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Architecture and Urbanism
Chinese Edition 16:08

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特辑：
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This is a special issue devoted to the architectural office BIG – Bjarke Ingels Group, based in Copenhagen and New York and led by Bjarke Ingels.

BIG is engaged with projects both large and small in locations all over the world. This issue reflects that diversity, with the first half devoted to the large, urban-scale projects for which the practice is best known, and the second half devoted to smaller projects, including residences and a pavilion. Including those nearing completion, 20 of the 22 projects introduced here are currently underway. Over the next few years, we will see many more of their works finished.

Leading off the issue is an interview of Bjarke Ingels by Jeffrey Inaba. The office's projects are characterized by conceptual clarity and surprisingly playful forms. From the interview, we see how these characteristics are the answer to the basic architectural themes of form, function, site, circulation, direction, light, air, and materials. At various scales, from small to large, their work is based on a detailed engagement with spatial experience and structure, architectural materials and the surrounding context, and broader issues in society – an ongoing challenge unfettered by conventional ideas.

What is behind the office's remarkable development since its foundation in 2005, and what is the source of their ideas, announced one after the other? They may be one of the architectural offices most sensitive to current trends in the world, and an embodiment of what the world needs from architecture. *(a+u)*

Translated from Japanese by Thomas Donahue

本辑是BIG（Bjarke Ingels Group）建筑事务所 的作品专辑，BIG立足于哥本哈根和纽约，由建筑师比雅克·英格斯（Bjarke Ingels）领导主持。

目前BIG所进行的项目，规模各异且分布在全球范围内。本辑的前半部分收录了BIG在城市尺度下的大型建筑项目，后半部分介绍了BIG的一些小型住宅和展馆项目。在这22个作品中，正在进行中的项目（有的即将竣工）共计20个，因此在之后的几年里，我们将会看到更多建成的BIG作品。

本辑的开篇是杰弗里·英娜巴（Jeffrey Inaba）对比雅克·英格斯进行的访谈。BIG的诸多作品，设计理念明快、造型玩意十足，从访谈中我们即可会意到BIG作品所具有的这些特征是如何回应形式、功能、基地、动线、方位、光线、空气、材料等建筑基本要素的。对大大小小、各种尺度的项目，他们既从空间体验、空间结构、建筑材料、周围环境以及更广泛的社会问题等方面深潜细究，同时也进行着与传统观念相抗衡的持久战。

从2005年成立以来，BIG取得了令人瞩目的发展成就，这些成就的背后是什么？他们的创意想法层出不穷，这些创意源自哪里？BIG也许是当下世界范围内，对时代风向最为敏锐，并能将其察觉到的时代需求具象呈现出来的建筑事务所之一。

（编者）

（吴瑞香 译）

View of Copenhagen office / 哥本哈根办公室

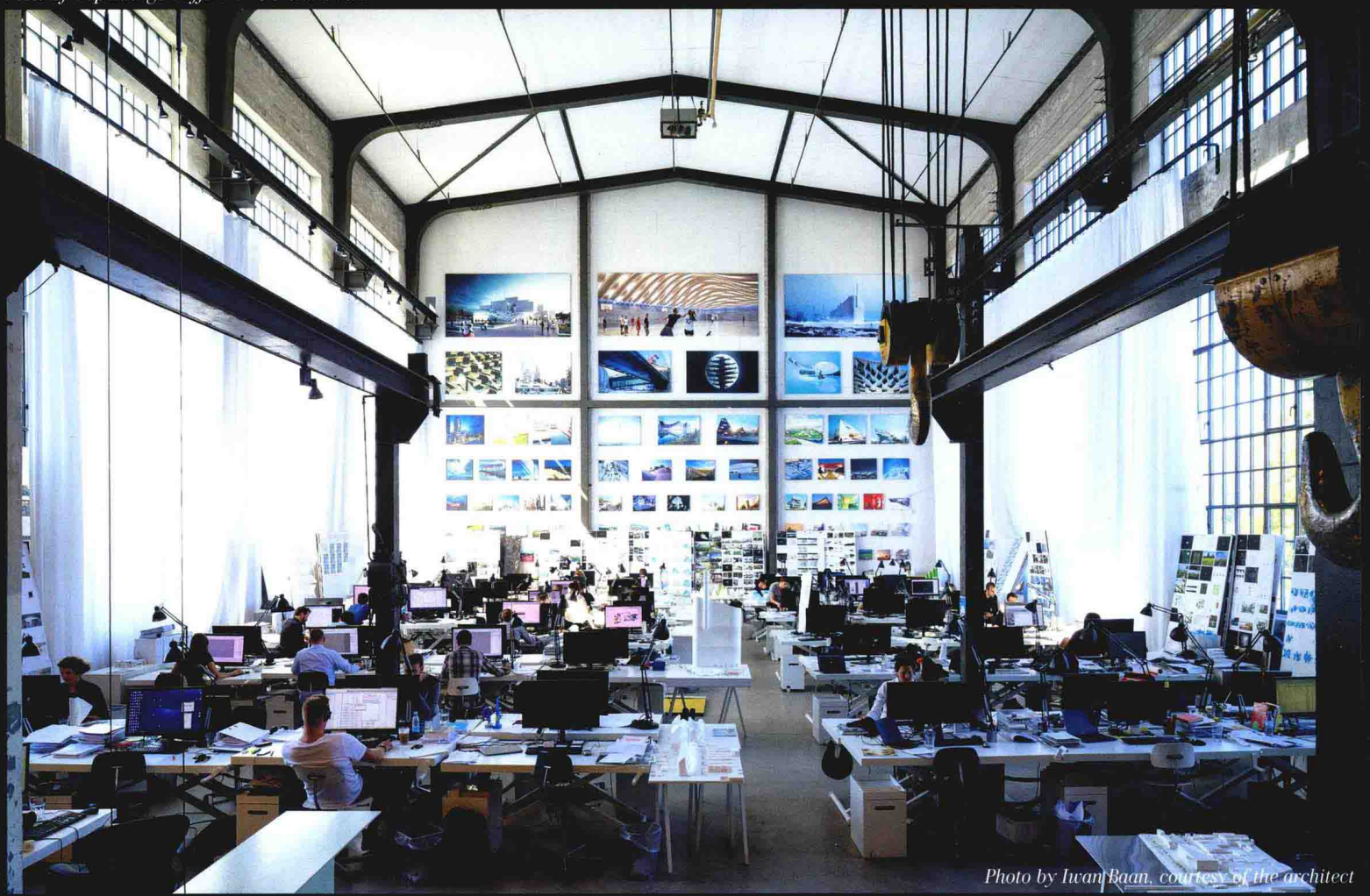
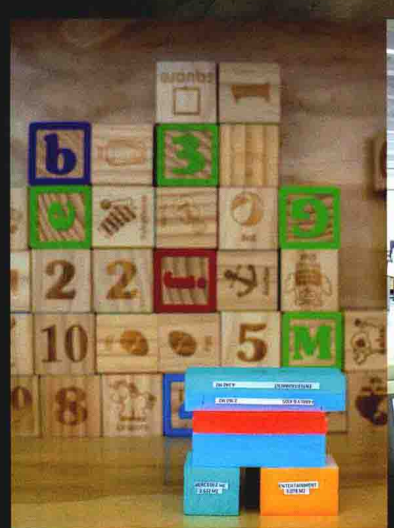


