

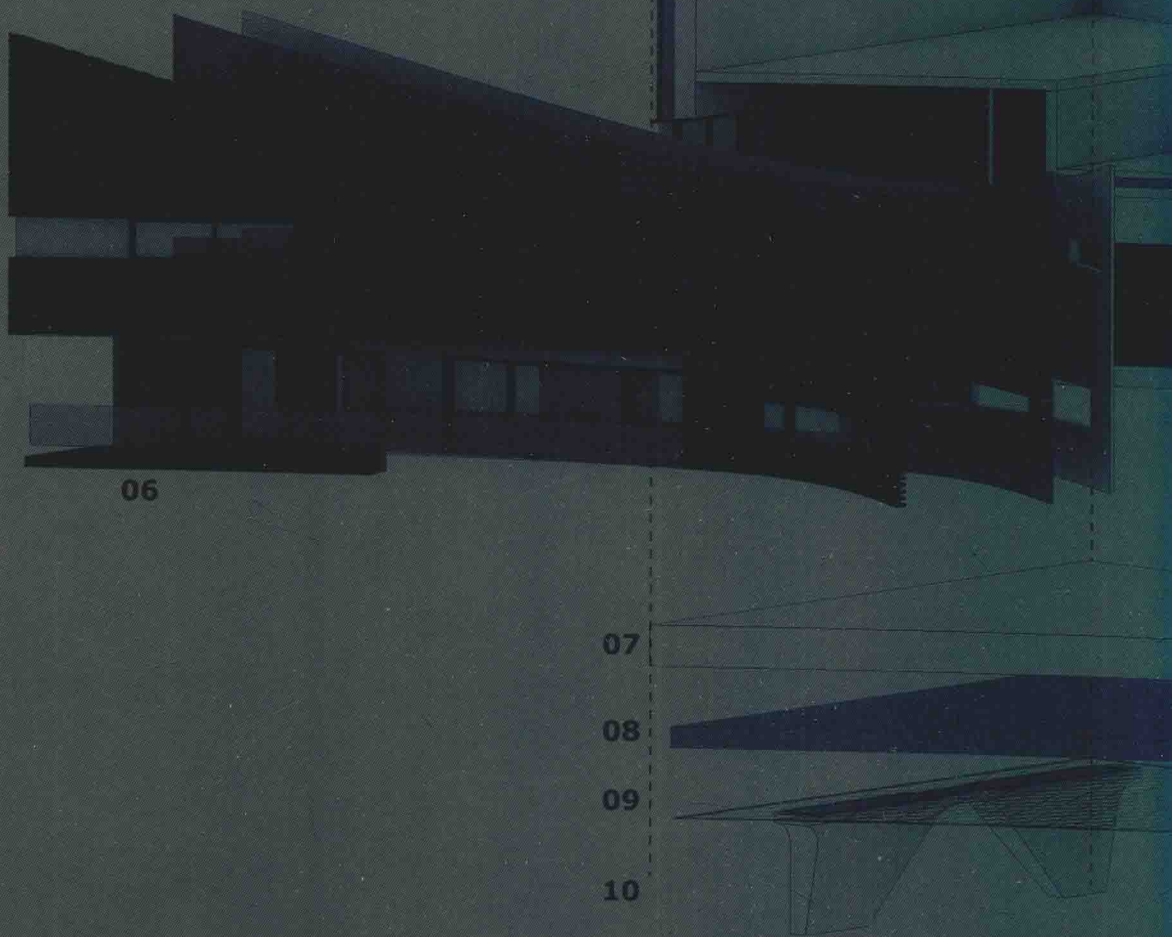
Architectural Material & Detail Structure

建筑材料与细部结构

(荷) 尼尔斯·凡·麦里恩博尔 编 常文心 译



Masonry 砖石



辽宁科学技术出版社

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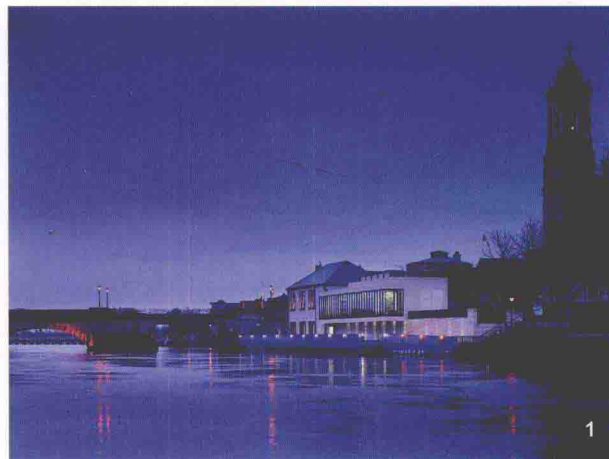
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Masonry 砖石

