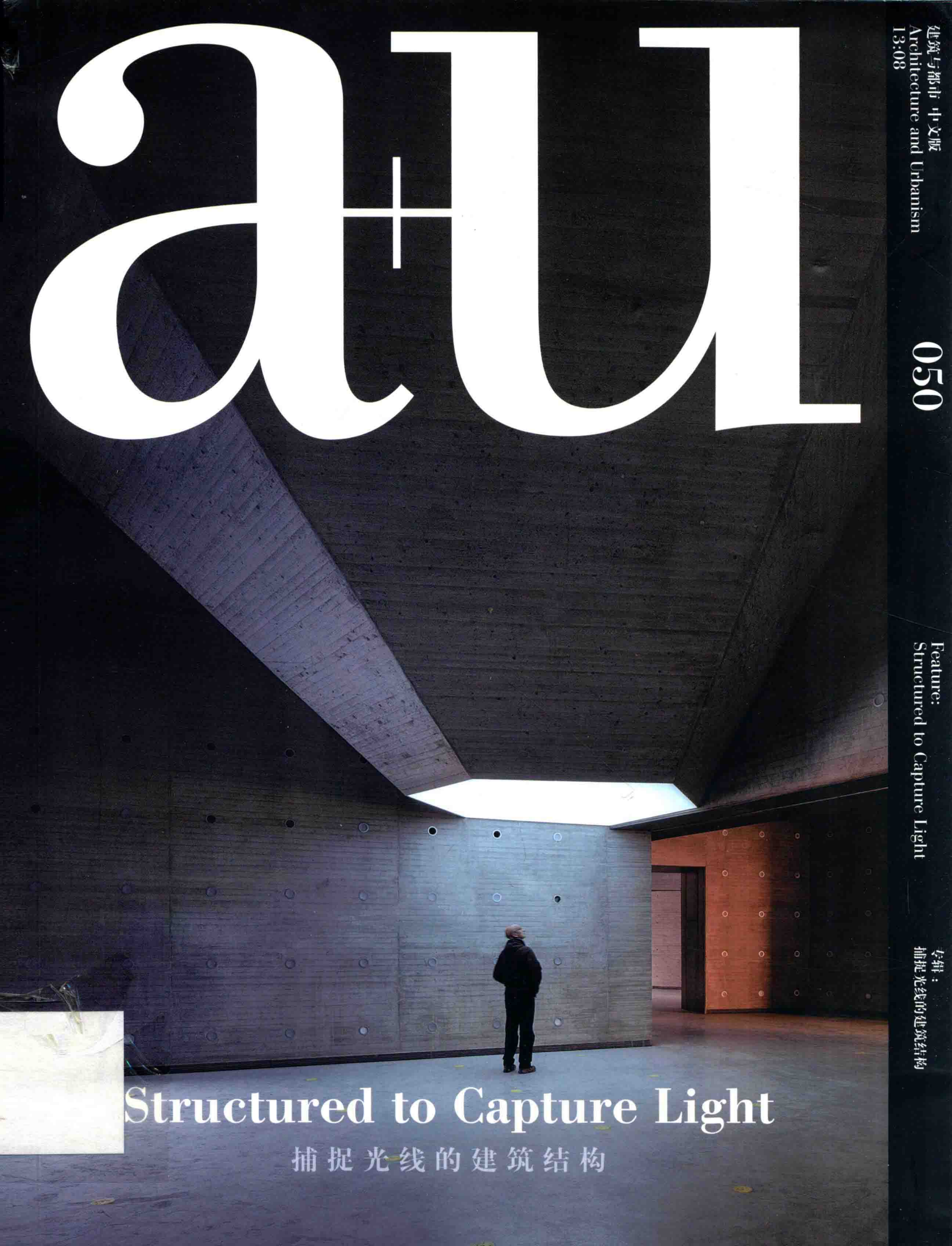