Photo by Iwan Baan, courtesy of the architect

View of New York office / 纽约办公室



Photos by Paul Godwin, courtesy of the architect

BIG is a Copenhagen and New York based group of architects, designers, builders and thinkers operating within the fields of architecture, urbanism, research and development.
The office is currently involved in a large number of projects throughout Europe, North America, Asia and the Middle East.
BIG's architecture emerges out of a careful analysis of how contemporary life constantly evolves and changes. Not least due to the influence from multicultural exchange, global economical flows and communication technologies that all together require new ways of architectural and urban organization. We believe that in order to deal with today's challenges, architecture can profitably move into a field that has been largely unexplored. A pragmatic utopian architecture that steers clear of the petrifying pragmatism of boring boxes and the naïve utopian ideas of digital formalism. Like a form of programmatic alchemy we create architecture by mixing conventional ingredients such as living, leisure, working, parking and shopping. By hitting the fertile overlap between pragmatic and utopia, we architects once again find the freedom to change the surface of our planet, to better fit contemporary life forms.

BIG立足于哥本哈根和纽约，是由从事建筑设计、城市规划、研究与开发领域的建筑师、设计师、建设者和思考者一起组成的团队。目前，BIG进行着大量的建筑项目，它们分别位于欧洲、北美洲、亚洲（尤其是中东地区）。BIG的作品根植于对不断发展变化的当代生活的深入剖析。多元文化的交流、全球经济的动向以及信息技术的发展，这些都对建筑和城市结构提出了新的设计要求。BIG认为，为了应对现今的这些挑战，建筑可以有益地介入一些未曾涉足过的领域。实用的乌托邦建筑体系，将规避僵化的实用主义的枯燥方体和数字形式主义单纯的乌托邦想法。就像程序化的炼金术一样，BIG整合了日常起居、娱乐休闲、工作、停车以及购物等诸多传统要素来打造建筑。通过探索实用主义与乌托邦之间优渥的交集，建筑师将会重获为更适于当代生活方式而改造地球表面的自由。

（吴瑞香 译）

Interview:

The Big Picture

Bjarke Ingels
Interviewer: Jeffrey Inaba

访谈：
大未来
比雅克·英格斯
访谈者：杰弗里·英娜巴
许嘉 译

Jeffrey Inaba (JI): BIG projects have a simple idea and mind-boggling complexity. The classic BIG project for me is one that has a super understandable form. For example, Amager Resource Center / ARC (See pp. 36–45) in Copenhagen looks like a ski slope. At the same time, the architecture is performing on many different levels: functionally, it's producing energy while also serving as a park; symbolically, it's a piece of serious infrastructure but it's safe enough for people to inhabit; in appearance, it's a relatively tall building but it looks like a mutation of nature. People can easily grasp the concept of the architecture and meanwhile it offers new combinations of program, challenges what we assume about a building's typology, and asks us to consider a new architectural image. While the diagram of the building may be very simple and legible, ultimately the layered experience of the building is what is memorable. On closer inspection the building reveals a different world, uncharted territory that we are unaccustomed to. Can you paint a picture of this double life of BIG's architecture?