Preface 前言

Morden interpretation of traditional material

古老材料的现代演绎



Masonry may be best understood as the building of structures from individual units, laid and jointed together by mortar. Alongside timber, it is perhaps mankind's most ancient building means of construction.

Stone hewn from the earth has formed some the grandest and most enduring structures, from the pyramids of Egypt and the Parthenon in Athens to the Great Wall of China and the Taj Mahal in India.

The humble brick, made from clay set in moulds and dried in the sun or pressed and baked in kilns has provided simple, durable, relatively cheap building material for centuries. Standardised, repetitive in nature but enduringly acceptable in most societies as bringing a tangible human scale to even the largest of buildings, the small unit size of bricks lends them great versatility. Careful positioning in the kiln with its temperature gradients means that the fired colours of brick will vary considerably despite a consistent batch mix. The surface hues and textural variation have offered great opportunity to create pattern and diversity of colour, whereas tight selection can result in an almost uniform consistency.

Brickwork's high qualities of fire resistance, good load bearing capacity, and the fact that it is capable of being structurally reinforced with steel, have all been key to its longevity. Architects and engineers have been able to lift this basic building block to create the grandest of civic works. From fine villas and viaducts to defensive military structures, stadia such as the Roman coliseum, 19th century railways stations and for much of Europe's and North America's urban housing stock the brick has been a central element in the creation of our cities. Extraordinary buildings such as the 17th century Børsen in Copenhagen and the much later Larkin Administration Building 1906 by Frank Lloyd Wright,

in different ways use brick to achieve monumental form coupled with decorative detail, making majestic the architecture of commerce. The simple brick has risen far above its very humble origins.

Eladio Dieste (1917-2000), a Uruguayan engineer and architect, made his reputation by building a range of structures from grain silos, factory sheds, markets and churches, in his home country. Using bricks in extraordinary ways he created the sense that masonry structures could shed their weight and instead of bearing heavily upon the ground would seem to hover or take on the appearance of fabric floating in the wind. Buildings in Uruguay such as Northern Soft Drinks, Inc. Salto, Uruguay 1980 and Iglesia de Estación in Atlántida illustrate plainly that Dieste achieved similar limits of possibility with brick masonry to those reached by Pier Luigi Nervi (1891-1971) in his masterful use of concrete.

Though production is now as mechanised as possible, stone masonry, to a considerable extent still requires hundreds of hours of human labour from skilled tradespeople to assemble and lay the components according to tightly controlled standards and skill derived from centuries of practice.

The Valetta City Gate project by Renzo Piano Building Workshop completed in 2015, takes in the complete reorganisation of the principal entrance to the Maltese capital of Valletta. The project comprises four parts: the Valletta City Gate and its site immediately outside the city walls, the design for an open-air theatre "machine" within the ruins of the former Royal opera house, the construction of a new Parliament building and the landscaping of the ditch. The parliament's façades are finished in solid stone. This stone has been sculpted as though eroded by the direction of the sun and the views around it, creating a fully functional device that filters solar radiation while allowing natural daylight inside,

砖石建筑是由独立个体通过叠加和灰浆黏合而成的建筑结构。除了木材以外，它可能是人类最古老的建筑形式。

来自大地的石材能够形成最宏大、最持久的建筑结构，从埃及的金字塔、雅典的帕台农神庙、中国的长城到印度的泰姬陵。

低调的砖块先由黏土在模具中成形，然后在阳光下晒干或在窑炉内煅烧，是一种简单、耐用、相对廉价的建筑材料。它尺寸标准，易于重复，适应性强，即使在大型建筑中也具有良好的质感，小而统一的尺寸赋予了砖块极好的灵活性。窑炉里的温度渐变意味着即使采用统一的配料比例，煅烧的砖块也会呈现出不同的色彩。表面色彩和纹理的变化让砖块可以组成各种图案和色彩的组合，而严格的筛选又能实现高度的统一。

