

Title: **Exploring Geometry and Form in Tall Buildings**

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Subjects: Architectural/Design  
Building Case Study

Keywords: Design Process  
Form  
Mixed-Use  
Structural Engineering  
Wind Loads

Publication Date: 2016

Original Publication: Cities to Megacities: Shaping Dense Vertical Urbanism

Paper Type: 

1. Book chapter/Part chapter
2. Journal paper
3. **Conference proceeding**
4. Unpublished conference paper
5. Magazine article
6. Unpublished

# Exploring Geometry and Form in Tall Buildings

## 探索高层建筑的几何结构和外形



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Chris Wilkinson is a principal at WilkinsonEyre, which he founded in 1983. Combining a lifelong interest in art with a fascination for science and technology, Wilkinson has been responsible for the concept design of many of the practice's tall buildings, including 150 Leadenhall Street, the Crown Sydney Resort Hotel, and Guangzhou International Finance Center. Wilkinson was awarded an OBE in 2000, elected to the Royal Academy in 2006, and made an honorary FAIA in 2007. He was also awarded honorary doctorates from Oxford Brookes and Westminster University, as well as a visiting professorship at ITT and Harvard GS.

克里斯于1983年在英国创立威尔金森艾尔建筑事务所。克里斯结合了他对艺术的兴趣和创新科学技术之热情，一直负责多个英国本地或国际性的高层建筑项目的概念设计工作，包括澳洲皇冠悉尼度假酒店、英国伦敦的150 Leadenhall大楼和中国广州国际金融中心等等。克里斯于2000年被授予OBE，2006年入选皇家艺术院，2007年成为名誉FAIA，曾在牛津布鲁克大学和威斯敏斯特大学被授予名誉博士，曾是ITT和Harvard GS的客座教授。

### Abstract | 摘要

*Using four tower designs on four continents – the Guangzhou International Finance Center in China, the Crown Sydney Resort Hotel in Australia, 45 Bay Street in Canada, and 150 Leadenhall Street in the UK – Chris Wilkinson will explain Wilkinson Eyre's approach to designing tall buildings with sculptural form.*

*For most of the 20th century, towers have been conceived as vertical extrusions, usually rectangular or circular with a central core and a simple structure to provide lateral stiffness; why would you do anything else? Well, it's because we can, and indeed, there is a demand for innovative and exciting tall buildings in particular locations. Towers can make wonderful landmarks, but they have to be special. Throughout history, architecture has evolved in line with technological innovation. Recent advances in software have opened up enormous opportunities for more complex structures and now is the time to explore new forms.*

**Keywords: Architecture, Form, Hotel, Office, Structure, Supertall**

克里斯会通过中国广州国际金融中心、澳大利亚悉尼皇冠、加拿大多伦多海湾公园中心、英国伦敦150利德贺街四座位于不同地区的超高楼以解释设计与雕塑形式的建筑设计方法。

二十世纪大多数的建筑高楼也被设定为垂直挤压，通常是矩形或圆形的一个核心，和核心提供侧向刚度简单的结构。为何不作别的设计呢？...嗯，这是因为我们是可以做到的，并且在特定的地点对于追求创新和令人雀跃的高层建筑的需求仍然存在。超高层建筑能做精彩的地标，然而他们必须要独特的。纵观历史，建筑一直在不断符合技术创新而发展。在最新的软件进展，开辟了巨大的机会；对于复杂的结构，现在是最佳时机去探索更新的形式。所示的项目将包括：

**关键词：建筑，形式，酒店，办公楼，结构，超高层建筑**

This paper describes the design approach to four WilkinsonEyre-designed towers on four continents. Each unique project is related to its particular brief and context, and each explores geometry and form in a variety of ways, ranging from the conventional rectangular vertical extrusion in Toronto, to the sculptural curvilinear form in Sydney, the deceptively simple looking trochoidal tower in Guangzhou, and the understated stacked rectangles in London.

本文描述了四座位于不同地区的超高层建筑设计方法。每座建筑各具特色，并与其特定的设计要求和背景息息相关。每座建筑均以不同方式对几何结构和外形进行了探索，从多伦多的传统矩形垂直伸出外形到悉尼的雕刻曲线外形、广州的简约外观的锥形塔楼以及伦敦的保守多层矩形，这些均与规划限制相关。四座建筑均由威尔金森艾尔建筑事务所（WilkinsonEyre）精心的设计。

### Guangzhou International Finance Center

The first tower project was won in an international competition back in 2005 and, at that time, the practice was relatively small and had no previous experience in the design of tall buildings. However, the competition was run by the City of Guangzhou, which was relatively open-minded about procurement procedures. WilkinsonEyre, which was in

### 广州国际金融中心

於2005年成为第一座通过国际竞标获得的超高层建筑项目，那时威尔金森艾尔建筑事务所规模相对较小，而且在超高层建筑设计方面经验不多。但是，国际竞标由广州市组织负责，其采购工序上相对抱有开放态度。

2005年8月，威尔金森艾尔建筑事务所与奥雅纳公司（Arup）组成的联营中标，该

a joint venture with Arup, was selected in August 2005 with work expected to begin on-site by the end of that year. It was a challenging program by any standards, but it was achieved when the project was completed in 2011 for the Asian Games, followed by the hotel opening in 2012.

