



建筑方案手绘表现

(德)约翰内斯·默勒 (J.MÖHRLE) 著 孙晶 译

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Architectural Drawing

1



中国电力出版社
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本书从建筑视点角度精挑细选了多个手绘案例,通过案例向读者展示透视图的画法,以及建筑手绘图的表现技巧。不论是徒手表现还是示意图在不断发展的建筑理念中都起到了决定性的作用,因此本书的主要目的和创作理念更倾向于“绘画的建筑”。本书把透视结构的使用作为一种辅助手段,使其能真实的表达一个特定的主题,并且重点注意了合理的表现形式。

本书适合建筑、景观、环艺等专业的学生使用,也可作为建筑师、景观设计师及建筑装饰公司从业者的参考用书。

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前言

本书主要针对年轻的建筑师和那些已经对画法几何有了基本了解并且希望在透视图画法上继续深入学习的建筑系学生。除了建筑行业的专业人士外,我希望这本书也可以吸引那些仅是对建筑画感兴趣,或者那些能够从中获得愉悦的非专业人群。透视图这种艺术形式的市场价格的不断上涨,则更为证实了这种艺术形式存在的现实意义。本书对于学生这一读者群无疑能够提供更为深入的对于结构的详细说明,不过作者即使是在讨论纯几何的时候,仍然力求能清晰地表现美学理念。

在讨论中,人们发现本书的主要目的和创作理念更加倾向于“绘画的建筑”,不论是徒手画还是示意图在不断发展的建筑理念中都起到决定性作用。他们不需要清楚地阐释空间概念或者对建筑设计有极强的鉴赏力,但是如果建筑师的一张表达准确的草图作为展示某种技能的标志,那么他就能从顾客那里建立威信并且得到职业的认可。

在学校加强透视结构学习的基本目的之一通常就是通过恰当的透视草图练习达到熟练的境界。本书旨在这方面能够对学习有辅助作用,其次就是展示几何结构,逐步演示如何应用不同结构。如果你知道什么是灭点并且知道其在一张图纸上应被放置的位置,那么只能说明你清楚了透视规律并能够达到精确描绘的程度。本书试图将画法几何的难度减轻,与此同时寻求避免复杂结构的方法,即使这些结构在外观上表现的极为简化。

本书的根本目的之一是把透视结构的使用作为一种辅助手段,使其能真实地表达一个特定的主题,并且重点注意合理的表现形式。其中部分是从建筑视点的角度精挑细选的案例。建筑特性与由固有理论支持的画法表现之间的紧密联系应该能够促进和推动新理念的产生。

长期以来透视图在建筑行业的竞争中遭到了排斥,往往工作重点只是被放在严格的功能表现上,现在这种观点仍然在部分地区流行,但是好的建筑画如今正逐渐得到众人的认同。确切地说这种趋势源于国外,尤其是在美国,在那里通过具有说服力的建筑表现向顾客“出售创意”的现象极其普遍。本书当然也有许多这样的例子,其中也有普通的或者廉价的、粗劣的插图。但是其中也不乏大量的优秀作品来促使人们对建筑透视图的使用有一个正确的理解。为了证明这些作品的水平,我只需提及几位杰出建筑师:弗兰克·劳埃德·莱特(Frank Lloyd Wright)、勒·柯布希埃(Le Corbusier)、保罗·鲁道夫(Paul Rudolph)、拉尔夫·尔斯金(Ralph Erskine)和戈登·卡伦(Gordon Cullen),还有奥尔多·罗西(Aldo Rossi)、荷尔姆特·亚恩(Helmut Jahn)等著名的设计师。

表现最重要的方面之一是在不借助巧妙的修改前提下,准确并精确地再现原作,然而这并不意味着人们不能以一种热烈的方式,充分利用每个机会来体现艺术意图与表现,包括环境氛围。

目前的一些资料试图反映这些想法,但是却没有一个全面的广泛的技术辅助的素材库可利用。

最后,我会利用一些篇幅说明另一个问题:大家所熟悉的计算机辅助设计,或称CAD。我特意把这个题目放在最后,因为它把关于三维表现的一本书带到一个需要其自身深入处理的全新方面。这些过程基于计算机技术的不同假设,即使在画法几何的前后联系中与使用传统中心投影的方式得到的结果相同。

毫无疑问,现代的计算机程序为绘制透视图提供了一个广阔的前景,尤其是当人们希望快速得到一系列不同站点形成的图形的时候。换句

话说,使用正确的计算机程序,物体在任何位置几乎都可以被描绘,并能迅速做出接连的变化。计算机输出能够精确表达物体的基本三维效果,但是这些图往往需要进一步的设计和核对。当设计师想要将其作为“表现图”呈现给客户时,对于那些对三维图像外行的客户来说情况就有所不同,他们希望看到把新建筑与周围环境结合清楚地表达出来的一幅画面。

这种情况下,就要遵循基本透视构造的比例与关系,有必要在画面中增加一些人物、树木、汽车和周围建筑。图画平面使用中心投影的方法,根据实际情况通过相对应的灭点决定放大还是缩小,以此来标注与设计“真实尺寸”。在后面的计算机绘图阶段,不可能利用已有的线形网格,这个过程或许更有难度,构造的无缝延长也是不可能的,因为这容易引起误差。

需要深入考虑的一个问题就是在绘画上加强画面的明暗度的对比,或者相反使画面“松绑”,这是使画面更为生动的一个重要方式,而这些只能徒手完成。这已经被作为一个区别与图纸评估的过程,建筑师也把它作为一个决定性影响强加于作品的效果上。

计算机专家对于这个问题或许有不同的看法,尽管还有些限制,但是我仍然认为计算机辅助透视绘图和手绘图之间在强调描绘的某个方面时有着相辅相成的关系。实现这种结合的条件是对透视构造规律的了解,绘图技巧的应用,以及图解的技巧。本书将对这个问题在各个领域都提供很好的论述。