砖砌结构具有良好的防火和承重能力，并可以通过钢筋加固，具有极长的使用寿命。建筑师和工程师可以利用这种基本的建筑构件来创造伟大的市政工程。从精美的别墅、高架桥到坚固的军事设施，例如罗马竞技场、19世纪的火车站以及欧洲和北美的城市住宅，砖块已经成为我们创造城市的核心元素之一。17世纪哥本哈根的旧股票交易中心、弗兰克·劳埃德在1906年设计的拉金行政楼等建筑都选择用砖块来实现宏大的效果，配以装饰性细节，成就伟大的建筑。简单砖块的价值已经远远超过了它卑微的出身。

乌拉圭工程师、建筑师埃拉迪奥·迪斯特(1917-2000)以他在乌拉圭所建造的各种谷仓、工厂厂房、市场和教堂而闻名于世。他通过特有的方式让砖石结构超脱了自身的重量，呈现出盘旋或飘浮在空中的模样。北方软饮料公司(乌拉圭萨尔托, 1980)、阿特兰蒂达车站教堂等建筑向世人展示了埃拉迪奥·迪斯特的卓越成就，他超越了砖石结构的极限，正如皮埃尔·奈尔维(1891-1971)超越了混凝土的极限一样。

尽管机械化生产已经实现了常规化，石材在很大程度上仍然依赖经验丰富的技术工人花费数百小时根据数百年来流传下来的严格标准和技巧来进行装配和铺装。

由伦佐·皮亚诺建筑工作室设计的瓦莱塔城市之门项目(2015)帮马耳他首都瓦莱塔的主要门户实现了全面的重组。项目由四个部分构成：瓦莱塔城市之门和它紧靠外城墙的地块、建在皇家歌剧院遗址上的露天剧院、新

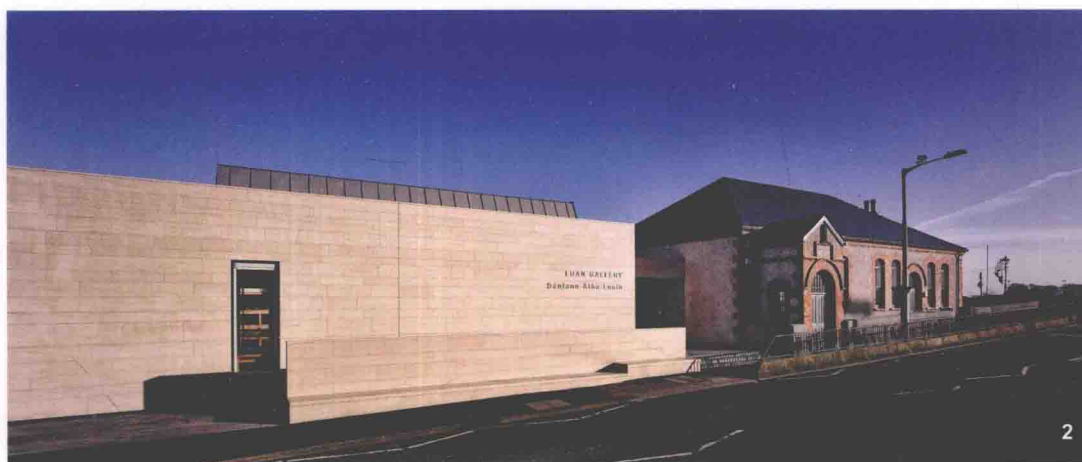


figure1~ figure 3: Luan Gallery, Ireland

图1——图3：位于爱尔兰的卢安美术馆

all the while maintaining views from the building. Each of these blocks of façade has been sculpted by a numerically controlled machine. The result is a stone architecture that is fitting for its historic context but also the product of cutting-edge technology*. (source Archdaily*)

Stone masonry, for centuries split and carved by hand, later cut by machine, is clearly part of the 21st century technological revolution bringing architecture new opportunities for exploration of form and surface. What interests me is how to use material as a means of expressing more effectively the architectural pre-occupation of my projects.

My firm's buildings are shaped by my core belief that architecture is primarily concerned with simple components such as light, form, space, scale, material, and context. It is to the architect to use his or her skills to determine the way in which these things are combined that will have the capability to enthrall and enrich the experience of people who are touched by them.