The result is a 440-meter tower with 103 stories, including 165,000 square meters of office across 69 floors and a Four Seasons Hotel located on the top 34 stories with its reception on the 70th floor. At that time, the building would have been one of the tallest buildings in the world, but of course, things have moved on and there are now many taller supertowers. In terms of the architecture, the desired aesthetic was for an “**elegant simplicity**” with no frills or unnecessary decoration (Figure 1).

A curved triangular plan was chosen for its efficient layout and because, in studies, it proved to be effective in shedding wind load. Following wind tunnel testing, an estimated 20 percent was saved on the supporting structure by pointing a corner of it into the prevailing wind.

The seemingly simple geometry of the vertical form is surprisingly complex: it tapers out from the base to a maximum girth at a third of its total height before reducing again to a minimum at the top. Each of the three faces of the building are set out on a radius of 5.1 kilometers, which was a geometry determined through 3-D modeling and rapid prototyping models. Many options were considered, but the final form was selected, as it gives the most generous floor space for the offices at the lower levels and the minimum depth for the single aspect hotel floors at the top.

In plan, the outer surface of the three sides is also curved with a radius of 71 meters and the corners have a tighter radius of nine meters, which is constant; although, each floor does have a different area because of the angle of the outer skin (Figure 2).

In towers of this height, the central core cannot provide sufficient lateral stability and, with the hotel accommodation at the top, movement had to be restricted to a minimum. Therefore, a decision was made with the engineers, Arup, to go for an **exoskeletal structure**. Much analysis went into the design of this structure, both to achieve maximum efficiency in engineering terms, all while carefully considering the visual aspects of the design. The drawings explore the pattern of the diagrid in 3-D in order to ensure the best node set out.

项目计划于同年的年底破土动工。事务所当时遇上各种标准性的挑战，但最终该项目于2011年竣工，酒店于2012年正式开始营业。广州国际金融中心是一座超高层建筑，楼高440米，共103层，1至69层是办公面积，共计165,000m<sup>2</sup>。70至103层是四季酒店，酒店接待大堂设于第70层。当时，该大楼是全球最高建筑之一；当然，在日新月异的发展下，目前出现了更多超高层的建筑。从建筑学角度而言，期望达到“**简约优雅**”无过分装潢或刻意的装饰之美学（图1）。

该项目建筑平面采用圆弧三角形以确保其有效布局，且经研究证明，圆弧三角形平面有利于分散风力荷载。风洞试验表明：通过将支撑结构的一角指向盛行风，支撑结构约承受20%的风力。

垂直外形的几何机构看似简单，但其复杂程度却是出人意料的，因为该建筑从底层往上逐渐变宽，随后又逐渐变窄至顶部。该建筑共有3个立面，每个立面均位于5.1 km的半径范围内，这是通过3D建模和快速成型模型确定的几何结构。当时曾考虑多种选择方案，但最终选定的外形，主要取决于其能够保证低层办公室提供最宽大的占地面积，顶部深度最小的单一方向为酒店楼层。

按照平面图，三个立面的外侧表面也是圆弧形，半径71米，转角处半径9米，尽管因外侧表面角度导致每层面积不同，但这两个半径是恒定不变的（图2）。

对于具有这种超高层建筑而言，中央核心无法提供足够的横向稳定性且由于该楼顶部设有酒店，移动须限制在最小。因此，奥雅纳公司的工程师决定采用**外骨骼式结构**。在这种结构的设计中进行了大量分析以便保证在工程学方面达到最佳效益，然而在视觉效果上也进行了审慎的考虑。为确保最佳节点布置，通过图纸在3D模式下



Figure 1. Guangzhou International Finance Center (Source: Wilkinson Eyre Architects)

图1. 广州国际金融中心（来源：Wilkinson Eyre建筑事务所）

对斜肋构架方案进行了多方面的探索。

考虑到结构的优先性，钻石形结点之间的斜肋构架高度可达54米且有利于施工，外骨骼式结构采用混凝土填充钢管预制而成。该规模几乎是与结点连接处（高度超过2层楼高）成比例的且在大楼底部钢管直径为1.8米，到了顶部楼层，直径减少至900毫米。

