

建筑与都市 中文版
Architecture and Urbanism
11:12

040

Feature:
Timber Innovation +
OMA Hong Kong

专辑：
木材革新
+ OMA香港事务所



Chinese Edition

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木材革新 + OMA香港事务所



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Chinese Edition
2011:12 No.040

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Architecture and Urbanism

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新信息: BIG 建筑事务所在巴塞尔“Transitlager”改造设计竞赛中获胜 / 马泰建筑师事务所与多米尼克·佩罗建筑师事务所在里昂再开发设计竞赛中获胜 / est 8 在慕尼黑弗莱哈姆·诺德城市与景观规划设计竞赛中获胜

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BIG wins the Competition to Renovate "Translagger" in Basel

BIG 建筑事务所在巴塞尔 "Translagger" 改造设计竞赛中获胜

BIG won an invited competition to renovate and extend an existing 1960's concrete warehouse situated in an industrial district in Basel which is being transformed into an alternative Arts District. Located in Basel's upcoming Dreispitz neighborhood, which is envisioned as an attractive and inviting urban quarter in Herzog and de Meuron's master plan from 2003, the existing 18,000 m² "Translagger" built in the late 1960s is to be renovated and extended by up to 7,000 m² for residential and arts related purposes.

The Translagger's surrounding industrial area is characterized by the geometries of infrastructures – the intersecting railways, loading docks that weave through the city and create a puzzle of linear buildings with pointy corners and staggered facade lines into an untraditional and adventurous urban area consisting of galleries, restaurants and creative businesses. The iconic character of the existing Translagger, its generous surrounding public spaces, and connection to the city's botanical garden makes the building a natural focal point of the Arts District.

BIG 建筑事务所在一个混凝土仓库改扩建项目邀请赛中获胜。这个建于 20 世纪 60 年代的仓库位于巴塞尔的一个工业区，将转型为艺术区。与其毗邻的德莱斯皮兹区生机勃勃，在赫尔佐格与德梅隆于 2003 年所做的总体规划中被设想为魅力无穷、开放的城市一角。占地 18 000 m² 的建于

20 世纪 60 年代末期的 "Translagger" 将扩建达 7000 m²，用于居住与艺术活动。

Translagger 周边工业区遍布着基础设施，交织的铁路线及货运码头在城市中延伸，将一系列带有尖角和交错立面的建筑创造为非同寻常、大胆创新的地区，内有美术馆，餐饮和创意园区。Translagger 周围开阔的公共空间及其与植物园相连的标志性特点使该建筑自然而然地成为艺术区的窗口。

Mateo Arquitectura and Dominique Perrault Architecture win the Lyon Confluence

马泰奥建筑师事务所与多米尼克·佩罗建筑师事务所在里昂再开发设计竞赛中获胜

Last September, Mateo Arquitectura, together with the French practice Dominique Perrault Architecture (DPA), presented a proposal for the project to urbanize Îlot P in Lyon Confluence, to the south of the city of Lyon. This competition forms part of the process of urban remodelling being conducted throughout the Lyon Confluence area with the aim of leaving behind its industrial past. The

project involved the urban development of a city block (Îlot P), including housing, commercial areas and offices (laid out in two buildings), and landscaping. The project developed by Mateo Arquitectura and DPA comprises: building A devoted principally to housing, though there is also a small office section, and building B, which houses offices and shops. One of the principal project requirements was sustainability, so the roofs and façades accommodate solar and photovoltaic panels to optimize energy consumption.

2010 年 9 月，马泰奥建筑师事务所与法国多米尼克·佩罗建筑师事务所（DPA）联合展示了关于里昂城市南边的里昂·康弗伦斯地区的地块 P（Îlot P）的城市化方案，该竞赛是里昂·康弗伦斯地区整体城市改造的一部分，目的在于摆脱其工业区的旧形象。该项目将兴建一个城市街区（Îlot P），容纳居住、商业、办公（集中于两栋建筑中）以及景观。

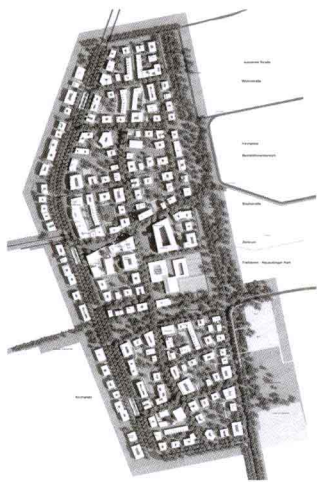
马泰奥建筑师事务所和 DPA 的联合方案为：A 楼主要用于居住，小部分用于办公；B 楼则用于办公和商业。项目的一个首要条件是可持续性，因此屋顶及立面都安装了太阳能、光能电池板以优化能耗。

This page, above: CG rendering of the renovating "Translagger" by BIG. This page, below: CG rendering of Building A (left) and Building B (right) in Lyon by Mateo Arquitectura and DPA. p. 6, left above: Site plan of Freiam Nord by West 8. p. 6, left below: CG rendering of Freiam Nord by West 8. p. 6, right above: CG rendering of the Met by WOHA. p. 6, right below: Aerial view of Pruitt and Igoo area. Photo courtesy of Pruitt Igoo Now. All images on pp. 5–6 except as noted courtesy of the architects. p. 7: View of the exhibition. Photo courtesy of Canadian Centre of Architecture.