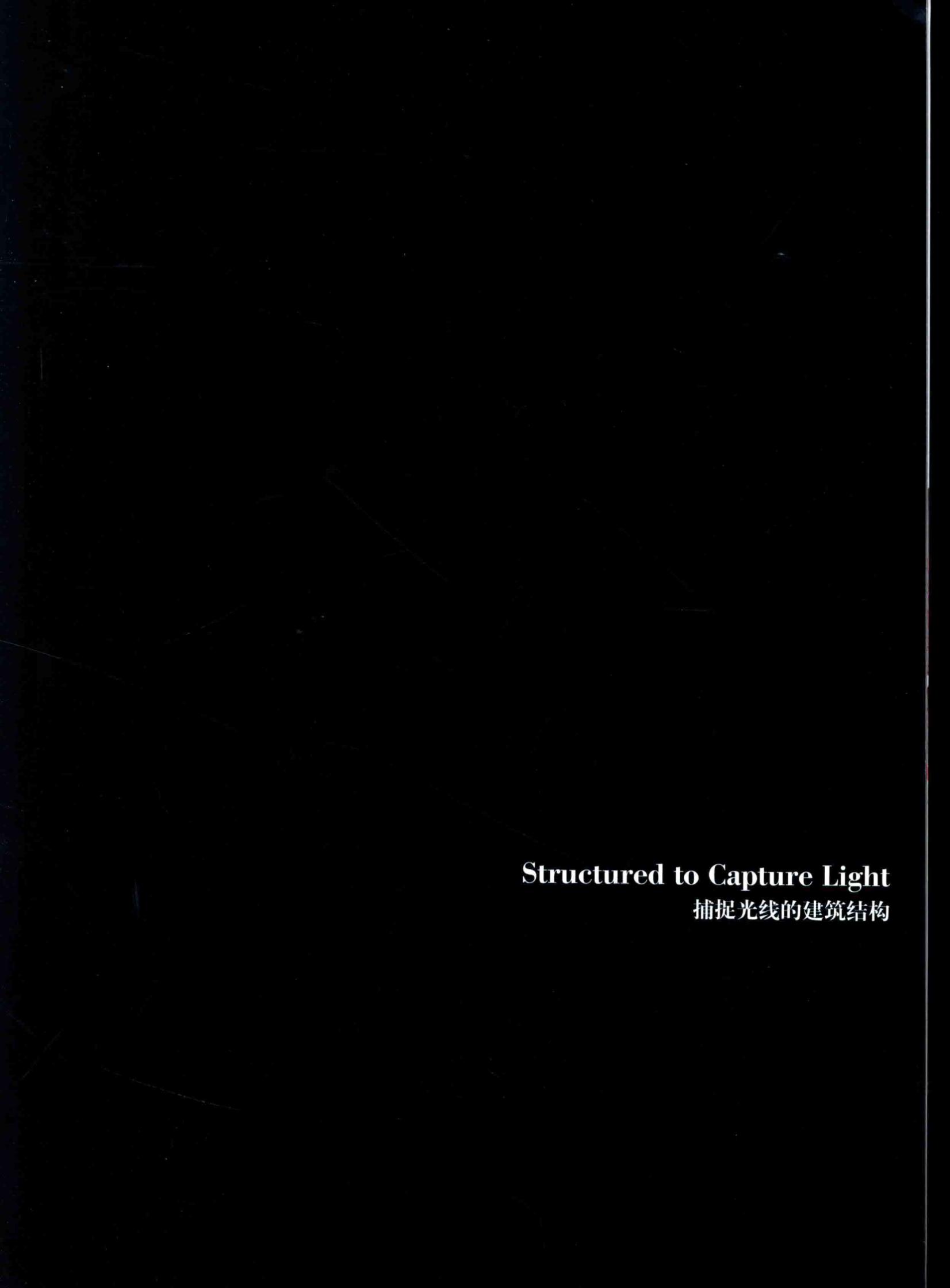