显然，由于该建筑外立面为圆弧三角形，这种结构的布局极其困难，但是当地中国承包商在规定的范围内成功实现。

结构的核心需要承载来自于建筑楼层的大部分重力荷载，并通过地板横梁与斜肋构架结构相连，形成一套坚固的管中管体系。尽管核心是钢筋混凝土内简单的垂直

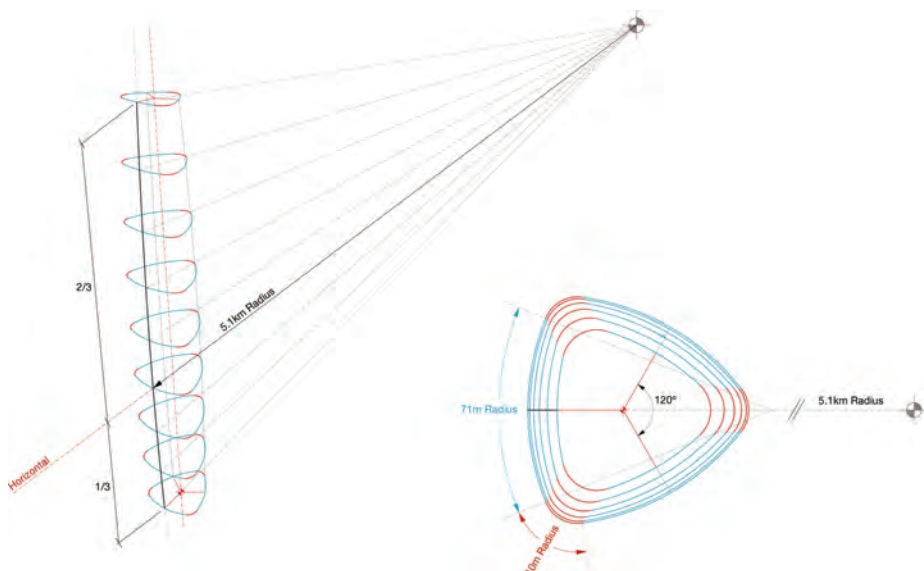


Figure 2. Setting out geometry for the tower (Source: Wilkinson Eyre Architects)

图2. 为大楼设置几何形态（来源：Wilkinson Eyre建筑事务所）

With the structural priority in mind, the diagrid proportions extended to 54 meters between diamond nodes and, for ease of construction, the exoskeletal structure was fabricated out of steel tubes filled with concrete. The scale is of almost monumental proportions with the node connections extending over two floors and the tubes are 1.8 meters diameter at the base, reducing to 900 millimeters on the upper floors.

Clearly, the setting out of the structure was extremely difficult because of its curvature, but local Chinese contractors managed to achieve it within the required tolerances. Much of the gravity load of the building floors is taken by the structural core, which links back to the perimeter diagrid structure via floor beams to create a stiff tube-within-tube system. Whilst the core is a straightforward vertical extrusion in reinforced concrete, it was planned for maximum letting flexibility. Its complexity relates to the planning for the 71 lifts in which express double-deckers serve the skylobbies with shuttle lifts in between. The lavatories are located in the areas where the lifts tail off.

In section, the central core stops at the 69th floor, allowing for a spectacular 120-meter-high, top-lit atrium for the hotel above the lobby reception on the 70th floor. Within the atrium, the geometry of the hotel corridors has been designed on a twisting angular grid that helps to bounce the light down through the space like a kaleidoscope. The roof is glazed and the top eight floors are enclosed with glass for smoke control (Figure 3).

By contrast, the outer skin of the tower has been designed to achieve a simple clean line which emphasizes the pure geometry of the building's shape. Floor-to-floor unitized glass panels provide maximum repetition that is only interrupted by the plant and refuge floors characterized by a vertical hit and miss glazing system. The cladding is smooth, aerodynamic, and easy to clean. Its simplistic modularity is only interrupted by views of the diagrid structure that can be seen through the transparency of the glass skin.

### Crown Sydney Hotel And Resort

In 2013, WilkinsonEyre won an international competition for the six-star Crown Sydney Hotel and Resort on an important site at Barangaroo in Sydney. The waterfront site on Darling Harbour called for a special approach,



Figure 3. Internal Atrium (Source: Will Pryce)  
图3 内部中庭 (来源: Will Pryce)

挤压，但其计划用来保证最大的灵活性。其复杂性与71部电梯的规划有关，洗手间设于电梯关闭的区域。

在剖面图上，中央核心设於69层，这样可确保能在70层接待大厅之上为酒店设置一个高120米的顶光中庭。

在中庭内部，酒店走廊的几何结构被设计在曲折且具有角度的网格上，该网格有助于将光线向下反射，洒满整个空间，就像一个万花筒。楼顶装有玻璃且顶部8层采用玻璃围住，便于控制烟气（图3）。