本页，上：BIG 设计的 "Translagger" 改造方案效果图；下：马泰奥建筑师事务所与 DPA 设计的里昂再开发设计方案的 A 楼（左）和 B 楼（右）效果图。6 页，左上：West 8 设计的弗莱哈姆·诺德项目总平面图；左下：West 8 设计的弗莱哈姆·诺德项目效果图；右上：WOHA 设计的 Met 大楼效果图；右下：普鲁蒂·艾戈地区鸟瞰图。7 页：展览现场。（5–7 页：肖靖译）



West 8 Winner of Freiham Nord Urban and Landscape Planning Competition, Munich
West 8 在慕尼黑弗莱哈姆·诺德城市与景观规划设计竞赛中获胜



Freiham Nord will be the last substantial development to take place in Munich and will accommodate about 10,000 inhabitants. In the Masterplan Freiham Nord has been divided into several project areas with different programming, each about 40 ha in size. The city of Munich organized a design competition for the first two project areas in which 24 offices participated. West 8's winning entry is about a friendly green neighborhood. Our design allows the creation of a city for all generations intending to mix ages and achieves a diverse mélange of inhabitants.

At the moment the project site is characterised by open, agricultural land which is flat and sparsely vegetated. The landscape doesn't provide any particular identity that could be built on in an urban design proposal. To create this identity, West 8 utilized the robust hierarchic structure of urban green spaces as alleys, boulevards, parks and squares, in the process bringing nature closer to urban life. Within this green network one central square and two secondary neighborhood squares

with churches were identified. The network creates a framework for diverse mixed-use urbanity which is both dense and green. The neighborhood consists of housing for families, couples, singles, seniors and students; it also includes shops, schools and buildings for cultural, religious and social activities. Varying compact isolated objects are loosely added in a green topography in order to reach transparent and lively city blocks. Internal spaces within the building blocks are designed as semi public urban spaces with specific housing related functions as allotment gardens, daycare playgrounds and neighborhood meeting points.

弗莱哈姆·诺德将成为慕尼黑最后一个大规模的开发项目，届时将提供 10 000 人的居住空间。在其总体规划中，该项目被划分为具有不同发展策略的几个区域，每个区域约为 40 ha。慕尼黑市为前两个项目区域组织了设计竞赛，共有 24 个设计团队参加。West 8 的获奖设计是创造一个友好、绿色的邻里环境，以适合不同年龄层次的多样性居住群体。

目前的基地以开阔的农业用地为特点，地势平坦，植被稀少，其景观并不能给城市设计提供任何特别的识别性。为了创造这种识别性，West 8 将城市绿色空间结构做了清晰的分层，如小巷、大道、公园和广场，以期拉近城市生活和自然的距离。在这个绿色网络中，一个中央广场以及两个相互临近、附有教堂的次级广场的地位突显出来。

这样的网络结构创造了一个多功能的城市框架，密集而又绿意盎然。住区可供家庭、夫妻、单身者、老年人和学生居住，同时还配有商店、学校以及用于文化、宗教、社会性活动的场所。各种紧凑的独立单元松散地渗透在绿色环境中，遍布在清晰可见、生机盎然的地块内。建筑之间的内部空间则设计成带有特定居住功能的半公共空间，诸如独立花园、托儿所和社区中心。



announcements

Aedas wins Cityscape Architectural Awards 2011
凯达环球赢得 2011 年度城市景观建筑奖

The Cityscape Architectural Awards 2011 winners were announced at the Awards gala dinner ceremony held at the Madinat Jumeriah, Dubai on September 27th.

Aedas was named winner in the Commercial / Mixed Use future Category for the Fusionopolis 4 (a+u 11: 08) project in Singapore and winner in the Leisure future Category for the Pazhou Exhibition Center (a+u 11: 08) in Guangzhou. Both projects, designed by Andrew Bromberg, have received multiple awards to date, demonstrating outstanding design and innovation. Receiving these awards is a testament to Aedas' design skills and our commitment to contribute to the built environment in all the places we work in. Congratulations to all the teams involved.

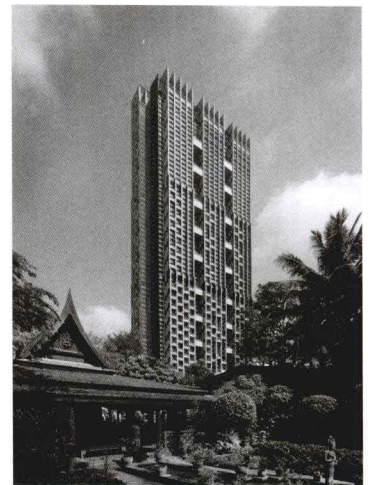
9 月 27 日，在迪拜的朱美拉古城举行的晚宴上揭晓了 2011 年度城市景观建筑奖评选优胜者。

凯达环球以其新加坡的启汇园 4 号项目被授予未来商业 / 多用途建筑类别奖，同时凯达环球还以广州琶洲展览中心项目荣获未来休闲奖。这两个由安德鲁·布朗伯格设计的项目因其杰出的设计革新近来囊获了众多奖项。这些奖项的获得证明了凯达环球的设计能力及其致力于所有工作地点的建筑环境的承诺。再次祝贺所有参与团队。

WOHA wins prestigious RIBA Lubetkin Prize 2011
WOHA 建筑事务所赢得 RIBA 2011 年度莱伯金大奖

The Met in Bangkok, Thailand by WOHA has scooped the Royal Institute of British Architects' (RIBA) prestigious RIBA Lubetkin Prize for the most outstanding work of international architecture by a member of the RIBA. A residential skyscraper incorporating outdoor spaces, balconies and gardens, the Met is a 66 storey perforate tower which uses the power of nature to cool the apartments. The Lubetkin Prize was established in 2006 and is given to the best international building outside the

EU. It is named after the world-renowned architect Berthold Lubetkin (1901–1990).