在此我要感激安德列亚·伍戴尔教授(DiPL.-Ing. Andrea Wandel)在本书的许多观点上提供的许多宝贵的帮助,我还要感谢托比亚斯·舒博兹(Tobias Schubotz)在本书的出版过程中提供的大力帮助。

Preface

This book is addressed first and foremost to young architects or students of architecture who already possess a basic knowledge of descriptive geometry and who wish to extend this to perspective drawing. In addition to people associated with the architectural profession, I could imagine that the book might also appeal to those who are simply interested in or derive pleasure from architectural drawings. The rising market prices for drawings of this kind confirm the existence of such an interest. For the latter group the book certainly goes too far into constructional detail. The author has nevertheless endeavoured to articulate aesthetic considerations, even when discussing pure geometry.

The guiding motive of and justification for a book of this kind is to be found in the plea it makes for the drawing architect. Drawings - whether freehand or constructed - are of decisive importance in the process of developing architectural ideas. They do not have to be of great graphic virtuosity to articulate a spatial concept or architectural design; but an architect gains in authority and professional status in the eyes of a client, if a sketch exhibits a certain skill, if >>The line is right<<.

One of the basic aims of the often protracted study of perspective construction in schools is to achieve facility in correct perspective sketching. This book is intended as an aid in this respect, setting out the framework of geometry again, and demonstrating step by step how various constructions may be applied. It is only possible to sketch accurately and in compliance with the laws of perspective, if one knows what a vanishing point is and where it should be positioned within a drawing. The book attempts to allay fears of the difficulties commonly associated with descriptive geometry, and at the same time seeks to avoid complicated constructions, even where these represent an apparent simplification. One of the underlying aims is to use perspective construction simply as an aid to achieving a realistic depiction of a particular subject, and to focus attention on possible forms of representation. Part and parcel of this is the careful selection of examples from an architectural point of view. A close link between qualitative architecture and a drawn representation that supports the intrinsic statement should stimulate new ideas and impulses.

For a long time perspective drawings met with disapproval in architectural competitions, value being placed on only stringently functional representations. This attitude still exists today in part; but good architectural drawings are gradually finding recognition again. This trend really has its origins abroad, where, particularly in the USA, the concept of >>selling<< ideas to clients by means of convincing architectural representation is a striking phenomenon. There are examples of this here, too, of course, many of which could be classified as mediocre or little more than cheap, kitschy illustrations. But there are also a number of outstanding and distinguished drawings that help to justify the use of architectural perspective. To demonstrate the standard implied here, I need mention the names of only a few great architects who are also known as superb draughtsmen: Frank Lloyd Wright, Le Corbusier, Paul Rudolph, Ralph Erskine and Gordon Cullen, or well-known modern designers such as Aldo Rossi and Helmut Jahn.

One of the most important aspects of representation is the correct and accurate reproduction of the original, without resorting to beautifying corrections. This does not mean, however, that one should not take every opportunity to bring out the artistic intention and expression in an exciting manner, including the atmospheric quality of the surroundings. The present documentation attempts to reflect these ideas without employing an all too extensive armoury of technical aids.

In conclusion, I should like to say a few words on another theme: computer-aided design, or CAD, as it is known. I have deliberately kept this subject till the end, since it introduces an entirely new aspect to a book about three-dimensional representation, an aspect that requires an intensive treatment of its own. The processes are based on quite different premises - those of computer technology - even if the results are the same as those obtained using traditional methods of central projection in the context of descriptive geometry.

Without doubt, modern computer programs offer a wide range of possibilities, particularly if one wishes to call up a series of images quickly, viewed from different standpoints. In other words, with the appropriate programming, the objects to be drawn can be depicted in almost any conceivable position, and in rapid succession. Computer print-outs show precise, three-dimensional basic representations of

an object. But, depending on the use to which these drawings are to be put, they will often need further interpretative treatment. This will not be necessary where they serve merely as three-dimensional design checks for the architect. But the situation is quite different where they are intended as >>presentation drawings<<, for the client, who, as a layman in the field of three-dimensional visualization, wishes to have a clear picture of the possibility of integrating the new building into existing surroundings. In such a situation it is helpful to draw in human figures, trees, cars and neighbouring buildings, observing the scale and context of the basic perspective construction. With the central projection method the picture plane is used for this. True sizes << are marked off and projected via the relevant vanishing point(s) to determine their enlargement or reduction as the case may be. This process is probably more difficult, if one seeks access to an existing network of lines in a computer drawing at a later stage. If it is not possible to find a seamless continuation of the construction, there is a danger of imprecision. A further point to consider is the question of graphically tightening or intensifying the drawing, or conversely >>loosening the mesh<<. This is an important means of enlivening a depiction, and it can only be done by hand. It can be described as a process of differentiation and graphic appraisal, with which an architect exerts a decisive influence on the effect of his drawing.

In spite of these limitations, which computer specialists might well view quite differently, I still regard a positive reciprocal relationship between computer-aided perspective drawing on the one hand and manually constructed representations - with the accentuation of certain aspects of the depiction - as a viable option. One condition for the proper functioning of a combination of this kind is knowledge of the laws of perspective construction - even in the use of CAD systems - and the application of depictive, interpretative techniques. In this respect the present book should provide a good foundation for both areas.

For her valuable assistance in the conception of this book I should like to thank Dipl.-Ing. Andrea Wandel. My thanks are also due to Tobias Schubotz (cand. arch.) who provided important help in the development of the layouts.