相比之下，超高层建筑的外面设计能够实现一条简单线，该线强烈突出了建筑物形状的单纯几何结构。楼层之间的整体式玻璃幕墙提供最大的重复性，重复性仅被植物和隔火层打断，隔火层的特点是垂直断续的玻璃系统。

覆盖层面平滑，符合空气动力学的理论，而且易于清理。覆盖层的简单模块性仅被肋肋构架结构的视图打断，借着透明的玻璃幕墙可看到肋肋架结构。

### 悉尼皇冠酒店

2013年，威尔金森艾尔建筑事务所成功赢得国际竞标，并获得六星级皇冠度假酒店的设计中标工作，该酒店位于澳洲悉尼布朗格鲁。位于达令港的海滨场地，采用了特殊设计方法并且威尔金森艾尔建筑事务所的设计方案是为外形雕刻的而设计的（图4）。

此构思主要来自早前曾参予另一地标性的项目设计工作，该地标由3个花瓣构成，当3个花瓣向上升高时通过90°旋转。事实

and the WilkinsonEyre proposal was for a sculptural form (Figure 4).

The idea was inspired by previous work on a landmark installation that had three petals which twisted through 90 degrees as they rose up to the sky. This was really just a sculpture, but it offered the potential to become a building by filling in the space between the petals with accommodation and growing it to become a tower. In this instance, the twist has been reduced to 60 degrees and the sculptural form rises up to a height of 275 meters (Figure 5).

The narrative about the petals proved to be an extremely useful means of describing such a complex piece of geometry, and one that people could both understand and appreciate. The development and interpretation of the idea into an architectural proposal, however, was not so easy, with every floor being a different shape and the twist causing the plan accommodation to spiral with the form. This also complicated duct risers and partition wall connections to the exterior cladding.

The structure has been achieved with a vertical core and outriggers, but the perimeter columns are **helical**, following the twisting form of the exterior cladding. This may be one of the first times that this concept has been used in a conventional building. However, perhaps the biggest problem is the design of the cladding. No single solution provided the answer, so three different systems were required. A triangulated diagrid was selected for the west elevation facing Darling Harbour and where the curvature is greatest. A stepped system of floor-to-floor rectangular panels was selected on the main façades where the curvature is less, but cold pressing will be required where the curvature pushes the glazing out of tolerance. The third system is a more conventional curtain walling for the block of hotel rooms, which are vertically stacked. Architecturally, this change of cladding systems serves to emphasize the curvature and twist of the tower's geometry which is so distinctive. The roof top where it meets the sky is visually important, as with all towers. It is here that the three petals are expressed in their own right where they form a spectacular three-story sky villa.

As with many resort hotels, the Crown Sydney Hotel and Resort requires a large podium to house all the restaurants, cafés, beauty salons, spa rooms, shops etc., as well as the two casinos. The podium is clad with a **veil of stone tracery** tensioned up with steel cables, enabling it to span up to 28 meters with

上，这仅是一个雕塑，但其提供了成为建筑物的可能性；通过使用住宿房间填满花瓣之间的空间，可逐步形成超高层建筑。在这种情况下，旋转减少至60度且雕刻的外形上升至275米高（图5）。

经证明，关于花瓣的概念是一种描述此类复杂几何结构极其有效的方法，也是一种人们可以理解和欣赏的叙述。但是，将想法转化为建筑设计方案并非易事，因为每层形状各有不相同，且旋转导致酒店房间随着外形成螺旋形上升。这也使外部覆盖层的立管和隔断墙连接处变得复杂。

结构由垂直核心和外伸支架构成，但是在周边圆柱是螺旋形的，与外部覆盖层的盘绕外形一致。此概念可能是其中首次用于传统的建筑物。但是，最关键的问题可能是没有单一解决幕墙设计的方法。因此需要采用3种不同系统。三角形肋骨构架被选定用于面向达令港口的西侧立面，该立面的曲度最大。主立面楼层和楼层之间的长方形墙板采用阶梯式结构，主立面的曲度

较小；但是如果曲度导致玻璃超过公差，需要采用冷压。第3种系统是酒店房间采用的较为传统的幕墙。从建筑学角度来讲，这种覆盖层系统的变化也有助于强调超高层独特的几何结构的曲度和旋转性。