WOHA 建筑事务所在泰国曼谷设计的 Met 大楼赢得了英国皇家建筑师协会 (RIBA) 的莱伯金大奖，这个奖项颁发给世界范围内由 RIBA 成员设计的最优秀建筑。Met 高层住宅大楼拥有室外空间、露台和花园，楼体高达 66 层的孔洞立面借助自然绿色能源实现房间制冷。

莱伯金大奖设立于 2006 年，颁给欧洲范围以外的国际性最佳建筑。奖项以世界著名的设计师贝特洛·莱伯金 (1901 – 1990 年) 而命名。

competition

Pruitt Igoe Now Competition
“今天的普鲁蒂·艾戈”设计竞赛



Pruitt Igoe Now is an ideas competition launched by a non-profit organization of the same name, located in St. Louis, Missouri, USA. The subject is the 57-acre site of the long-mythologized Pruitt and Igoe housing projects – a site whose future is intertwined with emerging ideas about urban abandonment, the legacy of modernism, brownfield redevelopment and land use strategies for shrinking cities. This competition seeks the ideas of the creative community worldwide: we invite individuals and teams of professional, academic, and student architects, landscape

architects, urban planners, designers, writers, historians, and artists of every discipline to re-imagine the site and the relationship between those acres to the rest of the city.

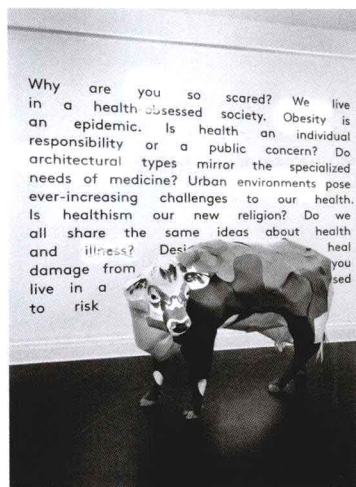
“今天的普鲁蒂·艾戈”概念设计竞赛由美国密苏里州圣路易斯市的一个同名非盈利性机构发起。其课题基于一个神秘已久的名为“普鲁蒂·艾戈”的居住项目，占地 57 英亩。这个项目的未来融合了关于废旧城区的新理念、现代主义的传统、灰色空间的重新发展，以及针对城市衰败的土地利用策略。该竞赛意欲在世界范围内寻找富有创意的城市社区概念：我们邀请了包括职业建筑师、学者、学生、景观设计师、城市规划师、设计师、作家、历史学者、艺术家等各个行业在内的个人及团队来参加，重新设想该区域及其与整个城市的关系。

Host organization: Pruitt Igoe Now
Registration and submission deadline: March 16, 2012
email: contact@pruittigoenow.org
url: www.pruittigoenow.org

exhibitions

Imperfect Health
不完美的健康
Canadian Centre for Architecture
Until April 1, 2012

We observe – and suffer daily from – the unforeseen consequences of our actions on the environment. We are anxious about ground pollution, food safety, pollen allergies, smog, asthma, cancer, obesity, epidemics, and ultimately, ageing. Now that everything is perceived as a possible source of disease, the health, defense and fortification of our own bodies has become an obsessive pursuit. We have begun to think of all aspects of our lives in medical terms. Imperfect Health is not a comprehensive survey of the relationships between health, architecture, cities and the environment. On the contrary, these projects for buildings, interiors, and open spaces are meant to highlight uncertainties and contradictions present in the ideas of health that are emerging in Western countries today, particularly in Europe and North America. We are exposed to a lot of solutions, but at what cost? Is the future of architecture in its medicalization?



我们每天目睹并忍受着人类活动所导致的意想不到的环境问题，担心着土地污染、食品安全、花粉过敏、烟尘、哮喘、癌症、肥胖、流行病，以及最根本的衰老问题。一切都被认为是潜在的病源，于是人们便沉迷于对健康、保护并强化身体的追求，我们开始用医学的角度来思考生活的各个方面。

“不完美的健康”并不是一个针对健康、建筑、城市与环境关系的深入研究；恰恰相反，这些关于建筑、室内，以及开放空间的设计意在聚焦西方国家当下蔚然成风的健康理念中所具有的不确定性和矛盾性，这一点在欧洲及北美尤为突出。

我们的解决方法倒是很多，但以什么为代价呢？医疗化会是建筑的未来么？

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2011 Shenzhen & Hong Kong Bi-City Biennale of Urbanism / Architecture