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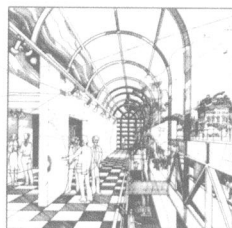
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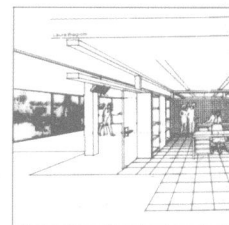
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66 拼贴在中心透视图中的应用 (Collage in Central Perspective Drawing)

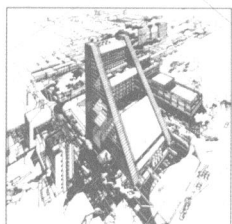
在透视图运用蒙太奇的手法来表现周围环境。在表现内部透视中这种精确、详细而清晰的方法是一个非常重要的元素。

Communication of atmospheric ambient using photo-montage technique in the constructed perspective. The precise articulation of details as an important element in the composition of an interior perspective.



11 太阳广场 青年中心, 东京 (Sun Plaza Youth Center, Tokyo)

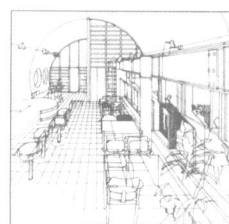
两点透视。阴影的构造。画面边缘的界定。黑白的表现技巧。Two-point perspective. Construction of shadows. Edge definition of drawing. Black and white techniques of representation.



74 空间和结构 (Space and Structure)

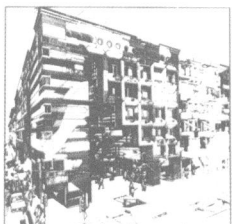
举例说明了三个阶段——从起初的粗略勾画到依次用阴影细致而充分地刻画。

Illustrated in three stages - from initial sketch to fully elaborated line drawing with gradations of shading.



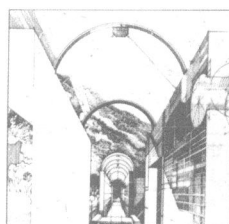
24 Ransilia, 卢加诺 (Ransilia Lugano)

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42 电影中的小屋 (House in Films)

由多边形和多种不同墙体组成的物体, 需要由大量灭点构造。Object with polygonal plan shape and various alignments of walls requires construction of a number of vanishing points.



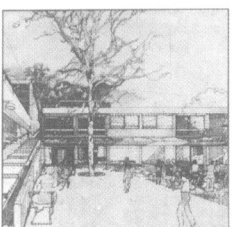
84 贸易大厦, 法兰克福 (Trade fair Tower, Frankfurt)

手绘图。从这个自由的建筑中得到的乐趣被转移到草图中, 这又反过来促进对建筑的内在艺术理念的更为深入的理解。一个更富有想象力的绘制建筑画的方法是把绘图重点放在基本的建筑理念中。Examples of freehand drawing. The pleasure derived from the freer, more diverting element of sketching, this in turn facilitating a closer understanding of the underlying artistic intentions. A more imaginative approach to strict constructional drawing, placing emphasis on the principal architectural statements.



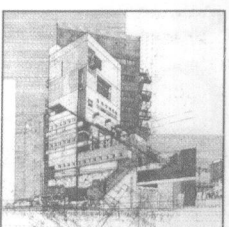
54 海伦的带平台的房屋 (Terraced housing in Halen)

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92 边界 (The Edge)

一个非常壮观的、复杂的建筑的正常的两点透视。通过彩色的天空和利用主要建筑轮廓形成的天际线共同构成了周围城市结构。A normal, two-point perspective for an unusual object - a tough, accomplished architectural statement. Drawing together the surrounding urban structures by means of a coloured screen of sky with a line that takes up the silhouette of the main building.



94 人物 (Figures)

两个重要方面:

1. 比例 2. 强调环境因素

对于一个矫揉造作者表现的内在的隐患存在于人物的省略。
在人体素描中遵从人体比例应该是最根本的规律。

Two important aspects:

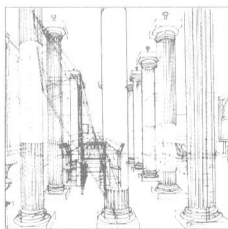
1. scale 2. accentuating the atmospheric element.
The dangers implicit to a mannerist abbreviation of figures.
The proportions of the human body should always form the basis of figure drawing.



109 Metamorfosi del Loft

为了表现画面中重要部分的线条, 可以使部分结构(在此例中为仿古柱子)省略或者保持透明。

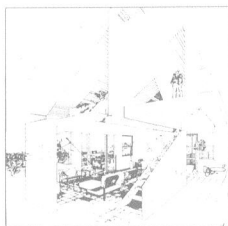
Omission or transparency of parts of structure (in this case, simulated antique columns) to open up lines of view to important areas of a drawing.



114 宽尼格斯温特住宅 (Residence Kömogswinter)

内部空间的透视图不能局限于空间本身, 相反试图结合影响整体表现的外部建筑元素。

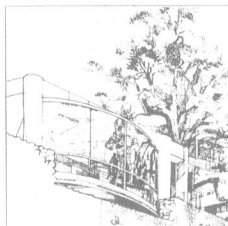
Perspective drawing of interior space, not limited to the space itself; on the contrary, attempting to integrate into the picture those elements of the exterior architecture that have an influence on the overall image.



124 倒影 (Reflections)

描绘光滑地区的线条范围具有不同的联系。

The scope of line drawings in depicting glazed areas in quite different contexts.



128 高根住宅 (Cogan Residence)

内部空间的单点中心透视。曲线的点对点结构。用迅速的果断的笔触表达圆形的椭圆形透视形状(如圆柱)。对家具表现的研究。

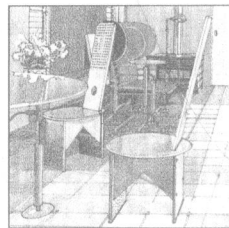
Single-point central perspective drawing of interior space.
Point by point construction of curved lines. Drawing perspective ellipses of circular forms (e.g. round columns) with a swift, sure hand. Graphic study of furniture.