与所有超高层建筑一样，屋顶在视觉方面具有重要意义；而且3个花瓣构成一个壮观的3层空中别墅效果。

与许多度假酒店一样，悉尼皇冠度假酒店需要一栋较大的裙楼容纳所有的餐厅、咖啡馆、美容店、Spa房、商店以及许多度假酒店一样，悉尼皇冠度假酒店需要一栋较大的裙楼容纳所有的餐厅、咖啡馆、美容店、Spa房、商店以及两个赌场等等；该位置采用一层石质窗饰覆盖，**石质窗饰**采用钢缆拉紧，钢缆可使窗饰的最大跨度达到28米。这种设计采用数控机床切割的1.5米长大理石坯料，大理石坯料采用不锈钢钢缆拉紧。尽管窗饰由重复的构件组成，但窗饰的曲线图案设计具有明显简洁随意的外观（图6）。



Figure 4. The Crown Sydney Hotel on Darling Harbour (Source: Wilkinson Eyre Architects)  
图4. 达令港湾的悉尼皇冠酒店（来源：Wilkinson Eyre建筑事务所）

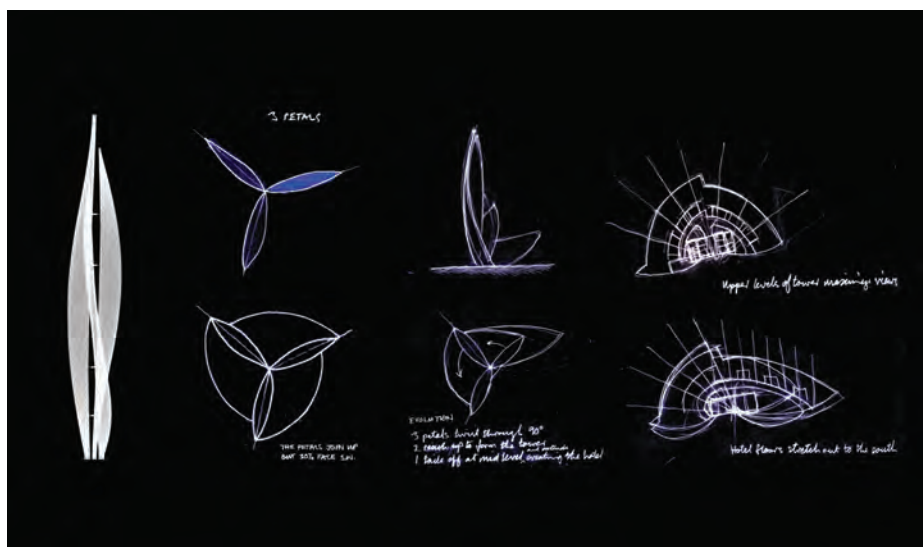


Figure 5. The narrative of the three petals (Source: Wilkinson Eyre Architects)  
图5. 3个花瓣的叙事（来源：Wilkinson Eyre建筑事务所）

intermediary connections back to the main structure. This is designed to be constructed out of CNC cut 1.5-meter-long marble blocks, which are tensioned up with stainless steel cables. The curvilinear pattern of the tracery has been designed to have a seemingly random appearance, although it is made up of repetitive elements (Figure 6). The veil, which provides shading to the perimeter terrace, is intended to give the resort hotel a distinctive and luxurious appearance. This reference back to European Gothic stone tracery gives an appealing historic narrative to an otherwise contemporary architecture. A prototype has been built in a stoneworks outside the city, proving that the system works and can be constructed in an efficient manner.

The concept for the Crown Sydney Hotel and Resort is an “inhabited artwork” that takes advantage of its spectacular site, provides a visual marker to the northwest corner of the city’s main central business district, and at the same time, offers spectacular views across to the Sydney Opera House and the Harbour Bridge. This project is due for completion in 2020.

### Bay Park Centre, Toronto

The third tower is a regeneration project in the center of the City of Toronto in Canada where the brief was to extend the central business district towards the lake and beyond the railway lines. The site at Bay Street is located in the heart of a financial district that is contained on the south side by railway lines leading to Union Station and the Gardiner Expressway, which is raised above ground level. The site, currently partly occupied by the main city bus terminal, provides the opportunity for the new development of two towers – one on either side of the railway – connected by a new public park above the tracks, and a newly configured bus terminal at the ground and first floor levels (Figure 7).

The first phase of this development, due to start on site later this year, is 45 Bay – a 54-story office tower and associated podium, with tenant amenity space, conference facilities, and the new bus terminal. The tower has a simple but elegant rectangular extruded form with a central core and concrete frame. The rectangular form is divided into two square sections with a recess between that both helps to reduce the visual bulk and increases the number of corner offices. The two parts, which finish at different heights, are crowned with an open-crenulated, glazed section to highlight the skyline.



