer, Walter Gropius.<sup>65</sup>

The inner structure of Canberra, the capital of Australia, was marked out by Walter Burley Griffin, its architect, through coordinate axes that are formed by a “land axis” between the government center and the capitol building, and a “water axis” between the university and the city waterways. The intellectual sections of the city are laid out in a circular pattern, and internally then subdivided into rectangles.<sup>66</sup>

The geometry of the city architecture of Le Corbusier is constituted by the intersection point of two axes, which, as precisely as Le Corbusier would make them, run exactly from north to south and from east to west. All remaining streets create a pattern of rectangles that is joined together at intersections through circular forms. In his plans for a “contemporary city of three million inhabitants,” which Le Corbusier drew up in 1922, the architecture of the mandala is revealed.<sup>67</sup>

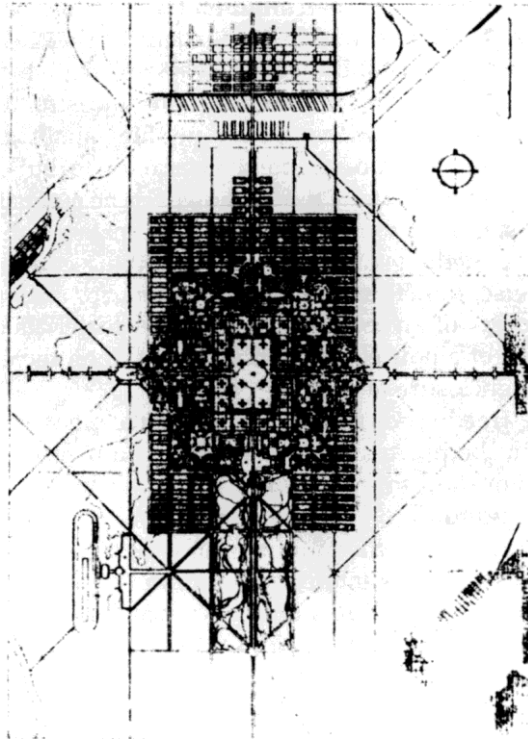


Figure 4: Le Corbusier, “Contemporary city for three million inhabitants” (1922).

The idea of a “Garden City” was very successfully propagated by its originator, Ebenezer Howard, as one of the major ideas of modern city-building. According to Howard’s view, each Garden City consists of a perfectly symmetrical figure formed at concentric circles.<sup>68</sup>

In 1922, as part of the competition for the new Chicago Tribune Building, Adolf Loos drew up plans for a skyscraper in the form of a Doric column. At the same time Auguste Perret and Le Corbusier conceived the central idea of modern city building: the city in the form of a tower, in the form of ever-taller commercial, administrative, and residential skyscrapers, which would absorb more and more into themselves all the functions of the city. In the ancient architectural cosmology, the columns had the purpose of representing the world-axis and the city temple represented the worldmount. Today, in the city architecture of the twentieth century, the same world reflections appear again – world-axes in the form of skyscrapers, world-mounts in the form of tower cities.

### **City Architecture and World Redemption**

The architects of the twentieth century were human gods. In their works the world reflected itself, the one world within whose form and structure men still continue to discover their forms and structures.

By contrast, in their longings there was reflected besides an entirely different world, a “new” world, within whose form and structure men had delivered themselves (“liberated” themselves) from all previous forms and structures. They conceived city architecture to be world redemption.<sup>69</sup> F. L. Wright saw in architecture the “prophetic guidepost to the true life”;<sup>70</sup> he wanted all newly constructed buildings to serve the “liberation of mankind,”<sup>71</sup> and planned for this future city – Broadacre City – a new syncretistic religion of nature.<sup>72</sup> Le Corbusier proclaimed that “a great age has dawned, a new spirit is in the world,” and he styled himself its prophet.<sup>73</sup> If his redemptive vision of city architecture were to have become reality, we would all live now in a “radiant city”<sup>74</sup> (*ville radieuse* – Le Corbusier’s name for the modern metropolis), there stroll about in a “valley of leisure,” beneath “sacred trees,” past an “animal column” or a “monument of the open hand,” we would educate ourselves in a “museum of knowledge,” in a “temple of music,” we would think in a “sepulchre of contemplation,” let ourselves be enchanted in a “marvel chest,” and dream in a “tower of shadows.”<sup>75</sup>