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Structured to Capture Light

捕捉光线的建筑结构





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顾问:

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杰克士·赫尔佐格, 巴塞尔

伊东丰雄, 东京

瑞姆·库哈斯, 鹿特丹

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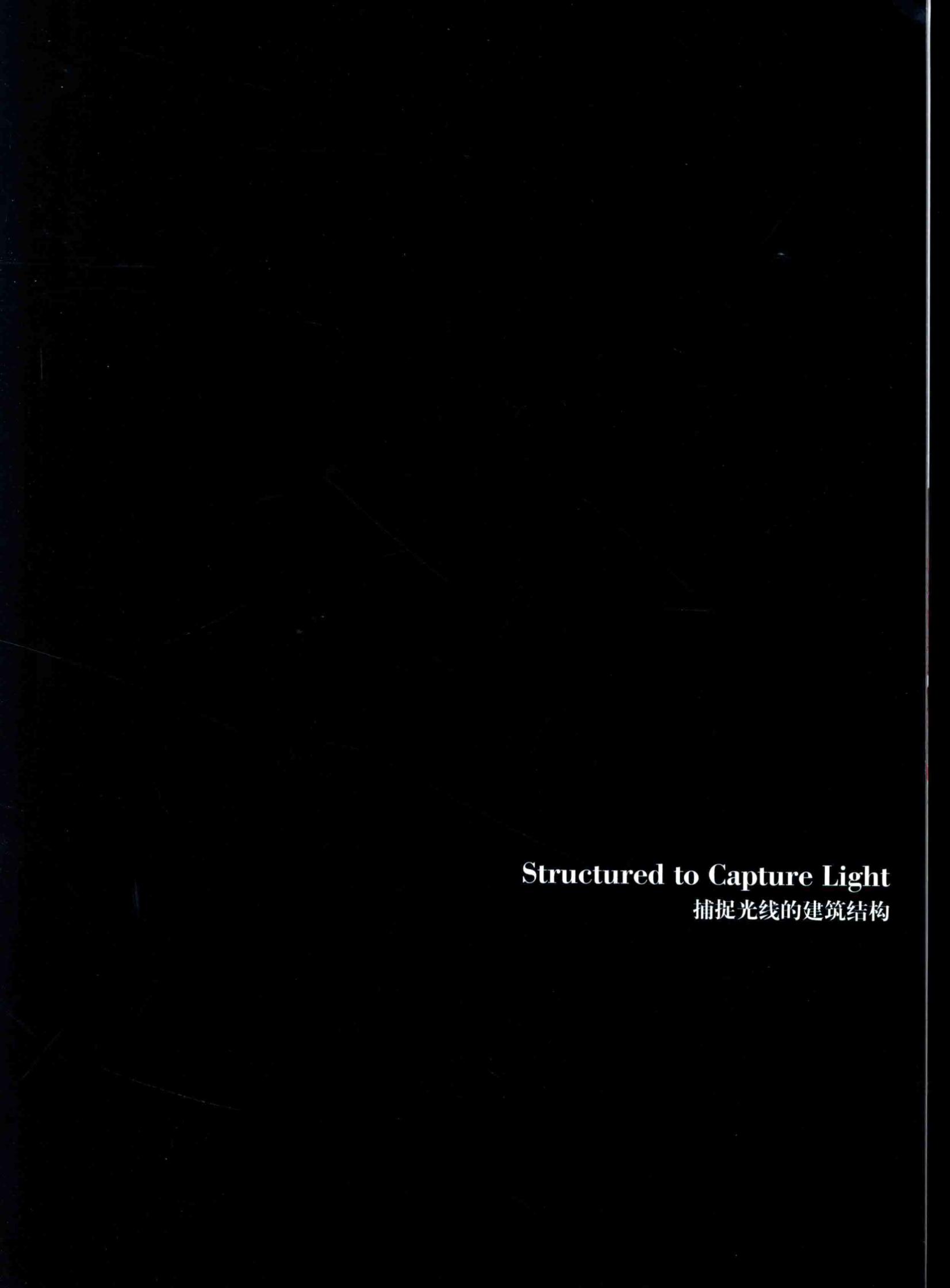
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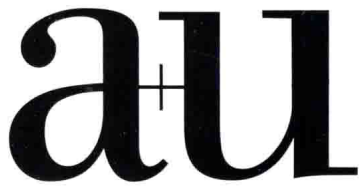
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专辑:

捕捉光线的建筑结构

This edition of *a+u* features architectures that are “Structured to Capture Light.”