Figure 6. The veil of stone tracery (Source: Wilkinson Eyre Architects)  
图6. 石材花纹的面纱 (来源: Wilkinson Eyre建筑事务所)



Figure 7. Bay Street Centre (Source: Wilkinson Eyre Architects)  
图7. 海湾街中心 (来源: Wilkinson Eyre建筑事务所)

遮蔽物可遮挡周围的平台，使该度假酒店具有独特且豪华的外观。采用欧洲哥特式石质窗饰，可使这种当代建筑内藏着一种吸引力的历史色彩。

在城外的石制品加工厂制作出一个模型，该模型证明系统工程可采用有效的方式建造。

悉尼皇冠度假酒店的概念，是利用项目本身位于壮观的吸睛位置而演绎为“人居于艺术品”的优势。该酒店是城市主要中央商务区西北角的一个可视的标志，同时可远眺对面的悉尼歌剧院和海港大桥壮观景色。预计于2020年完工。

### 多伦多海湾公园中心

第3座超高层建筑是位于加拿大多伦多市中心改建项目。计划将中央商务区向湖边

扩展，并跨过铁路线。海湾街位于加拿大金融区中心位置，金融区位于通往联合车站的铁路线及Gardiner高速公路的南侧。目前，现场部分区域被城市主要汽车站占用，可新建2座塔楼，铁路两侧各建一座并通过轨道上方的新建公共公园连接，在1楼和2楼建设一座公共汽车站（图7）。

第一阶段开发计划今年的下半年动工，建设一座54层的办公大楼和相关裙楼以及租户舒适空间、会议设施和新公共汽车站。

该超高层建筑借着一个简单而优雅的长方挤压形式，配有中央核心和混凝土框架。其独特的外观组成金字塔形的三角形建筑物，正面可透出每个平面上的光线

牢固的菱形图案遍布10层，且从底板向外突出约0.75米。该图案由铝合金框架构成，铝合金框架在视觉上可覆盖垂直的幕墙系统（图8）。

The tower's distinctive appearance is achieved with a triangulated façade of shallow pyramids that catch the light differently on each facet. The strong diamond pattern extends over 10 floors, projecting out by approximately 0.75 meters from the slab. The pattern is defined by an aluminum frame that visually overrides the vertical curtain walling system (Figure 8).

In this project, the geometry and the form of the tower are much simpler than the Guangzhou International Finance Center and the Crown Sydney Hotel and Resort, but it is designed to fit into the Toronto city context which is generally more understated in its architecture.

### 150 Leadenhall Street Tower

The fourth and final project is located in the City of London, also where WilkinsonEyre is based. This project is perhaps the most challenging in terms of design. London, steeped with history, makes new interventions interesting but also highly constrained, not just on height and gross floor area, but also by restricted view corridors.

The site, on the corner of Leadenhall Street and Bishopsgate, marks an important gateway into the insurance and financial district of the city. It is located in what is known as the Eastern Cluster, where taller buildings are permitted. It is close to Rogers Stirk Harbour's recently completed Leadenhall Building

长方形外形被划分成2个正方形部分，2个正方形部分之间有一处凹陷处，有助于减少视觉体积和形成数量增加的拐角办公室；两个部分的顶部均采用了露天细圆齿状玻璃。

在这项目中，与广州国际金融中心和悉尼皇冠度假酒店相比，该塔楼的几何结构和外形相对较简单，而其设计较适合多伦多较为踏实和沉稳的城市环境。

### 150 号LEADENHALL塔式建筑

第4座超高层建筑位于威尔金森艾尔建筑事务所总部的伦敦市，该建筑项目可能在设计方面是最具挑战性的项目。



Figure 8. Pyramidal glazing (Source: Wilkinson Eyre Architects)  
图8. 锥体玻璃（来源：Wilkinson Eyre建筑事务所）