138 透视图中的色彩 (Colour in Perspective Drawing)

紧靠主题, 色彩可以提升画面效果。彩色铅笔和蜡笔能够提供快速绘画的手法。为了达到基本的石头灰色应该混合颜色, 这样可以避免表现上的华而不实。

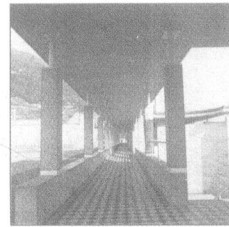
Depending on the subject, colour offers scope for heightening the effect of a drawing. Coloured pencils or crayons provide the quickest technique. Colours should be mixed to achieve basic grey tones and thus avoid too gaudy an appearance.



150 蒙特·卡拉索的新体育馆 (New Gymnasium in Monte Carasso)

提契诺州学校 (Ticino School) 的一个例子。由两个斜灭点构成的中心透视。具体位置组成特征的选择, 色彩的融合。

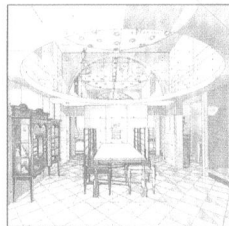
An example from the Ticino School. Construction of central perspective with two diagonal vanishing points. Selection of the elements characteristic of a specific situation, Colour blending.



160 Under the Pool

构造用外切四边形画出圆形。彩色铅笔的使用范围。

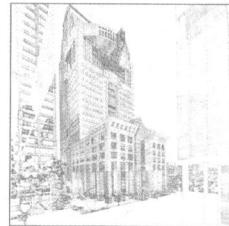
Construction: drawing ellipses with the aid of tangential squares. Scope for use of coloured pencils.

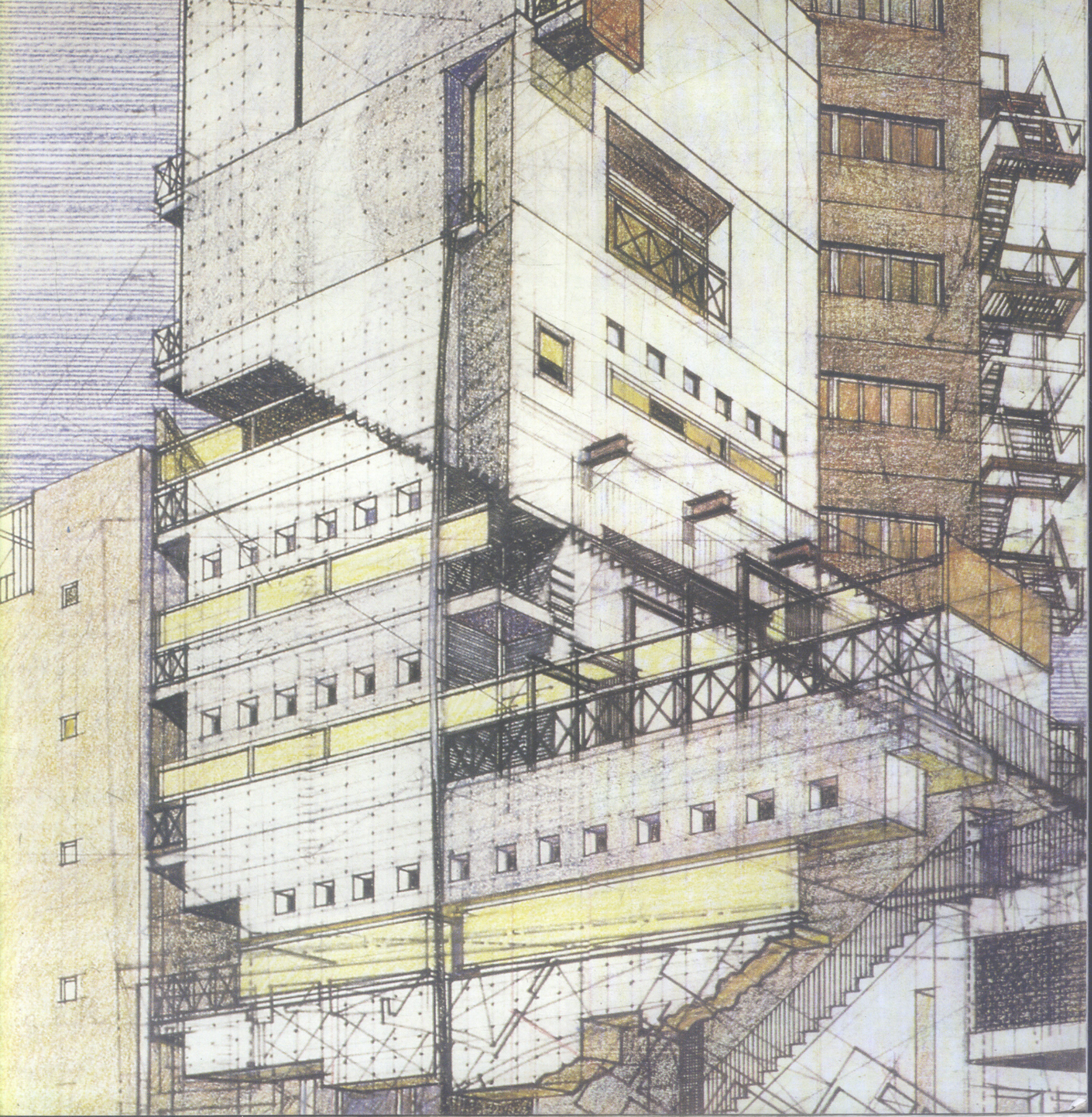


170 哈门那大厦 (The Humana Building)

决定画面平面的视点的距离和视高以获得特殊物体的最佳表现角度。构图, 图形处理的考虑。黑白色彩的色处理。

Determining the distance of the standpoint from the picture plane and the height of the viewpoint to obtain the optimal representation of a particular object. Composition; graphic considerations. Colouring a black and white drawing.