2011 年深圳·香港城市 / 建筑双城双年展
Shenzhen Civic Square, OCT-LOFT
Until February 18, 2012

The Chief Curator of the 2011 Biennale, Mr. Terence Riley, was selected from an international call for proposals. Mr. Terence Riley is an architect, critic, museum expert, and curator for world-recognized theme architecture exhibitions. He was the director of Miami Art Museum and chief curator of MoMA. Mr. Riley played a key role in the successful development and launch of MoMA's expanded and renovated facility, which opened to international acclaim in 2004. “Architecture Creates Cities, Cities Create Architecture” is

the Biennale. The Biennale will portray the endless interaction between architecture and cities, and provoke an in-depth discussion on sustainability and urban vitality. “The curatorial theme of the 2011 Biennale expands the concepts established in the previous three editions, highlighting the significance of Urbanism/Architecture on a broader international and contemporary scale.” said Feng Yueqiang, an architect from the Biennale Academic Committee. The exhibition structure includes theme exhibition, invitational exhibits, Special Exhibition, Satellite Exhibitions and Events, cultural welfare exhibition by leading sponsors. We would like to present 10 highlights: Interaction between Shenzhen and Hong Kong, gathering masters, energy conservation, climate change, affordable housing, new architects, comparing cities, citizen interaction, nation pavilion, urban China. Besides, the Biennale will present special exhibition A Catalyst Reaction of Our City: “Shenzhen and Universide” that showcases the newly constructed stadiums, and investigates the impact that large public events on Shenzhen.

泰伦斯·瑞莱瑞莱先生于去年通过深港双城双年展全球策展方案的甄选，被选定为 2011 第四届深港双城双年展的总策展人。作为一名国际著名策展人和建筑师，瑞莱先生曾任迈阿密美术馆馆长和纽约现代艺术馆 (MOMA) 的主策展人，并主持了 MOMA 在 2004 年的扩建计划。

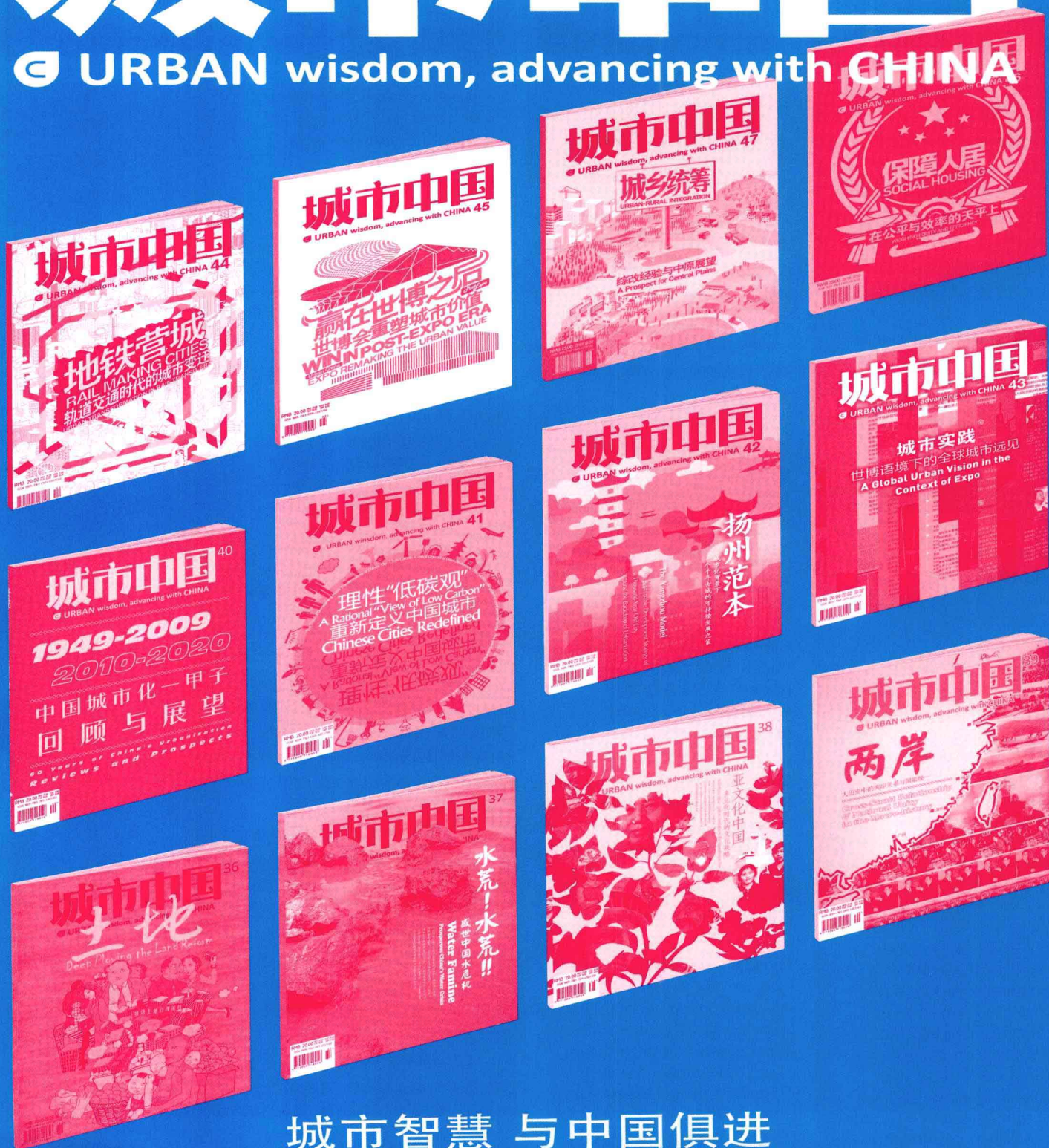
本届双年展的策展主题为“城市创造”。这一主题描绘了建筑与城市之间无止尽的互动关系，并激起对可持续发展和城市生命力的深度讨论。学术委员会成员之一的冯越强建筑师认为，“策划方案体现了前三届展览主题的延续及深化，更国际化、当下性，层面更高，同时让“城市/建筑”的母题探讨回到本质、持续性中来。”