Bjarke Ingels (BI): It stems from our obsession with the architectural game of Twister: how can we resolve all of the things we are asked to do in a way that also adds 10 additional uses. We pile on demands until it forces our architecture out of the standard solution and into more bending attempts to solve mutually conflicting desires. It isn't enough to just do what you are told. It becomes a better building for the community when it serves more purposes, and it also becomes more interesting architecture. It is something that we love to play with – this idea that you can do both.
I've lately become increasingly aware of how mammalian we are. [Laughter]. For the contemporary human being it's easy to be a lot in your head and not in your physical body. But architecture is inherently physical. In our case, we use our heads to dissect a situation into its constituent parts in order to be able to re-combine things into new solutions. The thought process enables us to come up with a very clear concept. But the rigor of the analysis isn't the driving force behind what we do. At the end of the day those operations serve a desire for a certain physical outcome of the building that alleviates a real urban concern.
The clarity of the initial concept doesn't dumb a project down – rather it forces the architects to come up with alternative solutions to conventional challenges. You are right that it doesn't eliminate variety. On the contrary, it forces unexpected moments to occur. When you don't have a clear concept, but rather a more diverse series of gestures, everything is already so blurred that the concept offers little resistance against all the practical obstacles that you encounter as the project gets realized. But when you have a single strong idea, you will encounter endless issues that need to be resolved, and by refusing to "normalize" your design concept, you are forced to invent to make the project happen. VIA at West 57th Street (See pp. 66–77) is a good example of that at the big scale. The hyperbolic paraboloid roof has been shaped by our effort to seamlessly resolve roof access, rails for building maintenance units, window cleaning, roof drainage, handrails, glare prevention, and snow control into one single swooping saddle shape of a roof. Countless little inventions have determined its form and tectonics.
Our attempts to resolve the connections between the existing concrete dock and the new steel and glass bridges with the Danish National Maritime Museum (See pp. 106–115) in Helsingor have created a whole series of architectural alternatives. The fan-shaped landings on the big restaurant stair preserve a simple slope towards the dock while providing the required landings inside. The handrail along the top of the zigzag bridge doubles as a long-span structural element and the anchor chain on the level below supports a suspended floor. These moments of architectural invention have only happened because we insisted on the clarity of the point of departure. The simplicity of an idea increases the complexity of the architectural experience.

JI: I can think of architecture projects today whose organization, construction details, and material innovations all are major contributions to our field. But the buildings are predictable. Walking through the spaces reinforces the clear organization one sees immediately upon entering through the door: great work, but no surprises.
There are also buildings that have a very clear concept that is carried through into the creation of an inventive plan, programming, and sequences of space. And in addition, they have spaces, details, colors, or materials that create a singular experience independent of the overarching concept; a kind of surprise that could not have been anticipated based on an understanding of the organizing principles.
Where would you situate BIG's work? How do BIG's design ideas materialize in the experience of its buildings?

BI: For me, the first category has to do with some basic elements of architecture. A major part of what architects do is try to get the most impact out of modest means. We try to let the form, function, site, circulation, orientation, light, air, and material come together in some kind of original synergy. We attempt to make things appear simple and effortless knowing

杰弗里·英娜巴（JI）：BIG的项目往往概念简单，但本身又极其复杂。对我来说，BIG的经典项目都有着非常易于理解的形式。比如说位于哥本哈根的阿迈厄能源中心（见第36–45页）项目，它看起来就像一个滑雪坡，但建筑本身在各个层次上都大有文章。功能上，它制造能源的同时也作为公园供公众使用；象征意义上，它虽然是具有危险性的基础设施，但人们在这里活动时也足够安全；外观上，这座高大的建筑看起来又像是自然存在的某种演化。人们可以很容易地读懂建筑的概念，而实际的功能组合又采用了新的思路和方法，对既有的建筑类型提出了新的挑战，引发人们对于新建筑的遐想。建筑的架构非常简洁、明晰，但多层面的建筑体验，最终会给人们留下深刻的印象。近距离观察时，它会为我们展示一个完全不同的世界，不一般的未知的领域。能否请您描述一下BIG建筑作品中的这种双重状态？

比雅克·英格斯（BI）：这个项目源自我们特别爱玩的建筑版扭扭乐游戏——怎样才能在满足所有要求的同时，增加10种新功能？我们反复地堆叠这些功能要求，直到不得不另辟蹊径、尝试更迂回的办法来解决这些相互矛盾的需求。只按照指令设计是远远不够的，当建筑满足了更多的功能用途后，它才能更好地服务于这个社区，也才能成为更有趣的建筑。这就是我们乐此不疲的设计思维——一举两得。

我最近越来越深切地意识到我们人类的动物属性（笑）。当代人容易光说不练，而建筑本是一件身体力行的事情。我们在遇到一些情况的时候，通常会先在头脑中将某种情况拆解分析，然后重新组合形成新的解决方案。这个思维过程能够帮助我们确立非常清晰的概念，但驱使我们工作的并非是这种分析的严谨性。我们的目的是希望通过这些工作，为建筑本身带来具象的结果，解决一些城市问题。

清晰的初步概念并不会让项目变得更容易，反而会迫使建筑师寻找其他的解决方案来应对传统的挑战。的确，一个明确的概念并不会消除其他可能的方案，相反它会引发很多意想不到的情况。如果没有一个明确的概念，而只是一些泛泛的模糊的操作，那么你的概念就很难与项目在实现的过程中所遇到的实际阻碍抗衡。而当你有一个强有力的概念时，即使会面对无数需要解决的问题，在不断拒绝将概念“常规化”的过程中，你就会竭力琢磨出让项目实现的方法。在我们的大型项目中，西57街VIA大楼（见第66–77页）就是一个很好的例子。我们将双曲抛物面屋顶分解，将屋顶通道、用于住宅维护的围栏、窗户清洁、屋顶排水、扶手、防眩光和防雪设施等集合成为一个陡斜的鞍形屋顶。这些无数的小创意决定了建筑的形式和构造。