MODERNE GALERIE

老城区的现代走廊





MODERN
GALLERY
IN OLD URBAN AREA
ARCHITECT: THE AUTHOR
CENTRAL SINGLE-POINT PERSPECTIVE
WITH CONSTRUCTION OF SEMICIRCULAR
ROOF FORM. CONTRAST
BETWEEN OLD AND NEW. USE
OF DIFFERENT TEXTURES TO
ARTICULATE COMPLEX SPATIAL
SITUATIONS.

这个中心单点透视的例子考虑了圆形拱的处理方法。由于曲线平面与画面平行，从基线G以1:100的比例画玻璃桶形穹顶的圆形弧线。使用视觉射线的方法，在透视图中与顶端的半圆弧线一起画钢柱的独立构造轴线，换句话说，也就是从处于画面（BE）的后墙向前景方向强调空间。根据透视原理，不仅要向前面作出垂线增加尺寸和高度，空间本身也要扩大，在前景中构造灭线，这样，玻璃桶形穹顶拱的半径也就增大了。但是从正面看，除了它的半径增加，半圆形没有改变。

当从平面和立面（或截面）构造透视的时候，必须注意这里的内部空间要延伸两层楼，并且高度也必须从基线上下两个方向划分开。在地面与较低的地面平面之间插入地板后，就最终确定了空间位置。棋盘状的地板产生了两个地面平面的视觉间隔，为了画出这种棋盘状的形式，有必要使用距离点和倾斜灭点。

徒手绘制的结构图中应该表现人物的群体和细部，同时在画面上也要注意表现空旷的空间。

在清楚地表现空间位置时，为了创造一种空间感，给建筑表面上色尤为重要，构造图本身也说明了这个过程对绘图人的重要性。外面的景色为整个画面表现的这部分增加了环境氛围。

在这个例子中，在没有确定光线的准确来源的情况下增加了灰色调。通过将桶形穹顶的组成部分的颜色加深来表现穹顶完全是由玻璃构成。在视觉判断的基础上，通过添加或删减不同色调来达到强调的效果。另外很重要的一点是认识到不仅可以通过阴影来创造灰色调，也可以通过画树或建筑表面达到这个效果。

如果灰色阴影表面包括浅的甚至白色的区域，则只能达到可塑性的形成。

This example considers the treatment of arcs in central, single-point perspective drawing. Since the plane of the curve is parallel to the picture plan, the round arch of the glass barrel-vaulted roof is drawn to scale (1 : 100) from the base line G. Using the visual ray

method, the individual construction axes of the steel columns are depicted in perspective with semicircular arches on top. In other words, the space is articulated from the rear wall, which lies in the picture plane (BE), towards the foreground.

According to the laws of perspective, not only do the verticals increase in size and height towards the front; the space itself broadens, the further the vanishing lines project into the foreground. As a result, the radii of the arches of the glass barrel vaulting also become larger. But apart from its increase in radius, the semicircular form, seen in a frontal view, remains unchanged.

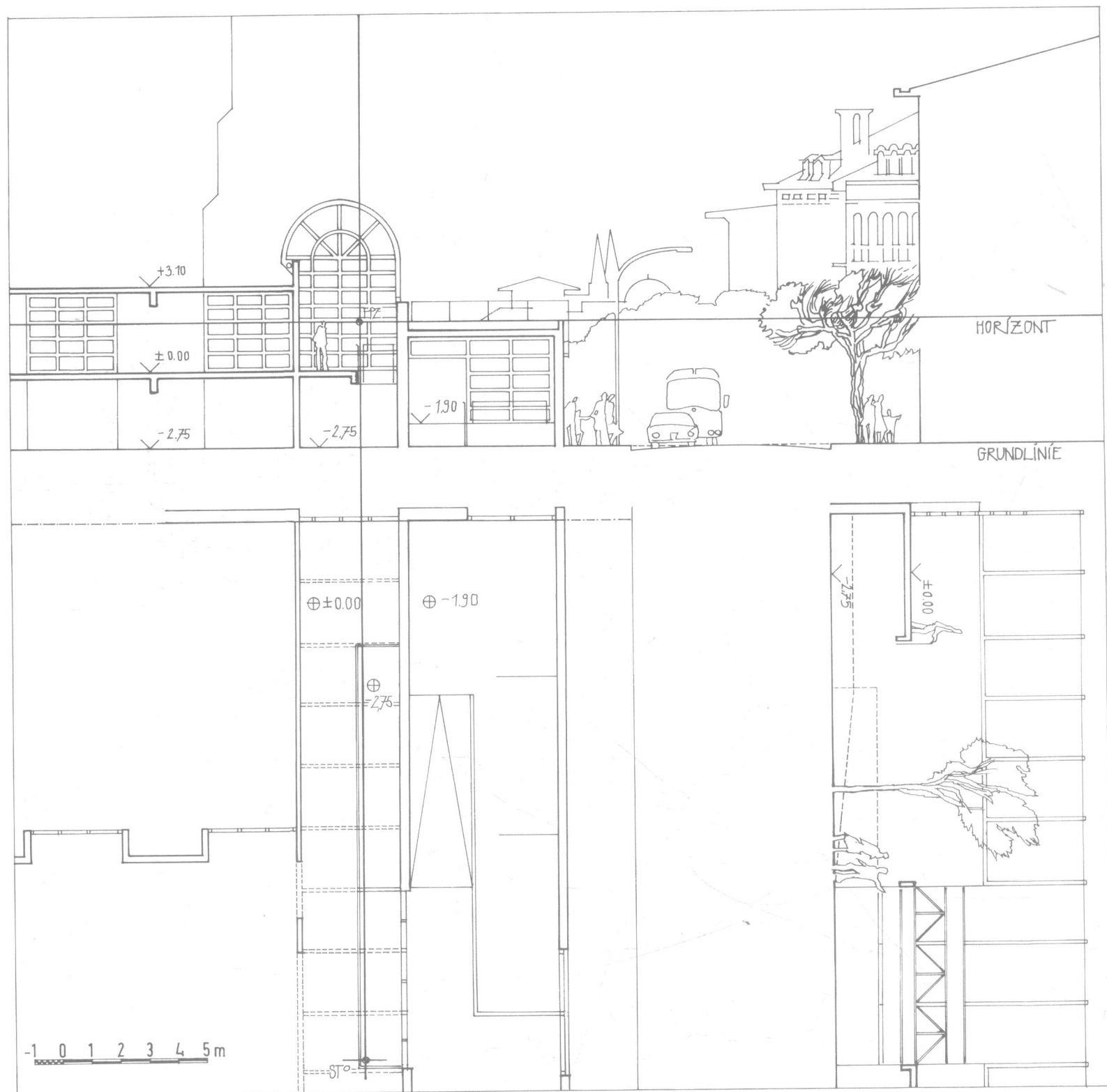
When constructing the perspective from plan and elevation (or cross-section) one has to remember that the internal space here extends over two storeys and that the height has to be marked off both upwards and downwards from the base line. After inserting the floor slab between the ground and lower floor levels the spatial situation is finally determined. The chequered flooring brings out the optical separation of the two floor levels. In order to draw the chequered pattern, it is essential to use the distance point or diagonal vanishing point.