本届展览框架主要由以下几部分组成：主展览、国家邀请展、深圳特别展、外围展、赞助企业公益文化展。共有十大亮点：深港联动、大师云集、绿色节能、气候变化、居住保障、建筑新锐、城市比较、全民互动、国家展馆、城市中国。此外，本届双年展还设立了深圳特别项目：城市触媒——大运与深圳专题展来展示大型城市事件给深圳城市发展带来的连锁式的复合促进作用。

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城市中国

URBAN wisdom, advancing with CHINA



城市智慧 与中国俱进

Urban Wisdom & the Development of China

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Feature 1:

Timber Innovation

专辑 1:

木材革新

Although timber is one of the most exciting materials, the opportunities to use it in large-scale architecture have been a few compared to other materials such as concrete and steel. But the situation is now changing.

Recent technology advances and expands a possibility of timber, which is sustainable material, to be used in large-scale architecture. There have been precise and dynamic proposals with the advanced fabrication and simulation technique; and related intimately to technologies such as prefabrication, CNC, structural modeling, and industrial robots. Also, many new timber materials have appeared.

This issue introduces these recent innovations and achievements, providing a glimpse of possibilities that may lie ahead for timber.

(a+u)

木材是最具魅力的建筑材料之一，但现代大型建筑的主体结构却多采用混凝土或钢材，鲜少应用木材。不过，目前这种状况正在逐渐改变。

近年来，随着科技进步，木材的建造性能得以开发和拓展。作为一种可持续性建材，它越来越广泛地应用在大型建筑当中。目前已发展出多项先进、精密而且高效的木材加工工艺和模拟技术；与之密切相关的还包括预制、数控、结构建模和工业机器人技术。此外，许多新型木材也纷纷问世。

本期介绍了一批近年来涌现的木构建筑项目，深具革新意义。对木材的未来发展，读者可从中大略窥探一二。

(编者)

Achim Menges, Jan Knippers

ICD/ITKE Research Pavilion 2010

Stuttgart, Germany 2010

阿齐姆·门杰斯, 扬·库尼帕斯

ICD / ITKE 研究亭 2010

德国, 斯图加特 2010

Material has the ability to compute. A material construct can be considered as the equilibrium state of an intricate network of internal and external forces and constraints. In architecture, this understanding is of particular relevance if the elastic bending behaviour of material is allowed to play an active role in the design and construction process. However, due to the considerable technical and intellectual difficulties posed by such a synchronous consideration of force, form and performance, there are only very few cases of elastically-bent architectures, as for example the elastically formed wooden lattice shells by Frei Otto in Germany.

The ICD/ITKE Research Pavilion aims at further developing the often overlooked lineage of these bending-active structures, exploring their architectural potential through contemporary means of computational design, engineering and robotic manufacturing. The result is a novel bending-active structure, an intricate network of joint points and related force vectors that are spatially mediated by the elasticity of thin plywood lamellas. The system's delicate equilibrium state unfolds a unique architectural space while at the same time being extremely efficient with the employed material resources.

The initially planar plywood strips are manufactured with a 6-axis industrial robot and subsequently connected so that elastically bent and tensioned regions alternate along their length. The force that is locally stored in each bent region of the strip, and maintained by the corresponding tensioned region of the neighboring strip, greatly increases the structural capacity of the system. In order to prevent local points of concentrated bending moments, the locations of the joints between strips need to oscillate along the structure, resulting in a distinct articulation of the envelope, which is constructed from more than 500 geometrically unique parts. The combination of the pre-stress resulting from the elastic bending during the assembly process and the morphological differentiation of the joint locations enables a very lightweight and materially efficient system. The entire pavilion was constructed using only 6.5 mm thin birch plywood sheets that are at the same time spatial envelope and load bearing structure.

The spatial articulation and structural system is based on a half-torus shape. Defining the urban edge of the campus, it touches the ground topography that provides seating opportunities on the street facing corner. In contrast to this, the torus side that faces the public square is lifted from the ground to form a free-spanning opening. Inside, the toroidal space can never be perceived in its entirety, leading to a surprising spatial depth that is further enhanced by the sequence of direct and indirect illumination resulting from the convex and concave undulations of the envelope, which finds its form as the equilibrium state of the embedded forces. The synthesis of material, form and performance enables a complex structure to be unfolded from an uncomplicated system, which is both economical to build and materially efficient, while at the same time providing an enriched semi-interior extension of the University's central public square.