在位于赫尔辛格的丹麦海事博物馆项目（见第106–115页）中，我们试图将既有的混凝土船坞和新增的钢结构玻璃廊桥结合起来，从而创造一整套新的建筑方案。餐厅大楼梯上扇形的梯台既形成了一条通向船坞的坡道，同时也可确保室内所需的面积。沿着“之”字形桥顶部延伸的扶栏同时也是大跨度结构的构件，下方的锚链支撑着悬挂式的桥板。我们之所以会不断想出这样的创意，是因为我们一直坚持着一个明确的设计出发点。因此，想法越简单，建筑的体验越复杂。

JI：今天有很多建筑项目在结构、细部和材料创新等方面都为我们这个行业作出了重大贡献。但这些建筑都是有些老套、可被预见的。人们在这些建筑空间中穿行的过程，始终是一种对建筑内布局第一印象的加强，尽管是杰作，但却不能给人以惊喜。

也有一些建筑，概念很明晰，同时在平面、功能划分和空间次序上表现出独创性，而且还通过空间、细节、用色和材料等方面的设计创造出一种整体概念之外的奇特体验，这也许是一种结构原理无法赋予的令人惊喜的体验。

您会怎样定位BIG的项目？BIG的设计概念是如何在这些建筑营造的体验中具象表现出来的？

BI：对我来说，第一类项目与建筑的一些基本要素有关。作为建筑师，我们主要就是尽力做以四两拨千斤的事情，尽力让形式、功能、地块、动线、方向、采光、空气和材料等相互辅成、协同作用，尽力让事情变得比较“信手拈来”，而这种“信手拈来”的背后将是巨大的心血付出。无论大小项目，首先要掌握技能，这是对建筑师的基本要求。

而精湛的技能有助于我们推进项目的设计，这就好像做实验一样，可以是对组织架构的实验，应对气候的实验，或对公众参与的实验——总之是与一些给定的条件相关的实验。这些实验妙就妙在即使你知道自己为什么要做这个实验以及想要达到怎样的效果，一旦开始运作各个要素，也会出现你无法预见的事情。这些矛盾需要解决，因为一些预料之外的事件，会产生能动作用，也会产生反作用，即使我们知道这是实验动态发展的结果，但对来访者和建筑师本人来说还是会感到意外。

建筑设计，最激动人心的就是竣工项目——这种第二现实所派生出的随机、惊喜和不可预见。这时我们会想起“创造世界（Worldcraft）”这一概念，即建筑师在创造世界中的世界。作为建

that it takes tons of effort to achieve effortlessness. It is a basic requirement for the architect: to master the craft, which is fundamental to any project big or small.
That mastery serves to carry out the design of projects, which are like experiments in their own right. It can be an experiment of organization, climatic response, or public engagement – anything that is relevant to the given condition. The beauty of any experiment is that even though you know why you are conducting it, and you have an idea about what you hope to achieve, the second you set the elements into motion unforeseeable consequences start to occur. Conflicts need to be resolved. Unanticipated events trigger reactions and counter reactions. Even though the results are the consequences of the dynamics of that particular experiment, they will come as surprises to the visitor as well as to the architect.
Architecture is most exciting when what appears random or surprising or unforeseeable, has been provoked by this alternate reality the completed project represents. We came up with the notion of Worldcraft: that architects craft worlds within our world. We architects manifest constructs from the realm of ideas into the physical world. We turn fiction into fact. The more consistent those new worlds are, the more likely they are to get realized and to have a lasting impact, even inform the work of others and become part of a discourse, or affect the trajectory of architectural history if ever so slightly. In that sense, Philip K. Dick's essay, "How to Build a Universe That Doesn't Fall Apart Two Days Later" is really relevant to the profession.

JI: The idea of Social Infrastructure threads through a number of large-scale BIG projects. What does the term mean?

BI: Social infrastructure is about reconquering lost territories for social or environmental benefit. The term typically refers to the institutions in a society that take care of nurturing the population: nurseries, kindergartens, senior citizen centers, etc. What we mean is more literal. It refers to public infrastructure like road works, bridges, power plants, sanitation plants, flood protection, that is typically strictly utilitarian and the domain of the engineer.
Public infrastructure is visible in Google Maps. The general urban tissue is yellow, a cultural building is red, a park is green, water is blue, whereas infrastructure is this amorphous body of grey. It's like a void in the map. They are generally completely lost opportunities in a city. They involve massive resources, billions of dollars of public budgets but provide no social or environmental benefit or enjoyment. The big question is, "Can we start thinking about these massive public expenditures in a way that not only is built to serve their immediate function, but also to improve the environment they are a part of?"
Decommissioned pieces of industrial infrastructure lend themselves to being reinvented as amazing spaces for the social or work life of the present. By reinhabiting one it's possible to improve a neighborhood with significant upgrades. As residents of the city we shouldn't accept those grey cancerous zones on our maps.
Our Danish National Maritime Museum reinvents an old dry-dock into a museum. We ended up being the beneficiaries of a scale that would be impossible to justify for a new ground-up commission. The dry dock is dimensioned to build giant ships: it is 500 feet long, 80 feet wide and 30 feet deep. Inheriting that structure presented an amazing opportunity to escape the typical realm of reason and confinement that are associated with human-scaled programs.