The freehand sketch preceding the construction drawing should show the grouping and details of the figures. It also reveals the graphic effect of empty spaces within the drawing.

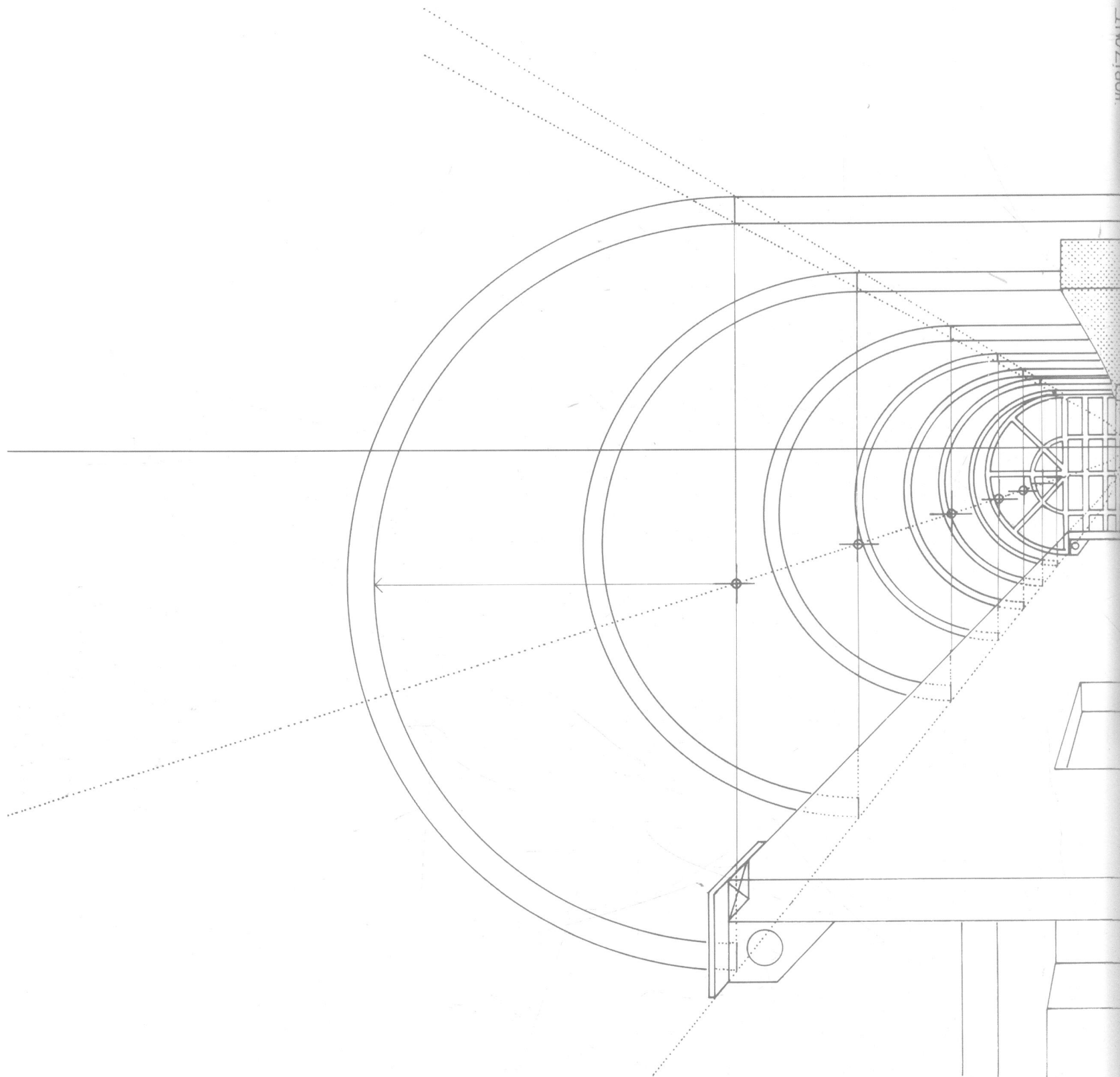
The construction drawing itself shows how important it is for the draughtsman, in clarifying the spatial situation, to colour the surfaces that help create a sense of space. The view to the outside heightens the atmosphere of this segment of the overall picture.