Architects explore the essence of natural light, such as gradient light, light that simulates sunshine filtered through foliage, and cave-like light, which create a multitude of spatial experiences. This issue focuses on how the structures are built to produce these various qualities of light. From the featured architectural pieces found all over the world, we find not only the innovative structural expressions of modern technology, but also structures that respond to their local cultures and natural environments. In this book, we included the introduction from “Henri Labrouste: Structure Brought to Light,” an exhibition held at MoMA in the spring of 2013. In his design of the Bibliothèque Nationale, Henri Labrouste adapted the peaceful atmosphere of natural zenithal lighting to the library’s program where people gather. He was able to materialize this atmosphere by using a structure built with cast iron, the newest material of his time. As mentioned in the introduction, the curators state that his pioneering approach at realizing spatial images by means of incorporating new materials, construction methods, and programs is considered a “marker” inherited by today’s architects.

Given the number of newly developed technologies in the present age, how do architects approach the theme of natural light and structure? We invite you to explore natural light, which defines the bodily senses, and its architectural aspects. (*a+u*)

本期 *a+u* 介绍了“捕捉光线”的建筑结构。

建筑师们乐于追寻自然光线的本质，探索形形色色的采光方式，诸如渐变光、洞穴幽光和模拟穿过枝叶的阳光，以此营造出丰富多样的空间体验。本期以采光为主题，考察建筑结构如何营造出不同的采光特质。本期收录了一批来自世界各地的采光建筑杰作，读者不仅能从中发现建筑结构上的科技创新，也能看到建筑与当地文脉及自然环境的呼应与融合。

2013 年春，“亨利·拉布鲁斯特：采光建筑”的展览于纽约现代艺术博物馆开幕。本期刊载了该展览的序言文章。亨利·拉布鲁斯特以设计采光建筑见长。举前巴黎国家图书馆项目为例，拉布鲁斯特根据图书馆的空间功能精心打造采光方式，阅览室采用天顶采光，令读者沉浸于一片平和静谧之中。为此，建筑结构采用了当时的新型材料——铸铁。策展人在展览序言中写道，拉布鲁斯特将新型材料、施工工艺和空间功能全面结合，营造出建筑整体形象，这种开创性的设计方法极具标识性，为今天的建筑师所师法和传承。

当今时代，新兴科技日新月异，如虎添翼的建筑师们又当如何处理建筑结构的自然采光问题呢？本期将向读者介绍决定建筑体量感的光线及其为建筑各方面带来的影响。

(编者)

Essay:

Henri Labrouste: Structure Brought to Light

Corinne Belier, Barry Bergdoll, Marc Le Coeur

论文:
亨利·拉布鲁斯特: 采光建筑
科琳·贝利叶、巴里·贝赫多、马克·勒克尔

— This is an exhibition presenting renowned 19th century architect, Henri Labrouste who designed Bibliothèque Nationale and Bibliothèque Sainte-Geneviève. This is an excerpt text from introduction of the catalogue *Henri Labrouste: Structure Brought to Light*. The exhibition was held at MoMA from March 10 to June 24, 2013.

Generations of writers and eminent intellectuals have worked beneath the domes of the Bibliothèque Nationale, generations of students have succeeded each other beneath the barrel vaults of the Bibliothèque Sainte-Geneviève. Those two reading rooms, which are among the most beautiful spaces in Paris, are the source of Henri Labrouste's fame as an architect. Their powerful expressiveness, the rational solutions that the architect implemented in response to the complex programs entrusted to him, the haunting and strange refinement of their ornaments, and, above all, the importance given to new materials – particularly cast iron, magnified by a subtle play with light – have from the beginning provoked universal admiration and inspired many photographers, from Durandelle in the 19th century to Candida Höfer today. While the former buildings of the Bibliothèque Nationale are undergoing an unprecedented renovation campaign, it seemed to us a good time to reevaluate the approach of one of the most uncommon and demanding artists of the 19th century, a contemporary of Eugène Delacroix and Victor Hugo, and also to show how important his works and undertakings were in their time and how they have remained so ever since.