JI: I see. Reusing existing infrastructure gives new life to large underused areas of the city while also creating a physical experience often not possible at the scale of buildings. Social Infrastructure also entails giving something that was modern in the past a contemporary purpose, replacing its industrial utility with a cultural or social utility.

BI: Exactly. This also applies to new construction, as with our Copenhagen Amager Resource Center / ARC. Social infrastructure becomes increasingly interesting with post-industrial clean technology. In the past, it wasn't possible for an infrastructure facility to have a public use because it was toxic and harmful. But now with clean tech you can actually combine things that were previously mutually exclusive. Because the plant produces clean power, it is no longer necessary to keep people far away. There is literally clean mountain air on the rooftop of this urban infrastructure. So we came up with this idea to turn it into a giant park – an actual Alpine slope. You'll be able to ski, hike, and picnic. There is also a 300-foot climbing wall.

JI: Social Infrastructure includes repurposing and giving a new meaning to smaller scale feature like building elements. The chimney for example was in the past something that emitted pollution, whereas here it is given new life as one part of a system that reduces it.

BI: Precisely. The exhaust from the chimney is mostly steam with some CO_2. We came up with the idea of making it puff steam rings as a celebration of CO_2 savings in place of it as a symbol of CO_2 emissions. My interest in the Amager Resource Center / ARC is not to express its "power plant-ness" but to

筑师，我们要将理念的东西具象地呈现在现实世界中，使虚构变成现实。这样创造出来的新世界，它的整合度越高，就越有可能实现，也越有可能产生深远的影响，或许是对他人的作品有所影响，或许是成为一种论述的一部分，也或许会对整个建筑史的发展有些微的影响。从这种意义上讲，菲利普·K·迪克（Philip K. Dick）的文章《如何建造一个不会在两天后就垮塌的宇宙》（How to Build a Universe That Doesn't Fall Apart Two Days Later），也确实与这个行业有关。

JI：BIG的许多大型项目中都贯穿着“社会基础设施”这一概念，这个词具体指什么？

BI：“社会基础设施”，是关于收复社会效益失地或环境效益失地的一个概念。它一般指的是托儿所、幼儿园、养老院等市民服务社会机构。而我们所说的是它更字面的意思，比如道路工程、桥梁、发电厂、环卫站、防洪防汛站等典型的严格意义上的实用型公共设施，它们隶属工程师的专业范畴。

谷歌地图上标有公共基础设施。城市的组织网络一般是黄色的，文化建筑是红色的，公园是绿色的，水是用蓝色标注的，而基础设施的标注是这种不规则的、好像地图缺口一样的灰色块。它们大多是城市中彻底的失落空间，耗费了大量的资源以及数十亿美元的公共财政预算，却没有带来相应的社会效益或环境效益，也无法带给人们一种愉悦感。所以一个大问题来了：“我们能否开始考虑如何让这些消耗庞大公共开支的项目，不仅满足人们直接的功能需求，同时也能改善它们所在区域的环境呢？”

废弃的工业基础设施如今被改造为很棒的社交和工作空间。通过再次居住生活使用，整片街区都有可能得到很大的改观。作为城市居民，我们不应该对地图上出现的这些灰色癌变区域视而不见。

我们的丹麦海事博物馆项目是把一个老的干船坞改造成了博物馆。这一次我们利用了基地尺度，放弃了地上建筑的方案。这个干船坞曾被用来建造过长500ft（约152m）、宽80ft（约24m）、深30ft（约9m）的巨型船舶。由于沿用了原有的结构，那么我们就不用再受制于行业理性以及涉及人体尺度的常识性功能设置。

JI：明白了。再度利用这些现有的基础设施，就复苏了我们城市中大片未被充分利用的区域，也会创造出一种我们平常不会有的建筑尺度的体验。社会基础设施也需要赋予昔日摩登一种当代意义，用它的文

give people new ideas about what such a thing can be. Just as with the chimney, when you encounter the plant you might be confused at first but then super excited because instead of seeing an industrial megastructure you will see pine trees and downhill skiers. It gives people an alternative idea about what infrastructure can be.
Creating a new image of what infrastructure can be applies also to East Side Coastal Resiliency Project (See pp. 14–19) called the Dryline. Our agenda is that we will have succeeded when you go to Manhattan's waterfront and at no point do you get any sense that anyone did anything to protect the city from flooding. Flood protection is traditionally designed by the Army Corps of Engineers as a purely technical feat. We've shown the value of architecture and public engagement by proposing 7.5 miles of flood protection that will be completely nested into all of the things you would otherwise love to find, like slopes, hills, pavilions, and parks. Some of those elements will end up looking a little bit funky but you might just think it's the product of joyful design when in fact it's really performing hard to prevent the next Sandy from destroying the city.

JI: Let's talk about the small scale. Google Campus (See pp. 20–23) isn't a small-scale project but it would be great if we could discuss its details. Some of the employed materials similarly serve a dual purpose: they have an environmental function, which in turn produces an another image of how architecture performs or functions.