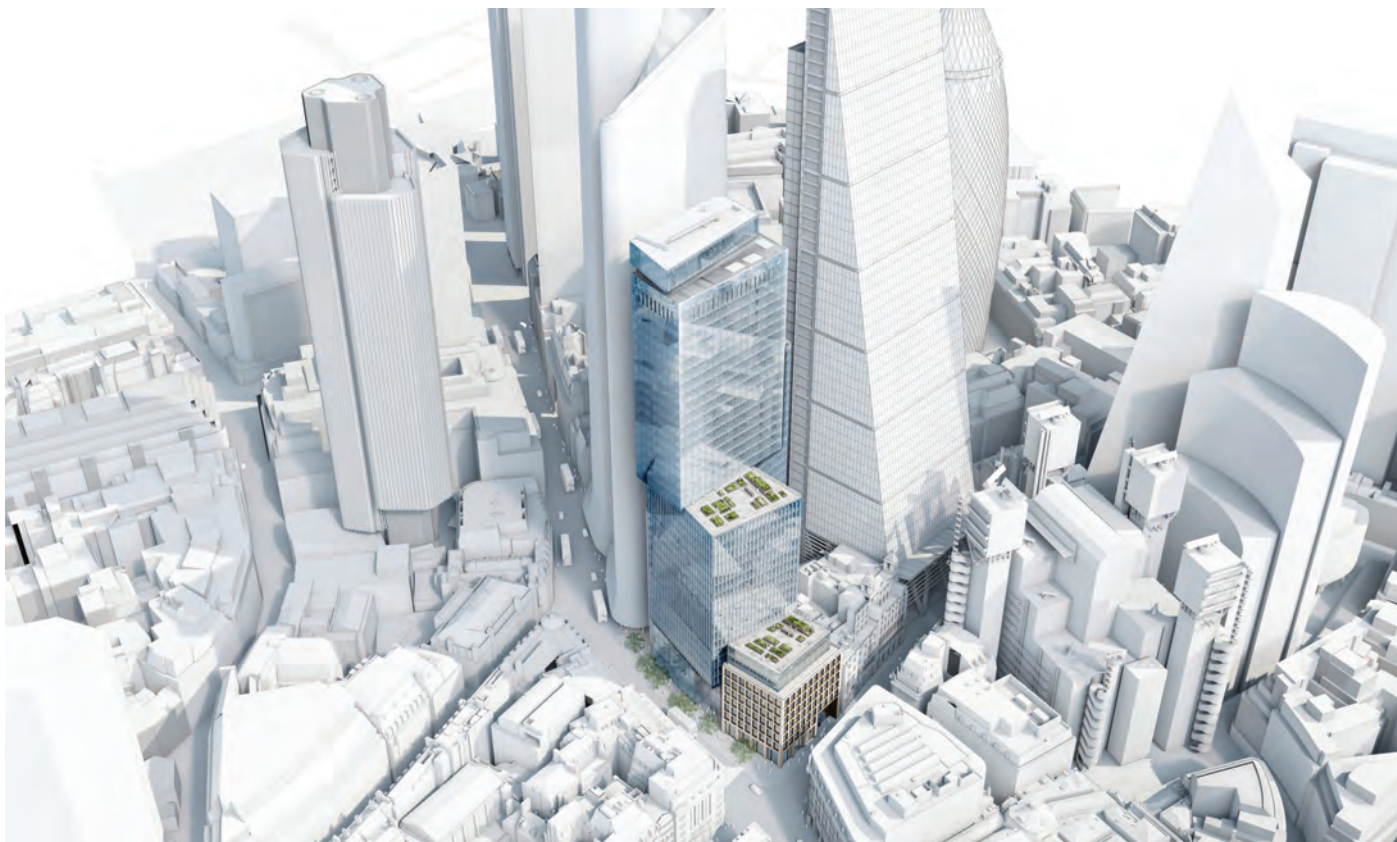


Figure 9. Aerial view of 150 Leadenhall Street (Source: Wilkinson Eyre Architects)  
图9. 150利德贺街鸟瞰图（来源：Wilkinson Eyre建筑事务所）

– commonly known as the “Cheesegrater”  
– and adjacent to the halted, KPF-designed “Pinnacle” at 22 Bishopsgate (now being newly designed by PLP Architects for a different client) (Figure 9).

Whilst the context is important, the most defining constraint for 150 Leadenhall came from the Chief Planning Officer’s requirement for the new building not to intrude into the angled line of the south face of the Cheesegrater, as seen from a prescribed viewpoint in Fleet Street. Whilst this may seem perverse, it does relate to a heritage requirement to preserve visual space around the dome of St. Paul’s Cathedral from Fleet Street which is on the ceremonial route from Buckingham Palace.

The view constraint heavily influenced the design of 150 Leadenhall Street and that determined its stepped form, interpreted by WilkinsonEyre as a series of stacked rectangular boxes, connected with a side core on the northern boundary. From the top, the double-height rectangular box creates a public viewing pavilion that sits on a narrow, yet deep stack of office accommodation 17 stories high. This block cantilevers forward above a wider 16-story-high block that, in turn, sits on a recessed plinth at street level. The visual aesthetic is based on

modernist principles where elements are expressed individually with a clean and undecorated appearance.

Each of the stacked blocks has a slightly different character which is expressed in the cladding systems. The top pavilion has wide shopfront glazing to maximize the views, and the narrow block below has a three-meter-wide double-skin curtain walling system with low iron glass. Below that, the wider block is designed with a 1.5-meter glazing module with an expressed steel structure that supports the cantilever to the block above. A third block behind has an even closer glazing module of 750 millimeters. The corner building has a change of cladding from glazing to stonework, which complements the adjoining historic buildings and helps to reinforce the identity of the street (Figure 10). In plan, each of the stacked blocks is set out on a twisting geometry related to surrounding buildings and road alignments, setting up a dynamic composition from different viewpoints in the city.