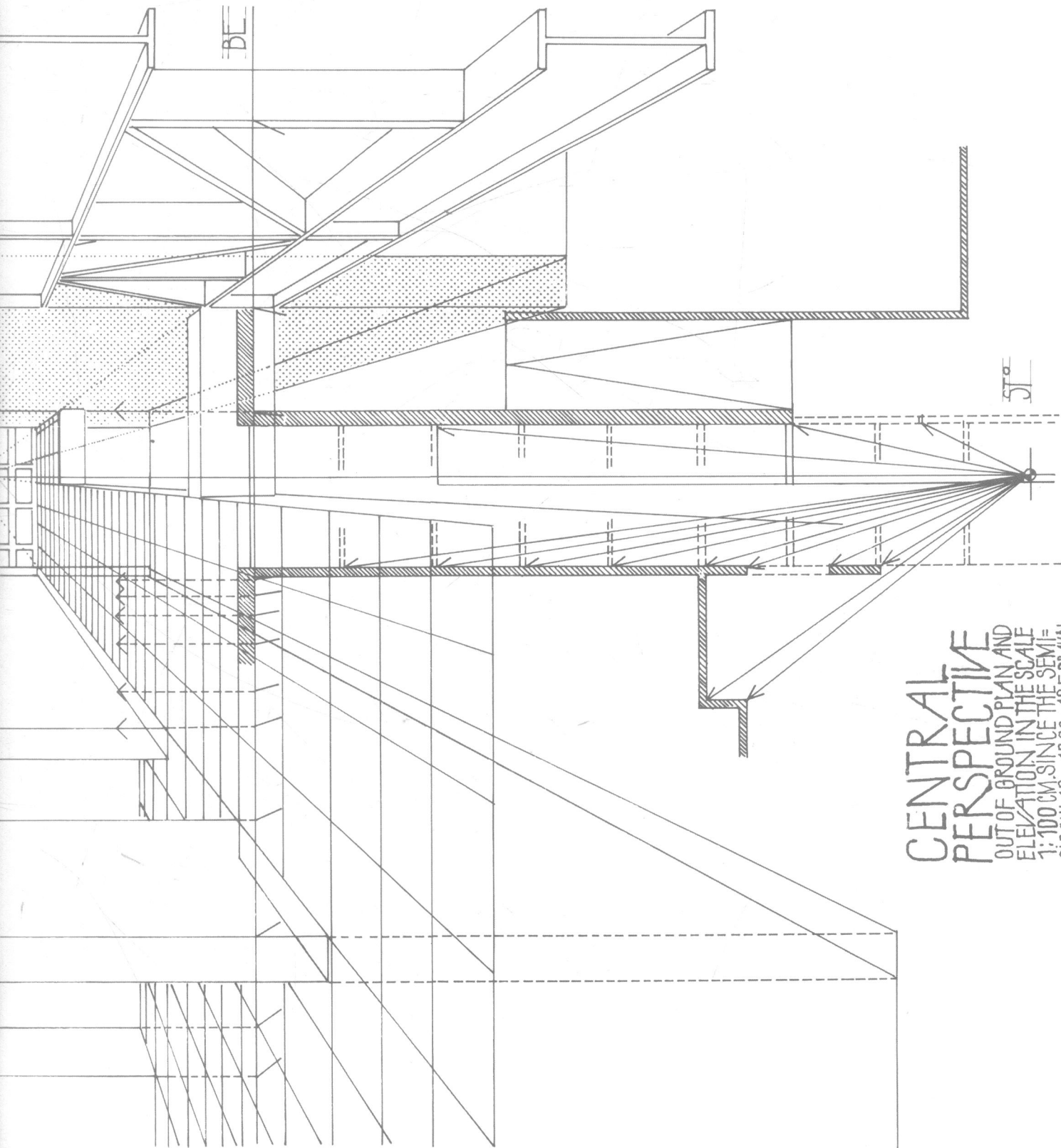
In this example, grey tones are added without determining the precise source of light. It is important here to bring out the complete glazing of the barrel-vault roof by shading the structural members darker than the rest. The addition or omission of various kinds of grey-tone accentuations should be made on the basis of visual judgement. It is important to realize that grey tones can be created not only by hatching, but by drawing a tree or the face of a building.

The development of a sense of plasticity can only be achieved, if grey shaded surfaces contain light or even white areas.