### The Shattered Mirror

In the city architecture of this century, the city as mirror of the world has been shattered through a thousand different attempts to replace it with another mirror. Slowly, with extended journeys through our remembrance, slowly we will learn to put it back together again.<sup>76</sup>

### Notes

- <sup>1</sup> Cf. for example: W. Braunfels, *Abendländische Stadtbaukunst: Herrschaftsform und Baugestalt*, Cologne, 1977 (see especially 7–17); L. Benevolo, *Storia della Città*, Rome-Bari, 1975 (especially introduction to chapters 13, 14, and 15).
- <sup>2</sup> Cf. H. Morrison, *Louis Sullivan: Prophet of Modern Architecture*, New York, 1935.
- <sup>3</sup> L. H. Sullivan, *Kindergarten Chats and Other Writings*, New York, 1918, reprint, 1979, 65, 114.
- <sup>4</sup> Cf. *Ibid.* 110.
- <sup>5</sup> “Cum in omnibus enim rebus, tum maxime etiam in architectura haec duo insunt: quod significatur et quod significat.” Vitruvius, *De Architectura Libri Decem-Zehn Bücher über Architektur*, ed. C. Fensterbusch, I, 1, Darmstadt, 1976, 22 (Latin-German edition).
- <sup>6</sup> Cf. O. Sinén, *The Walls and Gates of Peking*, London, 1924; A. Boyd, *Chinese Architecture and Town Planning*, Chicago, 1962; N. J. Wu (Wu No-sun), *Architektur der Chinesen und Inder: Die Stadt der Menschen, der Berg Gottes und das Reich der Unsterblichen*, Ravensburg, 1963; P. Wheatley, *City as Symbol*, London, 1969; *idem*, *The Pivot of Four Quarters: A Preliminary Enquiry into the Origins and Character of the Ancient Chinese City*, Chica-