伦敦，是一个充满历史气息的城市。任何新拓展的项目措施，大众会感到新鲜有趣，但同样地亦受到高度关注。此项目不但受到高度和总楼的层面积限制，同时观景走廊也高度受限，尤其是与保罗大教堂有关连的地区。

项目现场位于Leadenhall大街和主教门的拐角处，是进入市内保险和金融区域的重要通道。该项目位于被称为东部建筑群的位置，该位置允许建造更高的建筑物。靠近由罗杰斯建筑事务所（Rogers Stirk Harbour’s）最近完成的高楼Leadenhall大厦（一般称为‘Cheesegrater’），且邻近由KPF建筑事务所设计的‘Pinnacle’大楼（位于主教门22号）。然而，在兴建中的Pinnacle大楼于上一次金融危机期间暂停，目前新的投资发展商已更换，并委任PLP建筑事务所进行重新设计（图9）。

尽管项目环境很重要，最关键性条件主要来自总规划师对新建楼宇提出的要求（定义的约束主要包括从Fleet大街指定的视角望去时，不得侵入Cheesegrater南侧立面的角度线条）。尽管这似乎违背常理，但其的确与保护圣保罗大教堂周围的视觉空间（从Fleet大街望向圣保罗大教堂）有关，而这要求亦决定了Cheesegrater的规划阶段。

景观高度限制了这150 Leadenhall 项目的设计，且决定了其阶梯式的外形，威尔



Figure 10. Leadenhall Street's stacked boxes (Source: Wilkinson Eyre Architects)  
图10. 利德贺街堆叠盒（来源：Wilkinson Eyre建筑事务所）

## Summary

Obviously, the four before mentioned projects are unique in character as they are designed to suit their specific site context and brief. The Guangzhou International Finance Center strives for an elegant simplicity in the new central business district that distinguishes it from the many other towers in China's third city. Crown Sydney Hotel and Resort is designed as a sculptural form which creates a landmark on its important waterfront site at Barangaroo. The Bay Centre in Toronto makes a strong visual statement to extend the Financial District beyond the railway towards the Lake. Finally, the 150 Leadenhall Street tower in London, which marks a gateway into the financial and insurance district, takes a restrained architectural approach that sits comfortably in the city's Eastern Cluster. At WilkinsonEyre, there is no "house style" – each project relates to its particular brief and context. Yet, the interest in geometry carries through to each project, providing countless opportunities to explore something new. It determines the form and appearance of the building expressed in the architecture, and giving it a distinctive character and individuality.

金森艾尔建筑事务所将该阶梯式外形解释为一系列叠放的、与位于北部边界的侧面核心相连的长方形盒。从顶部望去，双重高度的长方形盒构成一个公共观景亭，观景亭座落在17层办公楼的狭窄但纵深的烟囱上，办公楼座落于更宽大的大楼（16层高）上，该16层高楼反过来座落在嵌入式底座上。视觉审美基于现代主义原则，各构件单独表示且具有清洁未加装饰的外观。

每个堆叠式区块均稍有不同的特征，体现在覆盖层系统上。顶部亭子具有较宽的正面玻璃幕墙，保证视野最大化，下部较窄的区块具有3米宽的双层幕墙系统（配有低铁玻璃）。在此之下，较宽区块的设计采用1.5米的玻璃组件，配有明确的钢结构，钢结构可支撑悬臂。后面的第3个区块具有更加紧凑的玻璃组件（750mm）。角落建筑物的覆盖层从玻璃改变为石制品，这与邻近的历史建筑物有关，有助于强化街道的同一性（图10）。在平面图上，每个堆放式区块被布置在一个与邻近建筑物和道路线形有关的缠绕几何机构上，从城市的不同视角来看，都具有动态成分。

## 总结

综上所述，因为4座建筑根据现场具体情况设计，所以其特点各有不同。广州国际金融中心在新的中央商务区追求一种优雅简约，以区别于该中国第三大城市的许多其他超高层建筑。

悉尼皇冠酒店采用设计雕刻外形，在布朗格鲁重要的海滨场地形成一个地标建筑。多伦多海湾公园中心提供了强烈的视觉表现，将金融区朝向湖边扩展，并跨过铁路线。150号Leadenhall塔式建筑是通往金融和保险区的大门，采用一种内敛的建筑方法，坐落于城市的东部集群建筑。在威尔金森艾尔建筑事务所，不存单一性的风格，但对几何结构的兴趣能贯穿每个独特的项目，这亦能够提供探索新生事物的机会，它亦是决定了建筑物的形式和外观，能赋予建筑物与众不同的特点和个性。