BI: If the Twister challenge at the big scale is to turn a giant monster into something enjoyable, like into a recreational mountain as with the Waste-to-Energy plant, then at the small scale it's about finding ways to integrate utilities into the material palette of the project.
I hope our buildings look different because they perform differently. "Necessity is the mother of invention" is especially true in architecture. Because the only way to escape the feeling that you are arbitrarily trying on different materials is when you have committed yourself to finding a better solution to the standard requirements, where the project hasn't been designed by aesthetic considerations alone, but it has been generated by parameters and resolved by building techniques. An aesthetic that is discovered through experimentation is far more beautiful and far more fresh than anything we could have designed ourselves in the absence of a performative framework.
The Google Campus roof canopies are long span opaque membranes. In the gap between these "handkerchiefs" we get the perfect amount and distribution of daylight while minimizing overheating and glare. The actual spanning fabric is made of shingled PVs. We are using it for its aesthetic qualities as well as for its power producing capacity. PVs are no longer an attached panel component; they are a building material just like woodchip shingles on a San Francisco townhouse facade. That means all of the sunlight, every photon that hits the building is either let in to reach the desired daylight levels or harvested as energy. The utility of the building becomes seamlessly integrated into its materials and appearance. In that sense, the utilities of architecture are disappearing. They are being incorporated into materials, which in the case of the Google roof is then applied to a form that is shaped for a desired environmental purpose.

JI: With smaller scale BIG projects there is a productive tension between the diagram of the building and the design's material and tectonic qualities. In the large-scale projects there is a more direct correspondence between the diagram and form, whereas in the smaller ones the form is both true to the diagram and deviates slightly from it, resulting in a fun, trippy experience that is made possible by the material and building technique.

BI: I think you'll really get a kick out of the Serpentine Pavilion 2016 (See pp. 154–159). Due to the time constraints of the project, the first thing we did was select the material. I went to the factory of Fiberline over Christmas and met with the owners and their top engineers. We brainstormed how we could make a big pavilion with the lightness and translucency of fibreglass elements. The cavity wall of stacked shelves was the result. The pavilion will be made out of bricks, but instead of being solid masonry they are frames. The thickness of the frame is like 6 mm. It will be 14 m×27 m in plan and is virtually transparent. There is hardly any material. When standing east to west, you will be able to look straight through it. But when you look north to south it will be this expressive sculptural shape that's more opaque. The project experiments with a traditional architectural element and construction technique, but involves this ultra-light material that is so thin that when you walk around the pavilion it will transform from material to immaterial, from rigorous to sort-of expressive, curvilinear to orthogonal. We love that the experience of the overall structure changes: that it can be two things in one. And we are achieving it through the method of construction. It's part of our ongoing love affair with Legos: using identical building elements to create infinite variations and expressions.

JI: Collective Intimacy is a concept that seems to tie together your thinking at the big and small scale. How did the idea come about?

化和社会价值取代原有的工业用途。

BI：确实如此。新建筑也是这样，比如我们的哥本哈根阿迈厄能源中心/ARC项目。后工业清洁技术出现后，社会基础设施变得越来越有趣了。在过去，含有毒有害物质的基础设施是不可能向公众开放的，但有了清洁技术，那些在以前水火不相容的事情，现在竟也能被我们结合在一起了。因为是生产清洁能源的工厂，所以它已经不再需要拒人于千里之外。这座城市基础设施屋顶上的空气就是清洁的大山空气啊。于是，我们想把它设计成一个巨型公园——一个真正的高山滑雪坡，人们可以滑雪、登高、野餐。它的上面还会有一面300ft（约91m）高的攀岩墙。

JI：社会基础设施也会赋予较小型建筑元件新用途和新意义的。比如烟囱，过去是用来排放污染气体的，而在这个项目中它被赋予了新的生命，成为减少污染气体排放系统的一部分。

BI：正是如此。从烟囱排出的主要是蒸汽和一些二氧化碳。所以我们就想到了让它吐出蒸汽烟环来象征性地庆祝碳的减排，而不再是一种碳排放的标志。对阿迈厄能源中心/ARC这个项目，我并不想它表达发电厂就是一个“发电的厂”，而是想借它告诉人们这个设施还有新的可能。这个烟囱也是，当第一次看到这样的设备时，你也许还是云里雾里，但随后就会欣喜若狂。因为你的大脑接收到的是超级工业建筑，而眼睛接收到却是满山的松树和成群的滑雪者。它将会颠覆人们对基础设施的理解。

刷新基础设施形象的做法，我们同样也用在了被称为“Dryline”计划的东海岸弹性防洪项目（见第14–19页）中。当你来到曼哈顿的滨水区时，却丝毫感觉不到有谁在防洪，那样我们就成功了。防洪工事最早是由美国陆军工程兵团设计建造的，是一项完全技术性的伟大工程。我们设计的这条长达7.5mi（约12km）的防洪带既肯定了原有建筑的价值，又体现了公众参与的意义。这些防洪设施都将是人们喜闻乐见的形式，比如坡道、小丘、凉亭和公园等。对其中的一些形式，你可能会觉得有点古怪，但其实它们是我们精心做的设计，将会努力为城市抵御下一场“桑迪”级的飓风。

JI：我们来谈谈小尺度的项目。谷歌总部园区（见第20–23页）不算是一个小项目，但我们可以谈谈它的细节。项目上使用的一些材料发挥着双重作用——材料本身具有环境功能，反过来这种环境功能又将会生成与建筑性能和功能相关的另一种形象。

BI：如果要扭扭乐游戏适用于大型项目，那么它面临的挑战就是如何把一个庞然大物变成一个令人愉悦的东西，比如哥本哈根阿迈厄能源中心/ARC项目，我们把它建成了一座乐游山；如果是小型项目，就是要找到将功能与项目整体材料融合在一起的方法。