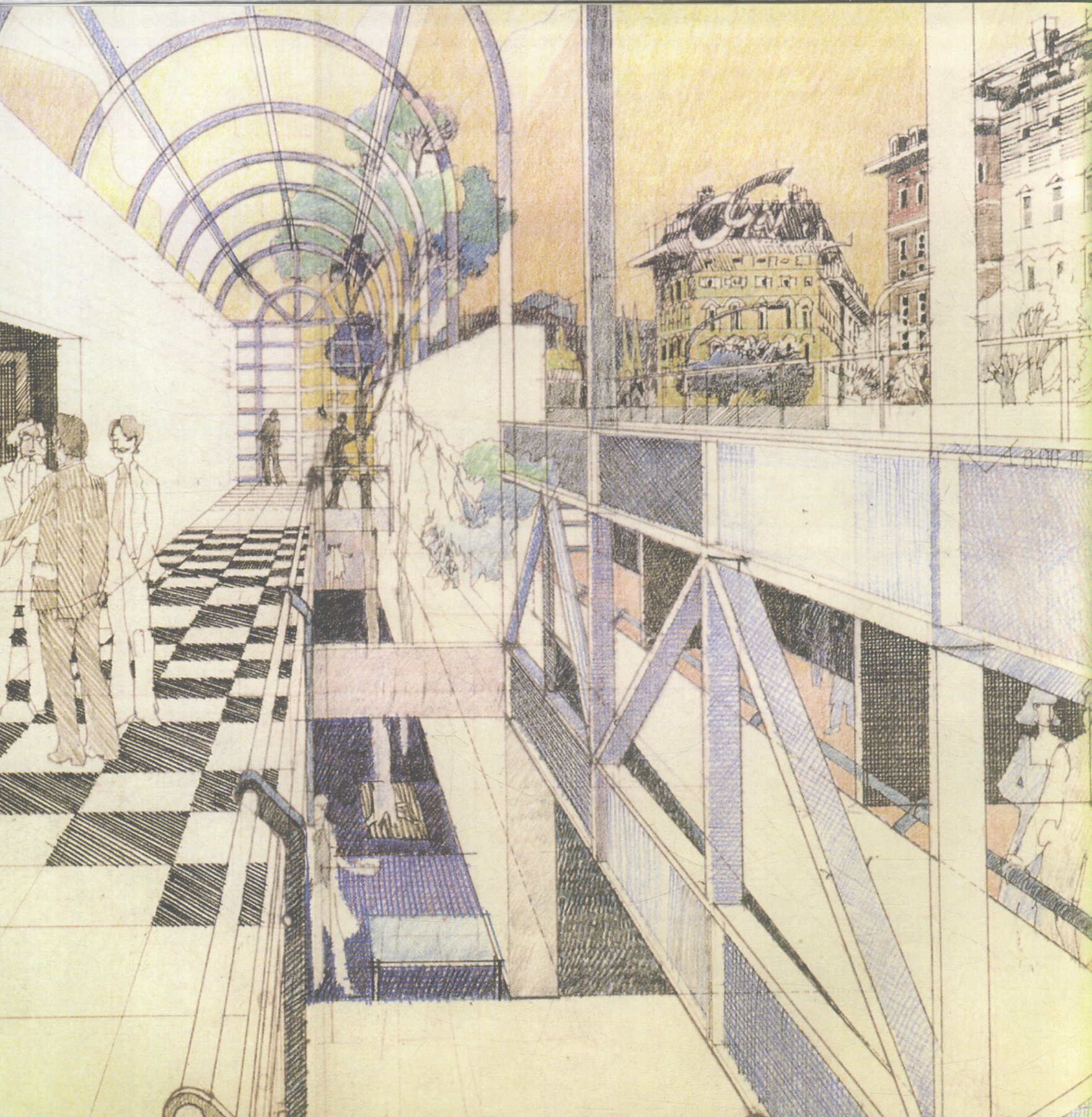




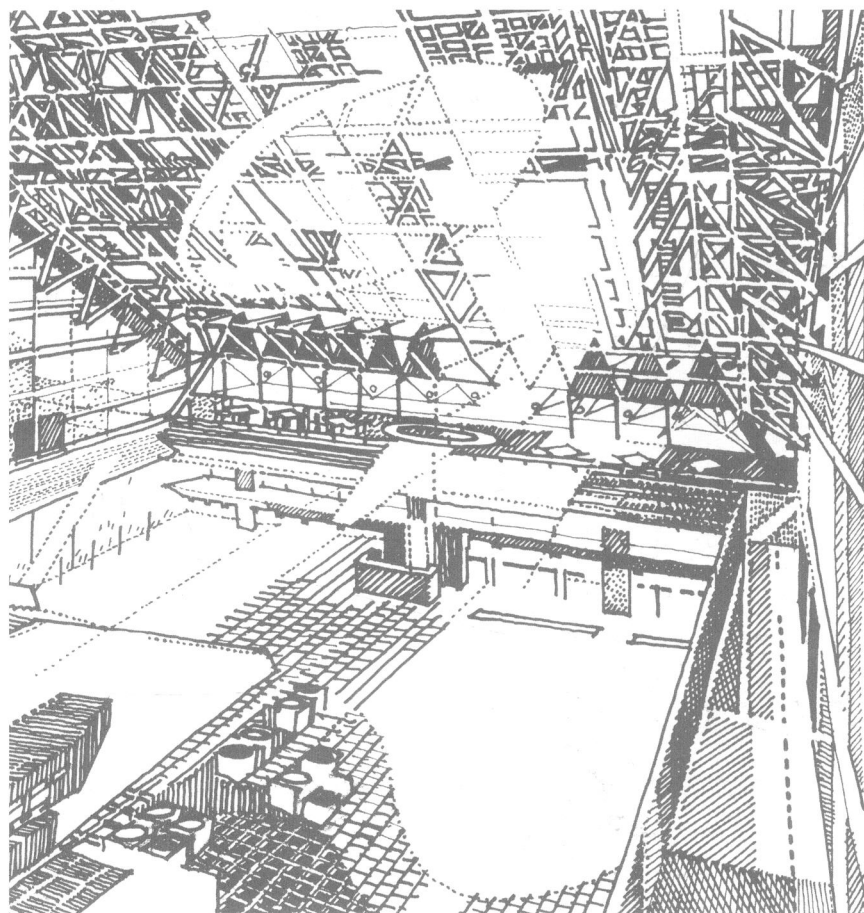




**CENTRAL
PERSPECTIVE**
 OUT OF GROUND PLAN AND
 ELEVATION IN THE SCALE
 1:100 CM. SINCE THE SEMI-
 CIRCULAR ARCS ARE DRAWN
 PARALLEL TO THE PICTURE-
 PLANE THE ARCS CAN BE
 MAINTAINED IN THE PER-
 SPECTIVE EXTENSION.







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