材料自身具有计算能力。材料应用于建筑结构中, 便可视作处于内部与外部的受力和约束的复杂平衡状态。建筑设计和施工采用主动弹性挠曲结构时, 尤其需要认识和了解这一点。然而, 要建造主动挠曲结构, 需同时考虑结构受力、建筑形态和空间性能, 在技术和理论层面上都面临严峻挑战。迄今为止, 成功案例寥寥无几, 唯以德国建筑大师弗雷·奥托设计的格栅木构壳体结构为典范。

主动挠曲结构的联结件往往受到忽视, ICD / ITKE 研究亭项目正立足于于此, 通过计算机辅助设计、工程学和机器人制造等现代化科技手段, 力求进一步开发提高联结构件的性能, 探索此类建筑结构的潜力。该建筑采用新颖的主动挠曲结构, 其错综复杂的网络结构体系由结点及相关的力矢量组成, 利用胶合薄板的弹性加以调节, 从而达成精妙的平衡状态, 拓展出一方独特的建筑空间。与此同时, 该建筑用材极为精简高效。

初始的胶合平板条由 6 轴工业机器人制造并连接, 使其受弯和受拉部位沿长度方向交错分布。局部应力施加在板条的各个挠曲部位, 并由相邻板条所对应的张拉部位加以平衡,

从而大大增加了系统的结构承载力。为了避免瞬间局部弯矩集中, 板条之间的接头交替排布, 最终形成了新奇独特的建筑外壳。该建筑总计由 500 多块几何形状各异的构件组装而成。组装过程中利用弹性弯曲形成了预应力, 板条接头分散排布, 造就了一座极其轻盈、用材高效的结构体系。整座建筑全部采用 6.5 mm 厚的桦木胶合薄板, 既是承重结构, 也是围护结构。

该建筑采用半圆环形的空间形态和结构体系, 坐落在校园与城市的边界, 其临街一角着落在地面上, 营造出供人休憩的座位。相反, 朝向校园广场的另一面却抬高地面, 留出高敞的开放入口。置身环形表面的空间之中, 人们永远无法洞察其全貌, 空间深度惊人。由于建筑外壳凹凸起伏, 直接和间接的光线投射而入, 使室内光影缤纷, 更增强了空间的深度感, 也使建筑整体呈现出内在受力的平衡状态。材料、形式和性能的综合集成将本质简单的系统扩展成复杂结构, 而且成本低廉, 用材高效。同时, 大学的中央公共广场得以延伸, 增添了一处生动丰富的半室内空间。

(陈霜译)

Opposite: General view of the research pavilion. pp. 12–13; Interior of the research pavilion. p. All photos on pp. 11–15 courtesy of the architects.

右页: 研究亭全景。
12–13 页: 研究亭内部空间。







Credits and Data

Project title: ICD/ITKE Research Pavilion 2010

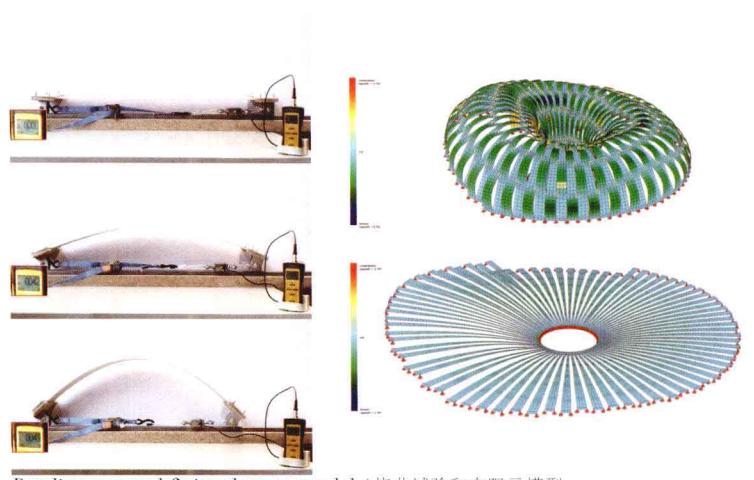
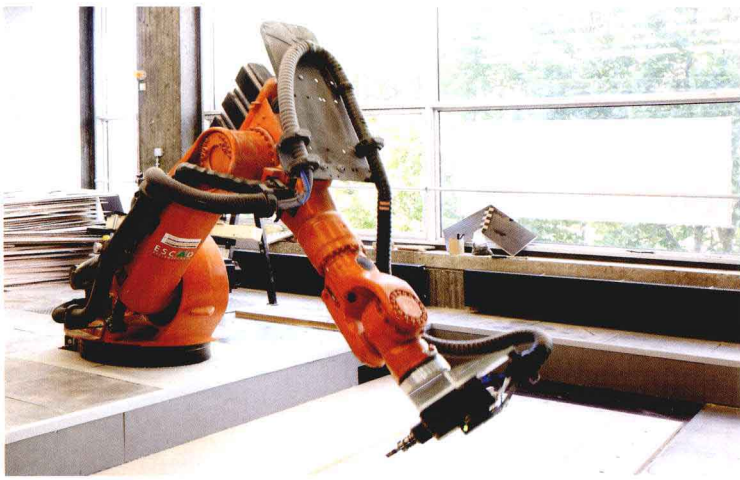
Institute for Computational Design: Prof. Achim Menges (Architect)

Institute of Building Structures and Structural Design: Prof. Jan Knippers (Engineer)

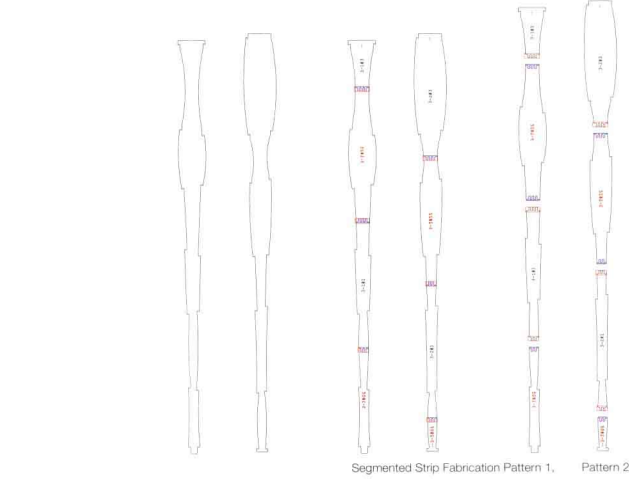
Concept and realisation: Andreas Eisenhardt, Manuel Vollrath, Kristine Wächter & Thomas Irowetz, Oliver David Krieg, Admir Mahmutovic, Peter Meschendorfer, Leopold Möhler, Michael Pelzer, Konrad Zerbe