Like the masters of the Renaissance or the great architects of the 20th century – Le Corbusier, Mies van der Rohe, Alvar Aalto – Labrouste created a very personal architectural language and means of conception, combining a deeply classical culture and sentiment with a strong inclination for boldness and innovation. Labrouste is one of the rare 19th century architects whose works have always been a benchmark, both in France and abroad. Since the 1970s and the pioneering work of Neil Levine, we have known that part of Labrouste's originality was first and foremost due to his awareness of the ties between artistic styles and the social history of peoples, then in his search in turn for an architectural expression suited to the mores and spirit of his era. The controversy between Labrouste and the Académie des Beaux-Arts over his restoration of the Greek temples at Paestum was less about strictly archaeological details than about the very issue of models in architecture: at the age of 27, refuting the ideal and fixed image of Antiquity upheld by the neoclassicists, the young architect wanted to believe there could be a flexibility

of style under specific conditions or circumstances. Later, his decision to use iron and cast iron forced him to reconsider the structure of buildings, their distribution and ornamentation. He took traditional masonry, although he refined the expression and thickness of its varied stone courses, and combined it with an architecture of assemblage. In his two libraries, he set large metal frameworks within a stone enclosure and gave those frameworks proportions that fit their properties. Attenuated supports, detailed as columns, skillfully relate human and monumental scale and play a decisive part in the perception of space. Labrouste thus inaugurated a new building practice and heralded the fruitful research that architects would devote for the next century and a half to shaping industrial materials, particularly composite materials such as reinforced concrete.

By individualizing each element of the construction and demonstrating that such a heterogeneous whole could create a strong sense of harmony, he thus paved the way for the great rationalist trend in European and American architecture at the end of the 19th century, which made a distinction between supporting structure and infill, expressively playing with materials and color. That architectural language would exert international influence, up to and including the commercial architecture and office buildings in the United States in the late 19th century, among them, the proto-skyscrapers of Louis Sullivan.

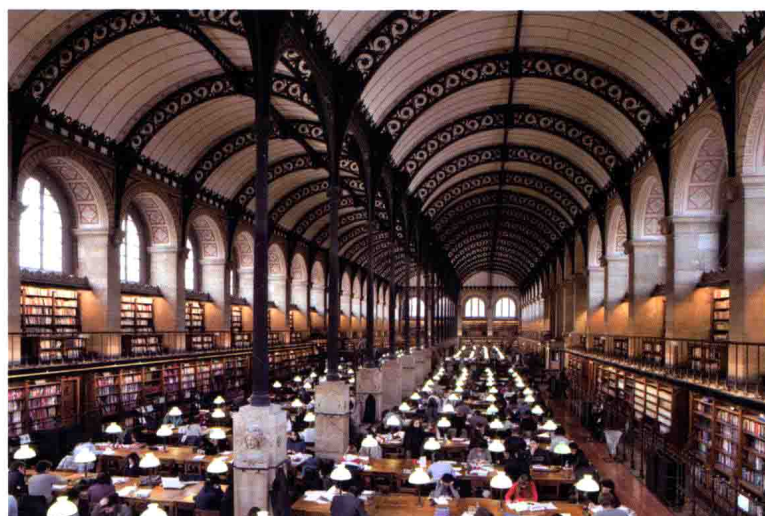
Labrouste's work is as poetic as it is rational. Decoration, which arises from the construction and underscores it, has an essential part to play. Ornamentation, which carries a symbolic discourse (inscriptions on the facade, sculpted torches and pedestals, fictive gardens, etc.), follows the sequences of cleverly composed spaces in which shadow and light, thickness and transparency, power and lightness intersect. His reading rooms are magical spaces. At the Bibliothèque Sainte-Geneviève, Labrouste was one of the first to introduce gas lighting into an architectural composition, using it to produce artistic, sensory effects. At the Bibliothèque Nationale, the natural zenithal lighting – soft and diffuse – and the view of simulated trees help give the reading room, despite its size, a strikingly peaceful atmosphere, perfect for study. The two libraries are a testament to the importance Labrouste gave to the general ambience, and to his influence on the work of library-goers. His approach is strikingly contemporary for architects and artists engaged in creating immersive environments today. One need only visit the remarkable Rolex Learning Center (2007–2009, *a+u11:01*), built by the architectural firm SANAA, at the Ecole Polytechnique Fédérale in Lausanne, to see just how much a