At the Luan Gallery, Ireland, my firm converted and extended the brick built Father Mathew Hall, to create a new contemporary art gallery. Pale buff coloured limestone was used in both rough split and smooth plane to form the new gallery wing. The horizontal plinth of random strip stone underpins visually the smooth clad limestone gallery above. The textural subtleties in the different use of the same material were crucial to the project's elevational composition and the project's materiality. (see figure 1,2)

At the Unicorn Theatre in London, we used sheer walls of dark blue/grey brick to create a seemingly taught skin of massive unbroken scale. Compositionally the brickwork forms a background plane in the elevational order of the building into

which the glazing was incised, let flush into the brickwork, and through which key elements such as the glazed theatre "green room" project.

In Architectural Material and Detail Structure: Masonry we see a number of trends continuing the exploration and invention in architecture through an examination of form, surface and material. What this book demonstrates in accomplished fashion is that the very best architects in exploring new aesthetic direction be it through radical challenge of form or precise refinement of materiality continue to invent and reinterpret ancient building materials in the context of the new technological age.

Texte by Keith R Williams (member of RIBA, MRSA, FRSA and founder + director at Keith Williams Architects: London)

国会大厦以及沟渠的景观美化。国会大厦的外墙上装饰着坚固的石材。石材经过雕刻，就像被阳光直射所侵蚀过一样，具有过滤日照辐射，引入自然光照的作用，同时又能保证建筑内部的良好视野。建筑外墙的砌块由数控机器进行切割雕刻。这座石砌建筑既切合它的历史环境，又是尖端技术的产物。（来源：Archdaily*）

数百年来，石材一直由手工切割雕刻，后来则采用机械切割，它充分体现了21世纪技术革命为建筑带来的新机遇，让我们可以充分探索新的形式和表面装饰。我所在意的是如何利用材料来为我的建筑项目带来更好的视觉表达。

我司的建筑全部以我的核心理念来打造，即建筑首先要考虑的是光、造型、空间、比例、材料、环境等简单元素。建筑师需要利用他们的技能来决定这些元素的组合方式，以实现丰富使用者体验的目标。

在爱尔兰的卢安美术馆项目中，我们改造并扩建了砖砌的马修教父厅，形成了一个全新的现代美术馆。新美术馆的翼楼选用了粗糙和光滑的浅黄色石灰岩作为建筑材料。由条状石材构成的水平底座支撑着由光滑石灰岩包覆的美术馆。同种材料在纹理上的细微差异对项目的立面构成和质感呈现起到了重要的作用。（见图1,2）

在伦敦的独角兽剧院，我们采用深蓝灰色的砖墙来打造连续的表皮。砖砌结构形成了一片背景，上面嵌入了玻璃装配，让砖块也变得鲜活起来，建成了一座“玻璃温室”剧院。

在本书中，我们将看到建筑师针对各种建筑形式、表皮和材料所进行的一系列探索和尝试。在本书所收录的案例中，优秀的建筑师为了追求新的美学方向，有的选择激进的造型，有的选择精致的材料。在新技术时代的背景下，他们不断创新和重新诠释砖石这种古老的建筑材料。