Scientific development: Moritz Fleischmann (project management), Simon Schleicher (project management), Christopher Robeller (detailing / construction management), Julian Lienhard (structural design), Diana D'Souza (structural design), Karola Dierichs (documentation)

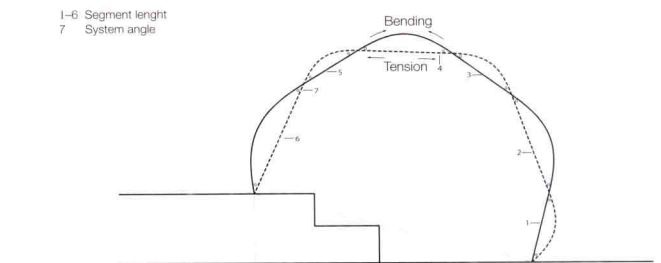
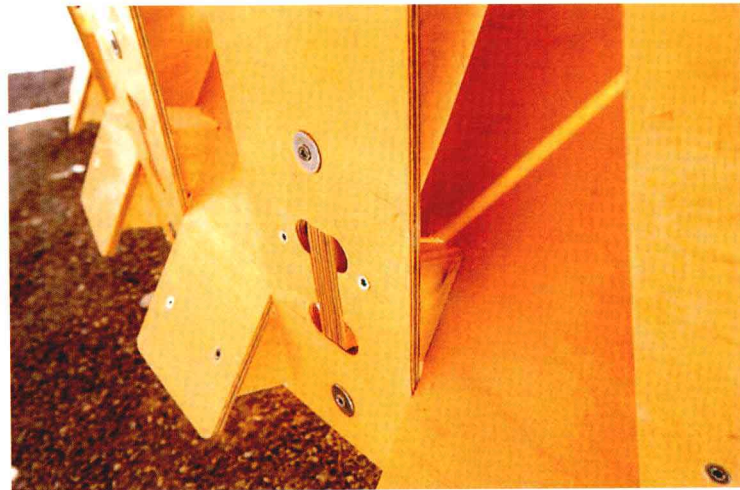
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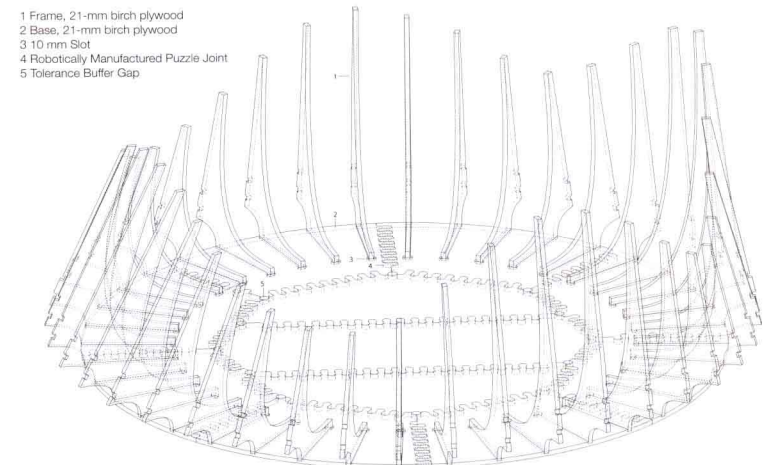
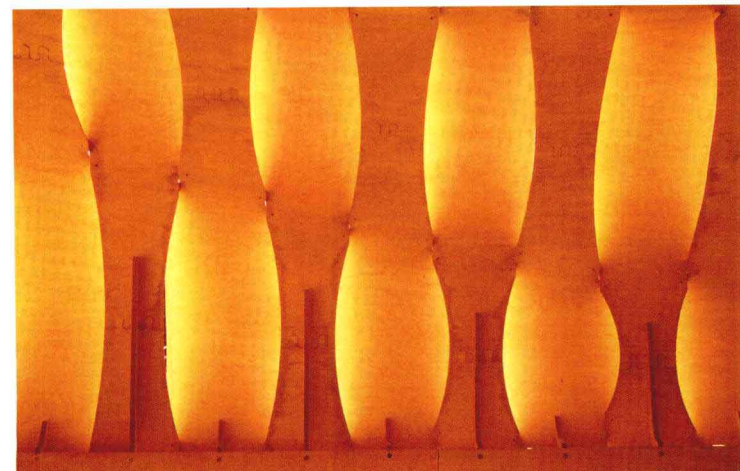
Bending test and finite element model / 挠曲试验和有限元模型