- go, 1971; A. F. Wright, "The Cosmology of the Chinese City," in *The City in Late Imperial China*, edited by G. Williams Skinner, Stanford, 1977, 33–73.
- <sup>7</sup> Cf. W. Kirfel, *Die Kosmographie der Inder*, Bonn–Leipzig, 1920; T.N. Ramachandran, "Śisūpalgarh," in *Journal of the Andhra Historical Research Society* (Rajahmundry), 19, 1948, 140–153; B. B. Lal, "Śisūpālgarh 1948," in *Ancient India, Bulletin of the Archaeological Survey of India* (New Delhi), 5, 1949, 62–105; R. E. M. Wheeler, *The Indus Civilization*, Cambridge, 1953, 1968; St. Piggot, *Prehistoric India*, Harmondsworth, 1961, 159ff.; W. Müller, *Die heilige Stadt, Roma quadrata, himmlisches Jerusalem und die Mythe vom Weltnabel*, Stuttgart, 1961, 115ff.; P. Wheatley, *City as Symbol*; *idem*, *The Pivot of Four Quarters*; K. Fischer, M. Jansen, J. Pieper, *Architektur des Indischen Subkontinents*, Darmstadt, 1987.
- <sup>8</sup> Cf. G. Tucci, *Teoria e pratica del Mandala: con particolare riguardo alla moderna psicologia del profondo*, Rome, 1949; J. E. Cirlot, *A Dictionary of Symbols*, London, 1967, the section on "Mandala," 190–194; J. Chevalier, A. Gheerbrant, *Dictionnaire des symboles*, Paris, 1969, the section on "Mandala," 487–489.
- <sup>9</sup> Cf. B. Brentjes, *Die Stadt des Yima: Weltbilder in der Architektur*, Leipzig, 1981, 12ff.
- <sup>10</sup> H. Wöfflin, *Kunstgeschichtliche Grundbegriffe: Das Problem der Stilentwicklung in der Neueren Kunst*, Munich, 1915, 1923, 241.
- <sup>11</sup> *Die Romrede des Aelius Aristides* (Greek-German), ed. R. Klein, Darmstadt, 1983, 13.
- <sup>12</sup> *Revelations 21: 10–24* (Revised Standard Version).
- <sup>13</sup> P. Bommersheim, "Das Ewige und das Lebendige: Zur Philosophie der Architektur," in B. Taut, *Frühlicht 1920–1922: Eine Folge für die Verwirklichung des neuen Baugedankens*, Berlin, 1963, 114.
- <sup>14</sup> Cf. Plutarch, *Vitae*, Theseus and Romulus, 9, 4; Dionysius of Halikarnassus, *Romaiké archaiología*, I, 88, 2. On the traditional understanding of a round sky and a rectangular earth (*t'ien-yüan ti-fang*) in ancient China, cf. N. J. Wu, *Architektur der Chinesen und Inder*, 10ff.; on "espace carré," "terre carrée" and "centre" in Chinese thought, cf. M. Granet, *La pensée chinoise* (1934), Paris, 1968, 80ff., 91 ff., 255ff., 323ff. For further parallels, cf. M. Eliade, *Le Mythe de l'Éternel Retour*, Paris 1949, 21–29, 20–37; *idem*, *Traité d'Histoire des Religions*, Paris 1949, 321ff., 325ff.; *idem*, *Das Heilige und das Profane*, Hamburg, 1957, 20ff. Cf. also E. Testa, *Il simbolismo dei giudeo-cristiani*, Jerusalem, 1962.
- <sup>15</sup> Cf. Plutarch, *Vitae*, Theseus and Romulus, 9, 5ff.; Dionysius of Halikarnassus, *Romaiké archaiología*, I, 85,6–88,3; Ovid, *Fasti* IV, 807–832; K. Kerényi, "Mythologie und Gnosis," in *Eranos-Jahrbuch* 8, 1940–1941, Zürich, 1942, 172–178; W. Müller, *Die heilige Stadt*, 9ff., 33ff., 37ff.; J. Rykwert, *The Idea of a Town: The Anthropology of Urban form in Rome, Italy and the Ancient World*, London, 1976, 45–71.
- <sup>16</sup> Cf. Plutarch, *Vitae*, Theseus and Romulus, 11, 2; Ovid, *Fasti* IV, 830–832.
- <sup>17</sup> Cf. Vitruvius, *De Architectura*, *op. cit.*, p. 414 "Mundus autem est omnium naturae rerum conceptio summa caelcumque"; and Ovid, *Fasti* II, 683–684; "Gentibus est aliis tellus data limine certo Romanae spatium est urbis et orbis idem." Compare, too, W. Dahlheim, "Die Funktion der Stadt im roemischen Herrschaftsverband," in *Historische Zeitschrift*, Beiheft 7 (NF), *Stadt und Herrschaft: Roemische Kaiserzeit und Hohes Mittelalter*, ed. F. Vittinghoff, 1982, especially 155–222.
- <sup>18</sup> Cf. Aulus Gellius, *Noctes Atticae* XIII, 14; Plutarch, *Vitae*, Theseus and Romulus, 11, 1–5; Dionysius of Halikarnassus, *Romaiké archaiología* I, 88, 2; Varro, *De Lingua Latina* V, 32, 143; Tacitus, *Annales* XII, 23.
- <sup>19</sup> For the striking parallels between Chinese and Indian surveying rites, see P. Wheatley, *The Pivot of Four Quarters*, 426ff., 462ff.
- <sup>20</sup> Cf. W. Krickeberg, *Mythe, Mensch und Umwelt*, Bamberg, 1950; C.T. Bertling, *Vierzahl, Kreuz und Mandala in Asien*, Amsterdam, 1954; C. Hentze, *Tod, Auferstehung, Weltordnung*, Zurich, 1956; W. Leschhorn, "Gruender der