本文由基斯·威廉姆斯（英国皇家建筑师协会会员、爱尔兰皇家建筑师协会会员、英国皇家艺术协会会员，伦敦 KWA 建筑事务所的创始人兼设计总监）撰写

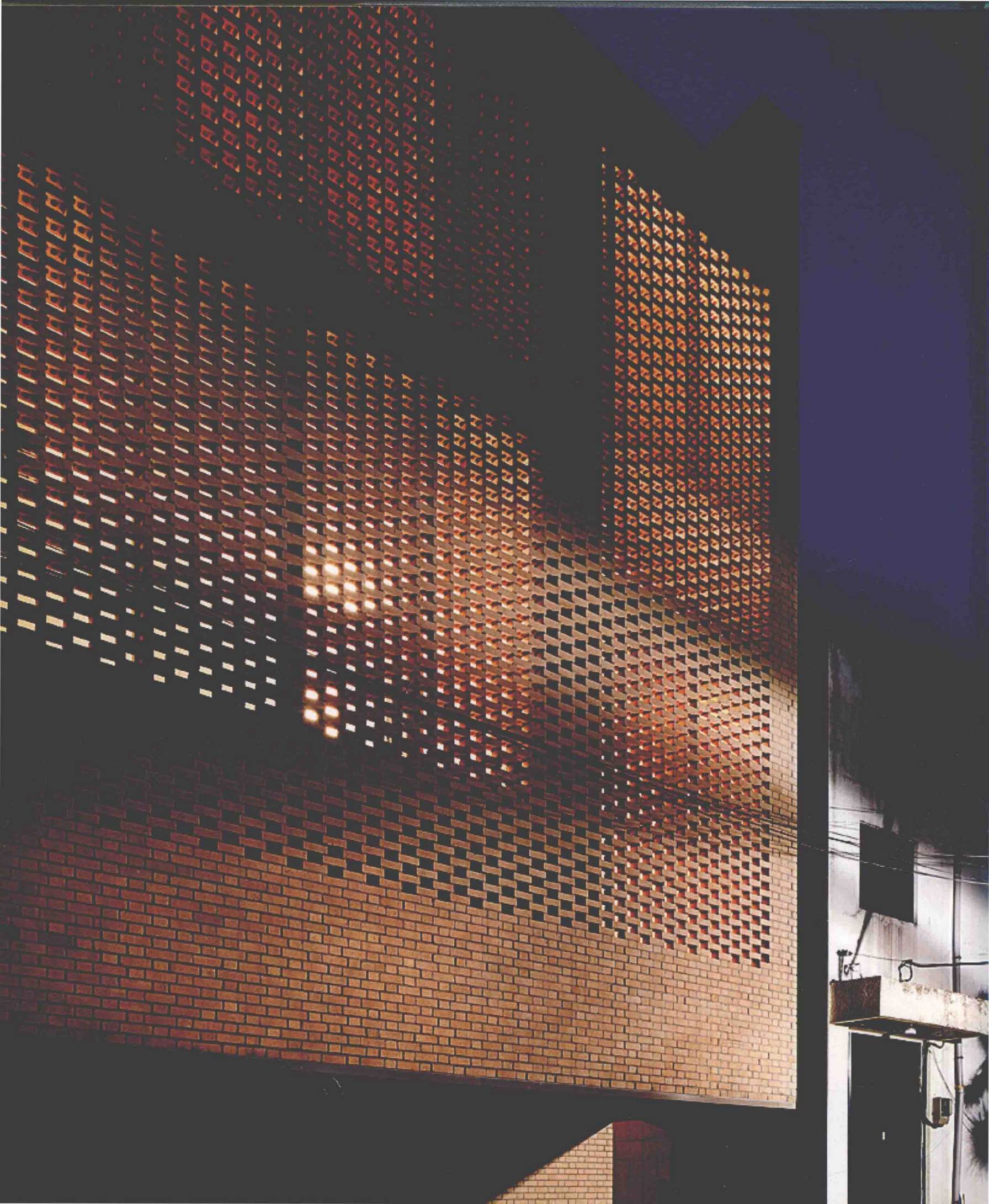
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Overview

概述

As primitive construction materials, bricks, ceramics and stone have played an important role in traditional architecture history. Masonry architecture contains high historic values and emotional factors. It implies the spirit of the time. Today, even with the extensive use of industrial construction methods and new construction materials, traditional masonry materials still maintain strong vitality. Nowadays, the concepts of architecture and environment have changed a lot. Ecology, environmental protection, health, energy saving and sustainable development have become consensus. Architects are trying to explore new application of masonry materials in the construction of contemporary architecture and have developed some innovative ideas which refresh our traditional understanding. Masonry materials are ancient and contemporary as well. (See Figure 1 to Figure 3)

砖石作为原始的建筑材料，在传统建筑发展史上发挥了重要的作用。砖石建筑本身蕴含了很高的历史价值和情感因素，体现时代精神。在大量采用工业化建造手段以及各种新型建筑材料的今天，传统的砖石材料以及其建造技艺依旧具有强大的生命力。如今，关于建筑和环境的认识理念发生了很大变化，生态、环保、健康、节能、可持续发展等成为共识，建筑师对砖石材料在现代建筑中的应用进行不断探索，造就了不少创新的构思，大大拓展了人们对它的传统认识。它们既是古老的，也是现代的。（见图1~图3）