university building, a place meant to spread knowledge, can be the paradigm for a new approach to social relations.

Labrouste's libraries also express shared values. Their respective reading rooms, which are so suited to individual work, were also designed to help a community of researchers: solitary study cannot be separated from the progress of knowledge within society as a whole. Built at a time when modern library science was developing and the first great bibliographic catalogues were being compiled, they are a testament to the 19th century's knowledge revolution and as such are important markers for a history we have inherited, in our own digital age.

Over time, everyone who has traced the history of modern architecture has underscored the prominent position of Labrouste and his two libraries, although each time they have been ascribed a different meaning to his work. In 1975, he was one of the great figures of the 19th century, with Charles Garnier, singled out by the "manifesto" exhibition "The Architecture of the Ecole des Beaux-Arts" at The Museum of Modern Art, while in 1976 he was the subject of an important monograph presented by the historian Pierre Saddy at the Caisse Nationale des Monuments Historiques et des Sites (at the Hôtel de Sully). The interpretations we are now presenting in turn are no less of our time: they include such key themes as assembly and hybridization, light and immersive environments. We are not interested in considering Labrouste as a simple precursor to modernity, as did Sigfried Giedion, who looked for forerunners of 20th century constructions in the productions of the 19th century and saw Labrouste as a misunderstood genius. It seems to us that the issues he raised and the answers he provided were very meaningful in their time, and that they have never ceased to be since, and that it is precisely for this reason that his work has enthralled generations of architects and historians.

Text excerpts from the catalogue *Henri Labrouste: Structure Brought to Light*, pp. 20–23. Edited by Barry Bergdoll, Corinne Belier, and Marc le Coeur. With Essays by Neil Levine, David Zanten, Martin Bressani, 2013, © 2013 The Museum of Modern Art, New York.



This page, above: Henri Labrouste (French, 1801–1875). Bibliothèque Sainte-Geneviève, Paris, 1838–1850. View of the reading room. Photograph: Michel Nguyen. © Bibliothèque Sainte-Geneviève/Michel Nguyen. This page, below: Bibliothèque Sainte-Geneviève. Steel trusses of the reading room. Bibliothèque Sainte-Geneviève. Photograph: Priscille Leroy. © Priscille Leroy. p. 9: Bibliothèque nationale, Paris, 1854–1875. View of the reading room. © Georges Fessy.

本页，上：巴黎圣热内维耶夫图书馆阅览室室内，由亨利·拉布鲁斯特（法国，1801–1875年）设计，1838–1850年；下：圣热内维耶夫图书馆阅览室采用钢桁架结构。

9页：前巴黎国家图书馆阅览室室内，1854–1875年。

——“亨利·拉布鲁斯特：采光建筑”展介绍了19世纪的著名建筑师亨利·拉布鲁斯特。前巴黎国家图书馆和圣热内维耶夫图书馆即由拉布鲁斯特主持设计。该展览从2013年3月10日至6月24日在纽约现代艺术博物馆举行。本文摘自展览的序言。