*Stadt*": Studien zu einem politisch-religiosen Phaenomen der griechischen Geschichte, Stuttgart, 1984; W. Krickeberg, "Bauform und Weltbild im alten Mexiko," in *Paideuma* IV, 1950, 295–333; P. Westheim, *Arte Antigua de México*, Mexico City, 1950; W. Krickeberg, *Altamerikanische Kulturen*, Berlin, 1956; G.E. von Grunebaum, "Die islamische Stadt," in *Saeculum* 6, 1955, 138–153; Ph. Stern, *Le Bayon d'Angkor et l'évolution de l'art Khmer*, Paris, 1927; J. Dumarçay and B. Ph. Groslier, *Le Bayon: Histoire Architecturale du Temple*. INSCRIPTIONS DU BAYON, Paris, 1973, especially Chapter 10, "Mandala et Yantra," 235–249; P. Wheatley, *City as Symbol*; idem, *The Pivot of Four Quarters*; W. Mueller, *Die heilige Stadt*; J. Rykwert, *The Idea of a Town*.

<sup>21</sup> Vitruvius, *op. cit.*, VI, 1, 263. Compare too 281.

<sup>22</sup> *Ibid.*, I, 6, 65.

<sup>23</sup> Cf. E. J. Eitel, *Feng-shui: Principles of the Natural Science of the Chinese*, Hong Kong, 1873; J. Needham, *Science and Civilization in China*, vol. 2, *History of Scientific Thought*, Cambridge, 1956, 359–363, and vol. 4, *Physics and Physical Technology*, Cambridge, 1962, 239–245.

<sup>24</sup> On *tabbur eres*, cf. Ezekiel 38:12 and Judges 9:37; on *ges omphalos*, cf. Plato, *Politeia*, 427c; on the other sources, compare the works of Wheatley, Müller and Eliade cited in notes 7, 8, and 15; also J. Soustelle, *La pensée cosmologique des anciens mexicains: représentation du monde et de l'espace*, Paris, 1940, especially Chapter VIII, "Les Points Cardinaux," 56–78; W. H. Roescher, *Omphalos: Eine philologisch-archaeologisch-volkskundliche Abhandlung ueber die Vorstellung der Griechen und anderer Voelker vom Nabel der Erde*, Leipzig, 1913; reprint, Olms Hildesheim, 1974; idem, *Der Omphalosgedanke bei verschiedenen Voelkern, besonderes den semitischen: Ein Beitrag zur vergleichenden Religionswissenschaft, Volkskunde und Archaeologie*, Leipzig, 1918; reprint, Olms Hildesheim, 1974.

<sup>25</sup> *Chou Li* (Ta-ssü-t'u), 3, 14.

<sup>26</sup> Cf. G. Coedès, *La date du Bayon*, in *Études Cambodgiennes XIX, Bulletin de l'École Française de l'Extrême-Orient*, XXVIII, 1928, 88.

<sup>27</sup> *Histories* I, 98, Aubrey de Selincourt translation. Herodotus also describes very precisely in the *Histories* (I, 178, 180, 181) the *square* layout of the city of Babylon and the *square* temple district of Babylon (We know the accuracy of this description from contemporary archeology). Also, cf. Plato's sketch of Atlantis (*Critias* 115c ff.), which is characterized by a circular layout, ziggurat-like palace and midpoint, and architectural color symbolism.

<sup>28</sup> Cf. W. Mueller, *Die heilige Stadt*, 53ff.