我希望BIG做的建筑是因为性能不同而显得不同。“需要是发明之母”，对建筑设计来说尤其如此，因为只有在既定要求之外找到更好的解决方案，才不会让你觉得自己在材料选择上太过随意，项目的设计不仅要基于审美的考虑，也需要运用参数运算和建造技术。这种在实验中发现的美，远比我们自己做的没有什么架构的设计更美也更新鲜。

谷歌总部园区的屋顶天篷是一个大跨度的不透明薄膜。我们从这些“手帕”间的空隙中获得充足、均匀的采光，同时室内的过热程度和眩光也可被降到最低。天篷采用薄膜太阳能电池膜材，这既满足了审美要求，也可以保证太阳能电池的发电能力。现在太阳能电池板已经不只是用来连接的面板了，它们已经成为一种建筑材料，就像典型的旧金山别墅立面上使用的木瓦片一样。这意味着照射在建筑上的所有太阳光以及每一个光子，要么被用于室内采光，要么被太阳能电池板吸收转化为能量。从而建筑设备与它的材料和外观紧密地结合在一起。从这个意义上讲，建筑设备正在逐渐消失，也正在被纳入材料范畴。在谷歌总部园区这个项目中，建筑的形式本身就是由环境需求来决定的。

JI：在BIG的小型项目中，建筑架构、设计材料和建造品质之间存在着一种积极的拉扯。在大型项目中，建筑架构和形式之间的关联更直接，但在小型项目中，形式既忠于架构，又稍微偏离架构，同时会通过材料和施工技术，创造出有趣而迷幻的奇特体验。

BI：我觉得你会非常喜欢我们2016年蛇形画廊展馆的设计（见第154–159页）。做这个项目的时候，由于时间紧迫，我们做的第一件事就是选材料。我在圣诞节期间去了Fiberline公司的工厂，见到了厂长和他们最顶尖的工程师，就如何用轻盈半透明的玻璃纤维做出一个大型展馆，我们进行了一次头脑风暴式的讨论。最后决定用架子堆叠出一个空心墙体。

BI: One genre of projects that we have dealt with lately that overlaps between large and small scales is the stadium. It combines the need at the big scale to provide multiple uses and the opportunity at the small scale to focus on the materiality and tectonics of a building. As contradictory as it may seem, the holy grail of stadium design is figuring out how to create Collective Intimacy: the challenge is to combine the logistics of moving 65,000 people in and out without causing an insane traffic jam, while allowing tens of thousands of fans to feel part of an intimate ritual.
We are working on the design of the Washington Redskins Stadium (See pp. 52–55). In one sense, the stadium is an exercise in numbers: number of seats, total exit stair capacity, car parking, bottlenecks, arrival and exit times, access to concessions, number of suites and VIP venues, area of billboards and advertisement. In another sense, it is an exercise in creating a communal feeling of togetherness between the supporters and players. Nesting the history of the team into the architecture becomes paramount. Imprinting the team into the bones of the building – not through paint or print – but rather through the bowl layout at the big scale, and the nascent attributes of the materials and details at the small scale become a way to make the players and their fans feel this stadium is indeed their home. Having spent the last decade on the architecture of extra large and extra small projects, Collective Intimacy is the obvious new focus for exploration!

JI: Now that BIG is a little over a decade old, what do you envision for its next tens years?

BI: As part of our design explorations we stumble upon things that we find intriguing and impactful that merit more exploration. As such we need to keep pursuing some of those ideas, forms, elements, materials, until we have satiated our appetite for them. And to see the return of an opportunity that allows us to explore something that we have been curious about in the past excites me a lot.
However nothing is more breathtaking than that fragile, feeble moment of stepping on to brittle ice for the first time after the first nights of frost: to see if it can hold and where it might take you. Often it can't and you fall through and your efforts are wasted. But sometimes you find firm ground that didn't exist yesterday that allows you to take all your experience and ideas on to whole new shores. I grew up by a lake and every winter the frozen water meant that our garden expanded in all directions open for play and adventure. At BIG, whenever we discover new approaches – or decide that something that used to be boring is now potentially interesting – it represents whole new avenues of exploration. Our first decade of work dealt with trying to inject innovation into a limited set of typologies, with even more limited resources. Now we are involved in a much wider range of commissions, from public to private, from student housing to high-end condos, from municipal museums to Manhattan skyscrapers, from flood protection to power production. We suddenly find that we have a vastly greater territory to explore with far more ingredients to experiment with.

p. 9, above: Aerial view of Danish National Maritime Museum. Photo by Dragor Luftfoto. p. 9, middle: Amager Resource Center. Image by MIR / BIG. p. 9, below: Serpentine Pavilion 2016. All images on p. 9 courtesy of the architect.