一代又一代的作家和著名学人都曾在前巴黎国家图书馆的圆顶下奋笔疾书、激扬文字；一代又一代的莘莘学子都曾在圣热内维耶夫图书馆的筒形屋顶下勤学苦练、勇于争先。这两间阅览室位居巴黎“最美场所”之列，堪称建筑师亨利·拉布鲁斯特的成名之作。前巴黎国家图书馆与圣热内维耶夫图书馆在建筑设计上极具空间表现力；其功能布局之合理须归功于建筑师的冷静高明，全面满足了复杂的项目要求；其装饰构件之精美，奇异而令人难忘；最重要的是，项目大胆启用了新型材料——尤其是铸铁，并由于建筑采光运用得当而大为增色——所有这一切自建成之初便引来一致好评，并激发了从19世纪的杜拉德勒至今天的康迪达·赫弗等历代知名摄影师的灵感。时下正值前巴黎国家图书馆进行规模空前的全面整修，借此良机，让我们走近拉布鲁斯特，重新审视和评析他的建筑作品，深入了解这位19世纪最不同寻常也最求全责备的艺术家、这位欧仁·德拉克罗瓦与维克多·雨果的同时代人；同时，本次展览也力求展现拉布鲁斯特建筑的时代意义和经典永恒性。

正如文艺复兴时期的建筑巨匠或者20世纪的建筑大师——密斯·凡·德·罗、勒·柯布西耶、阿尔瓦·阿尔托一样，拉布鲁斯特也自创出一套非常个性化的建筑语汇和构思手法，将深厚的古典文化、古典情感与大胆创意、勇于革新的精神结合起来。拉布鲁斯特这样的建筑师在19世纪实属罕见，他的作品名扬法国内外，每每成为业界标杆。20世纪70年代，尼尔·莱文着手进行了开拓性的“拉布鲁斯特”专题研究，我们从中逐渐了解到，拉布鲁斯特深刻认识到艺术风格与社会历史的密切联系，这便成为其建筑原创性的首要源泉之一；而他孜孜不倦地寻求和探索符合时代道德与精神的建筑表现，又成为其建筑原创性的另一重要来源。拉布鲁斯特参与希腊帕埃斯图姆神庙的修复工程时，法国美术学院派对他的方案颇有异议。两者的主要争端和分歧并不在于严格的考古细节，而是着眼于如何对待建筑典范的问题上：彼时27岁的建筑师反对新古典主义推崇的理想化的、一成不变的古代建筑意象；年轻气盛的拉布鲁斯特主张，建筑风格应该依据特定条件或环境作出灵活调整。后来，铁和铸铁的运用促使拉布鲁斯特对建筑结构、平面布局和装饰构件进行重新思考。他虽然沿用传统的砖石结构，但在砌体厚度和砌合方式方面精心构思，多加变化，并将之融合于装配式建筑之中。他的两座图书馆采用大型金属框架和石材墙体，框架比例符合材料特性。纤细的支承结构（例如柱列）巧妙地将巨大的空间规模过渡连接到人的尺度，决定了人们的空间感知。就这样，拉布鲁斯特开拓出一条崭新的建筑设计道路，引领着后世建筑师们在工业化建筑材料领域不断开发探索，尤其是诸如钢筋混凝土等复合材料——其后150年以来，该领域内硕果累累。

拉布鲁斯特将建筑结构的所有元素分别个性化，而后再整合为一体，呈现为高度和谐的异质性整体。他主张明确区分承重结构和填充构件，并

运用材质和色彩来创造建筑表现力。凭借这样的设计理念，早在19世纪末，拉布鲁斯特便为其后盛行于欧美大陆的理性主义建筑思潮开辟了道路。后来，理性主义建筑语汇风靡全球，其影响深远，一直波及美国19世纪后期的商业建筑和办公建筑，其中包括路易斯·沙利文式的摩天大楼。