<sup>29</sup> Cf. *Ibid.*, 78ff.

<sup>30</sup> *Revelations* 21:12–13, 16.

<sup>31</sup> *Chou Li* (K'ao-kung-Chi), 12, 14.

<sup>32</sup> J. Legge, *The Chinese Classics*, vol. 4, *The She King*, Hong Kong, 1960, 646 (Chinese text with English translation). On the problem of translation, cf. P. Wheatley, *The Pivot of Four Quarters*, 475.

<sup>33</sup> *Ezekiel* 40:1–43:11 (Revised Standard Version).

<sup>34</sup> *Book of Wisdom* 11:20.

<sup>35</sup> Plato, *Timaeus* 28c, 69b.

<sup>36</sup> Homer, *Odyssey* VI, 5–10.

<sup>37</sup> Cf. Vitruvius, *op. cit.*, I, 1, 30.

<sup>38</sup> Cf. L. Kutschelt, *Die fruehchristliche Basilika als Darstellung des himmlischen Jerusalem*, Munich, 1938; H. Sedlmayr, *Die Entstehung der Kathedrale*, Zurich, 1950; G. Sandmann, *Mittelalterliche Architektur als Bedeutungstraeger*, Berlin, 1951; O. v. Simson, *Origins of Gothic Architecture and the Medieval Concept of Order*, New York, 1956; C. Schneider, *Geistesgeschichte der christlichen Antike*, Munich, 1970, 480–494.