9页，上：丹麦海事博物馆的鸟瞰图。
9页，中：阿迈厄能源中心/ARC。
9页，下：蛇形画廊展馆2016。

Jeffrey Inaba is a principal of INABA WILLIAMS, an architecture firm based in Brooklyn. Jeffrey was born and raised in California and studied at Harvard University and University of California, Berkeley.
His unique background in research has led to the office's imaginative approach to design. He believes that careful analysis of a project's challenges will lead to an improbable and unique solution that will allow people to experience the built environment in a new way. INABA WILLIAMS has completed designs for Red Bull Music Academy New York, Whitney Museum of American Art, Red Bull New York Office, Donor Hall at the New Museum, Van Alen Institute, and Public Art Norway.
He has conducted research commissions about design, culture, and technology for YouTube, Audi, Hyundai, and Citi. Before starting INABA WILLIAMS he was a principal of AMO.
Jeffrey enjoys writing and editing and has completed two books, *Adaptation: Architecture, Technology and the City* (2012), and *World of Giving* (2010). He has edited numerous issues of magazines exploring architecture's engagement with technology, counterculture, and building systems.

展馆将会由砖砌成，但这种砖不是实体砌块而是一个个的框架，框架厚6mm。展馆的平面尺寸是14m×27m。展馆几乎是透明的，基本没有任何材料。从东西向看，人的视线可以穿过整座展馆；但南北向的视野则被展馆极具表现力的雕塑式外形阻挡。这个项目是基于传统的建筑元素和建造技术的试验，但它所采用的超轻材料非常薄，以至于人们在展馆四周移动时，会感受到它在有形和无形、理性与感性、曲线与直线之间的交替变化。我们喜欢这种建筑整体结构不断变化带来的体验——一座建筑，两种形态。通过这种建造方法，我们实现了这种体验。这跟我们爱玩的乐高如出一辙：用相同的构件去创造出无限的变化和表达。

JI：“集体亲密性”似乎是贯穿您对不同规模项目的思考的一个概念。这个概念是如何生成的？

BI：我们最近进行的一类项目是体育场，它同时包含了大小两种尺度，大尺度会满足建筑对多功能的需求，小尺度会更关注建筑的材料和构造。这看似矛盾，场馆设计的“圣杯”在于弄清楚怎样才能打造集体的亲密关系，而这个挑战在于既要让65,000人畅通无阻地进出场馆，同时也要让成千上万的粉丝感受到亲密的氛围。

我们目前正在做华盛顿红皮队体育场的设计（见第52–55页）。从某种意义上说，体育场设计主要是对数字的运用，座位数、出口楼梯总容量、停车场容量、关卡口、入场和离场时间、小卖部通道、包厢和VIP区域数量、告示/广告牌面积等等。而在另一种意义上，它研究的是如何在观众和运动员之间营造出整体感。将球队的历史融入建筑变得非常重要。我们希望能够将球队印刻在建筑的骨骼上，不是通过绘画或印刷，而是通过大尺度方面的碗状结构和小尺度方面的材料细节的所有属性，让运动员和他们的粉丝能有一种家的归属感。过去的十年，我们做过很大的项目，也做过很小的项目，在之后的探索中，我们将会更关注集体亲密性！

JI：现在BIG已经成立十多年了，对于下一个十年，您有什么计划吗？

BI：我们在设计探索过程中，会偶然发现一些有趣和有意义的事情，而这些事情也值得我们更深入地去探索。所以，我们需要不断地研究一些概念、形式、元素、材料，直到满意为止。而且更令我激动的是，我们会有机会探索过去一直好奇的东西。

但没有什么会比人第一次踩在薄冰上的那种脆弱无力感更刺激的了，不知道冰会不会裂，如果不会裂自己会去向哪里。通常，冰层很快会碎裂，你会掉下去，之前的努力都付之流水。但有时候，你会走到之前未曾发现过的坚固冰层，于是就能把自己所有的经验和想法都带到新大陆。我从小在湖边长大，每年冬天湖面都会结冰，于是整片湖就都变成了我的游乐场，我可以尽情地去游戏和冒险。在BIG，每当我们发现一种新方法或从那些曾经觉得无趣的事情中找到有趣的可能时，这些都代表着全新的探索。我们的第一个十年主要致力于将创新注入有限的建筑类型中，而这其中我们能够运用的资源更加有限。如今，我们的项目范围更宽更广了，从公共建筑到私人项目，从学生宿舍到高端公寓，从市政博物馆到曼哈顿的摩天大楼，从防洪工事到能源保护。我们突然发现，我们的实验资源比之前多了很多，要探索的领域也更大了。

杰弗里·英娜巴（Jeffrey Inaba）是总部位于布鲁克林的INABA WILLIAMS建筑事务所的主持建筑师，出生于美国加州，先后在哈佛大学和加州大学伯克利分校学习。

他独特的研究背景使事务所的设计方法极具想象力。他认为，仔细分析项目所面临的挑战就会带来独创性的解决方案，让人们以新的方式体验建筑环境。INABA WILLIAMS建筑事务所先后完成了纽约红牛音乐学院、纽约惠特尼美国艺术博物馆、纽约红牛办公室、新博物馆的捐赠者大厅、凡艾伦协会和挪威公共艺术机构等一系列项目。

杰弗里曾受YouTube、奥迪、现代和花旗银行委托进行设计、文化和技术相关的研究。在成立INABA WILLIAMS建筑事务所之前，他曾担任AMO建筑事务所的主持建筑师。

杰弗里还从事写作和编辑，并已出版了《适应：建筑、技术和城市》（*Adaptation: Architecture, Technology and the City*）（2012）和《给予的世界》（*World of Giving*）（2010）两部著作。此外，他也参与编辑了多本杂志期刊，从技术、反传统和建造系统的角度对建筑进行探索。

East Side Coastal Resiliency Project

New York, USA 2014–

东海岸线弹性防洪工程

美国，纽约 2014–