拉布鲁斯特的建筑既诗意又理性。在此意义上，其装饰构件功不可没——它们由建筑功能衍生而出，并烘托与突显建筑功能。蕴含象征意义的饰物（包括立面上的铭文、雕饰火把和底座、故事中的花园等）沿着巧妙布设的空间序列，出现在阴影与光线、厚实与透明、力量与轻盈的交错穿插之间。拉布鲁斯特的阅览室可谓神奇空间。在圣热内维耶夫图书馆，拉布鲁斯特率先将煤气灯作为建筑构成的一部分，以营造富有艺术效果的感性空间。在巴黎国家图书馆，他采用天顶自然采光——其柔和漫射的光线条件以及树形支柱的结构形态使得巨大开阔的阅览室内出奇地平静和安静，成为学习与思考的理想场所。这两座图书馆充分展现了拉布鲁斯特的设计思想，他赋予整体气氛以重要意义，营造出对读者产生积极影响的阅读环境。在创造令人完全沉浸的（浸入式）空间方面，他的设计手法对当今的建筑师和艺术家而言也是非常现代的。比如出自SANAA建筑师事务所手笔的洛桑瑞士联邦理工学院（EPFL）的劳力士学习中心（2007—2009年，a+u中文版 11:06），人们只需来此参观，便可看到一所大学建筑、一个以传播知识为宗旨的学习场所，同时也可成为一种新型社交场所的典范。

拉布鲁斯特的图书馆建筑还体现出了共享价值观。馆内阅览室不仅适宜于个人埋头苦读，同时也力求为集体研究营造良好的环境氛围——因为独立研究无法脱离社会整体的知识进步而存在。当时，现代图书馆学尚处于蹒跚学步阶段，世界上第一套大型图书目录也还在编纂之中，拉布鲁斯特的图书馆向今天的数字化时代展示出19世纪知识革命的风采，成为传承历史的重要标志。

岁月流逝，了解现代建筑史脉络的人都已深刻地认识到拉布鲁斯特及其两座图书馆建筑的卓越地位，尽管各种研究从拉布鲁斯特建筑中解读出了不同的内涵含义。1975年，在现代艺术博物馆（MoMA）举办的“宣言”式展览“法国美术学院建筑”上，拉布鲁斯特当选为19世纪风云人物，并肩于查尔斯·加尼叶。而在1976年，历史古迹和遗址国家基金会（设于旭丽府邸）的历史学家皮埃尔·萨迪以拉布鲁斯特为主题发表了重要的研究专著。今次的专题展览则与时俱进，介绍了若干富于时代特色的关键主题，例如：装配与混杂、采光与浸入式环境的空间体验。建筑理论家西格弗里德·吉迪恩曾在19世纪的建筑作品中寻觅20世纪建筑的前驱，他将拉布鲁斯特视作一名未被承认的天才；与之不同，本次展览无意深究拉布鲁斯特是否堪称现代建筑的前驱。在我们看来，拉布鲁斯特所提出的诸多课题以及他的解决方案在当时便意义深远，至今亦不曾过时和失色。正因如此，拉布鲁斯特的建筑作品深深地吸引了一代又一代的建筑师和历史学家。

本文摘录自“亨利·拉布鲁斯特：采光建筑”展览序言，由巴里·贝赫多、科琳·贝利叶和马克·勒克尔编辑，尼尔·莱文、大卫·赞滕和马丁·布莱萨尼撰写。（纽约现代艺术博物馆，2013年，20—23页）（陈霜 译）



Contemporary Art Center Córdoba

Nieto Sobejano Arquitectos
Córdoba, Spain 2008–2013

科尔多瓦当代艺术中心
尼耶托与索维汉诺建筑师事务所
西班牙，科尔多瓦 2008—2013









pp. 10–11: View of the city of Córdoba from the roof. Opposite: View of the east exterior wall. It has numerous openings with embed LED light which illuminate in the evening. Photos on pp. 10–12 by Roland Halbe. This page: Aerial view from the east. All photos on pp. 10–29 except as noted by Fernando Alda.

10~11 页：科尔多瓦城市屋顶景观。
左页：布满孔洞的东侧外墙，嵌装 LED 灯，提供夜间照明。
本页：东侧航拍图。