- <sup>39</sup> Eusebius quotes here *Psalms* 47:9, Eusebius, *Hist. eccl.* X, 4; Migne, PG, 20, 849.
- <sup>40</sup> M. Roriczer, *Das Buechlein voll der Fialen Gerechtigkeit*, Facsimile of original Regensburg edition (1486), ed. F. Geldner, Wiesbaden, 1965, 46ff.
- <sup>41</sup> H. R. Hahnloser, *Villard de Honnecourt*, critical edition of ms. fr. 19093 of the Paris National Library, Graz, 1972, 49ff. – For further information see: J. Wirth: *Villard de Honnecourt, architecte du XIIIe siècle*, Geneva 2015.
- <sup>42</sup> *Ibid.* 107ff.
- <sup>43</sup> Suger [of Saint Denis], *Liber de rebus in administratione sua gesti*, in *Oeuvres complètes de Suger*, edited by A. Lecoy de la Marche, Paris, 1867; reprint, Olms Hildesheim, 1979, 189.
- <sup>44</sup> Vitruvius, *op. cit.*, III, i, Frank Granger translation, Loeb Classical Library.
- <sup>45</sup> Cf. R. Wittkower, “The Arts in Western Europe: Italy,” in *The New Cambridge Modern History*, vol. 1, *The Renaissance*, Cambridge, 1957; G. Santinello, *Leon Battista Alberti*, Florence, 1962; R. Wittkower, *Architectural Principles in the Age of Humanism*, New York, 1965; E. Forssman, *Palladios Lehrgebäude: Studien ueber den Zusammenhang von Architektur und Architekturtheorie*, Stockholm, 1965; S. Braunfels, “Vom Mikrokosmos zum Meter,” in *Der “vermessene” Mensch: Anthropometrie in Kunst und Wissenschaft*, Munich, 1973; St. von Moos, *Turm und Bollwerk: Beiträge zu einer politischen Ikonographie der italienischen Renaissancearchitektur*, Zurich, 1974.
- <sup>46</sup> W. Gilpin, *Three Essays: On Picturesque Beauty, On Picturesque Travel, and On Sketching Landscape*, London, 1794; reprint, Gregg International Publishers, 1972.
- <sup>47</sup> C. Perrault, *Ordonnance des cinq espèces de colonnes, selon la méthode des anciens*, Paris, 1683, Préface, i–xxvii. Claude Perrault, brother of Charles Perrault, the protagonist of the “Querelle des anciens et des modernes,” did not, of course, follow the “method of the ancients”; like his brother, he stood completely on the side of the moderns.
- <sup>48</sup> B. de Fontenelle, *Entretien sur la pluralité des mondes*, 1707. Cf. G. Buchdahl, *The Image of Newton and Locke in the Age of Reason*, London, 1961; T. Schabert, *Natur und Revolution, Untersuchungen zum politischen Denken im Frankreich des 18 Jahrhunderts*, Munich, 1969; S. Sambursky, “Die Raumvorstellung der Antike: Von der unendlichen Leere zur Allgegenwart Gottes,” in *Eranos-Jahrbuch* 44–1975, Leiden, 1977, 167–198.
- <sup>49</sup> D. Hume, *Philosophical Essays Concerning Human Understanding*, 1748, especially sections VI and VII.
- <sup>50</sup> Voltaire, *Lettres anglaises* (also known as *Lettres philosophiques*), 1734, especially Quatorzième Lettre, “Sur Descartes et Newton”; idem, *Les éléments de la philosophie de Newton*, 1738.
- <sup>51</sup> E. Kaufmann, *Von Ledoux bis Le Corbusier: Ursprung und Entwicklung der Autonomen Architektur*, Vienna, 1933, 16, 19. Compare also 43, 46, 61.
- <sup>52</sup> S. Giedion, *Space, Time and Architecture: The Growth of a New Tradition*, Cambridge, Mass.-London, 1956, 431ff.
- <sup>53</sup> V. Considérant, *Description du Phalanstère et considérations sociales sur l’architectonique*, Paris, 1979, 59ff.
- <sup>54</sup> Cf. W. Schneider, *Ueberall ist Babylon: Die Stadt als Schicksal des Menschen von Ur bis Utopia*, Düsseldorf, 1960; M. Ragon, *Prospective et Futurologie: Histoire mondiale de l’architecture et de l’urbanisme modernes*, vol. 3, Tournai, 1978.
- <sup>55</sup> J. Guadet, *Eléments et théorie de l’architecture*, vol. 1, 1929, 139.
- <sup>56</sup> B. Taut, *Die Erde eine gute Wohnung* (1919), extracts reprinted in W. Pehnt, *Das Ende der Zuversicht: Architektur in diesem Jahrhundert, Ideen, Bauten, Dokumente*, Berlin, 1983, 324–326.
- <sup>57</sup> F. L. Wright, *The Disappearing City*, New York, 1932. Wright recommended to counteract this, that the entire U.S.A. be inhabited by single-family homes as “Broadacre City.” The “individual home” is the most important unit in the city,” the “center and the only centralization allowable” (*Ibid.* 80). Already in his Princeton lectures of 1930 Wright had declared: “I believe the city, as we know it today, is to die” (*The Future of Architecture*, New York, 1953, 182).