Strip geometry / 板条的几何形状

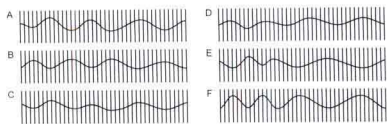


Bending and tension / 挠曲和张拉

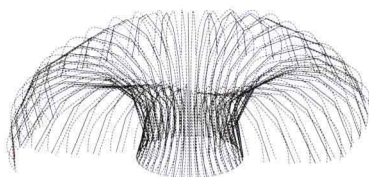


Inner disk / 内侧底盘

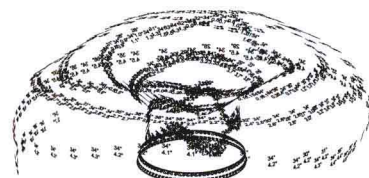
1 Lengths of the segments



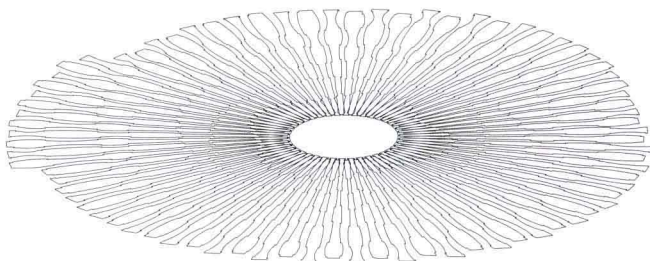
2 Polyline and bending lines



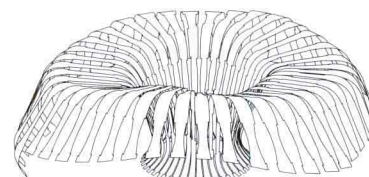
3 Overlapping angles of the nodes



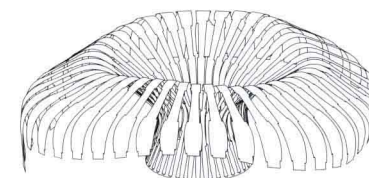
4 Flat projection



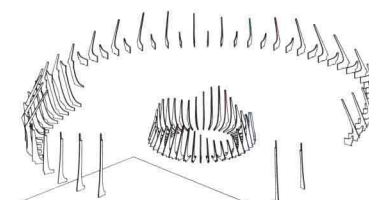
5 Pairs of wooden strips part I



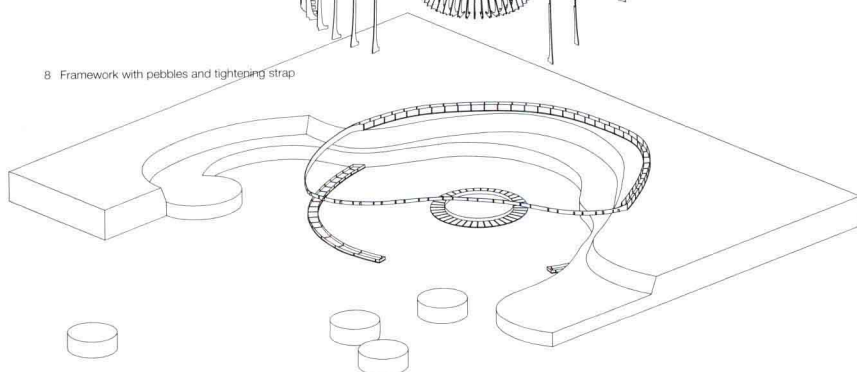
6 Pairs of wooden strips part I



7 Trusses



8 Framework with pebbles and tightening strap



Exploded view / 展开图

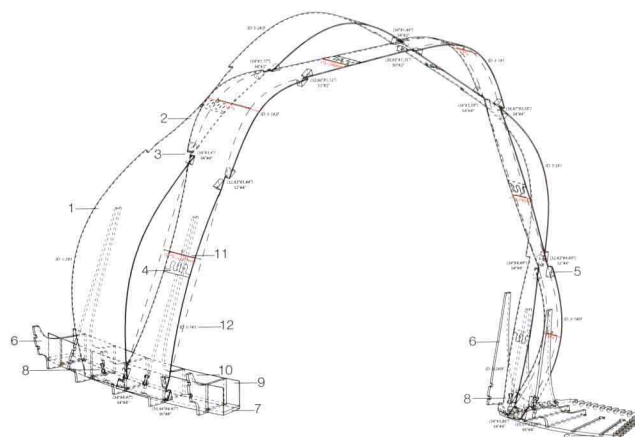


Opposite, left row, from the top:
Robotic manufacturing; installation;
connection detail; interlocking strips
detail. This page: Night view.

左页, 左列, 上起: 机器人进行加工、施
工现场、接头细部、板材接合处细部。
本页: 夜景。

- 1 Bent strip segment, birch plywood 6.5 mm
- 2 Strip segment under tensile stress, birch plywood, 6.5 mm
- 3 Connection detail, interlocking strips are rigidly connected by two wooden wedges
- 4 Connection detail, dovetail joint that resists tensile stress
- 5 Wooden wedge, pine wood, dimensions of the wedges vary according to the angles of the interlocking strips

- 6 Frame, 21-mm birch plywood
- 7 Flooring element, 21-mm birch plywood
- 8 Connection detail, strips are connected to the frame with screws
- 9 Cladding, 4-mm birch plywood
- 10 Pebbles
- 11 Dimensions of the waists vary
- 12 Identification numbers for all segments



3D drawing / 三维图形

Jürgen Mayer H

Metropol Parasol
Seville, Spain 2011

于尔根·梅耶建筑事务所
大都会阳伞
西班牙·塞维利亚 2011