- <sup>58</sup> E. Saarinen, *The City: Its Growth, Its Decay, Its Future*, New York, 1943. Compare also Le Corbusier, *Urbanisme*, Paris, 1925, 88: “Le centre des villes est malade mortellement, leur pourtour est rongé comme par une vermine. ... Je pense donc froidement qu’il faut arriver à cette idée de démolir le centre des grandes villes et de le rebâtir.”
- <sup>59</sup> A. Sant’ Elia, *L’architettura futurista*, in M. Drudi Gambillo and T. Fiori, *Archivi del futurismo*, Rome, 1958, 85.
- <sup>60</sup> F. L. Wright, *Schriften und Bauten*, Munich, 1963, 187.
- <sup>61</sup> C. N. Ledoux, *L’architecture considérée sous le rapport de l’art, des moeurs et de la législation*, vol. 1, Paris, 1804; reprint, Nördlingen, 1981.
- <sup>62</sup> Le Corbusier et Pierre Jeanneret, *Oeuvres Complètes de 1910–1929*, ed. W. Boesiger and O. Stonorov, Zurich, 1937, 111.
- <sup>63</sup> A. Brust, *Worte an die Meister aller Werke*, in B. Taut, *Fruehlicht 1920–1922*, 65.
- <sup>64</sup> Le Corbusier, *Urbanisme*, *op.cit.* 1.
- <sup>65</sup> Cf. G. Ciucci, F. Dalco, M. Manieri-Elia, and M. Tafuri, *La città americana dalla guerra civile al New Deal*, Rome-Bari, 1973, 348, n. 66; 344ff., n. 56; 136, nn. 215, 216; 400, n. 146; R. Fishman, *Urban Utopias in the Twentieth Century: Ebenezer Howard, Frank Lloyd Wright, Le Corbusier*, New York, 1977, 165ff.; J. Rykwert, *Ornament ist kein Verbrechen: Architektur als Kunst*, Cologne, 1983, 68–80.
- <sup>66</sup> Griffin’s plan for Canberra (1925 version) is, for example, reproduced in W. Pehnt, *Das Ende der Zuversicht*, 99; in the 1912 version it can be found in C. Ciucci, et al., *La città americana*, 138.
- <sup>67</sup> The plan is reproduced in Le Corbusier, *Urbanisme*, 168–169; also in R. Fishman, *Urban Utopias in the Twentieth Century* 114ff., W. Pehnt, *Das Ende der Zuversicht*, 51.
- <sup>68</sup> Howard’s plans for the “Garden City” are to be found in R. Fishman, *Urban Utopias*, 114ff. Compare also the plan for Washington, D.C. (1900) of Can Gilbert in G. Ciucci et al., *La città americana*, 75.
- <sup>69</sup> Numerous related statements and texts can be found, for instance, in the collection of Ulrich Conrads, *Programme und Manifeste zur Architektur des 20. Jahrhunderts*, Frankfurt, 1964. Compare also B. Miller Lane, *Architecture and Politics in Germany 1918–1945*, Cambridge, Mass., 1968, especially Chapter II, “The New Architecture and the Vision of a New Society.”
- <sup>70</sup> F. L. Wright, *Schriften und Bauten*, 25.
- <sup>71</sup> *Ibid.*
- <sup>72</sup> Cf. *The Living City*, New York, 1958, especially 120–121.
- <sup>73</sup> Le Corbusier, *Vers une architecture*, 1923, Paris, 1977, xviii. Cf. *idem*, *Urbanisme*, 37.
- <sup>74</sup> Cf. Le Corbusier, *Précisions sur un état présent de l’architecture et de l’urbanisme*, 1929, Paris, 1960, 23–26. Cf. *idem*, *Urbanisme*, 143, 281ff.
- <sup>75</sup> *Le Corbusier et son atelier rue de Sèvres 35. Oeuvres complètes, 1952–1957*, edited by W. Boesiger, Zurich, 1957 168; Le Corbusier, *Oeuvres complètes, Les dernières oeuvres*, ed. W. Boesiger, Zurich, 1970, 49, 65, 67; *idem*, *Sketchbooks*, vol. 3, 1954–1957, Cambridge, Mass., 1982, J 38, 411; J 38, 417; J 38,429.
- <sup>76</sup> Compare my two essays: “Modernity and History,” in *Diogenes*, 123, Fall 1983, 110–124; “The Decentralization and the New Urban Policy in France,” in *Urban Law and Policy* (England), vol. 7, No. 1, March 1985, 57–74.

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Tilo Schabert, Dr. phil., is Professor emeritus of Political Science at the University of Erlangen (Germany). He taught also at the Universities of Munich, Stanford, Bochum, Trier, and Dresden. 1981 Planning Associate, Boston Redevelopment Authority (Boston), Honorary Doctorates from the Universities of Perpignan and Rennes. 2005 German-French Parliamentary Price. 2007 Nominated Knight in the French Legion of Honor.