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The Synergy Tower: A New Typology for a Sustainable Future

协同大厦：适用于可持续性未来的新类型学



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The design of transformational architecture has been the focus and passion for Jonathan Ward the past 18 years. During these years, Jonathan has led the design and delivery of a variety of progressive high rise buildings for highly innovative global clients, such as NHN, Tencent, Samsung, and Chinatrust. Jonathan is an advocate for developing and advancing the use of computer technology in the design process. He believes these tools can open new design possibilities and enhance the efficiency and effectiveness of large, complex building projects.

乔纳森·沃德在过去十八年以来关注的重点和热情都倾注在转型建筑设计上。在这些年间，乔纳森主持设计并完成了多种多样的先进的高层建筑，其客户均为全球极具创新意识公司，例如，韩国NHN互联网服务公司、腾讯、三星和中国信托。乔纳森是一位在设计过程开发和促进使用计算机技术的倡导者。他坚信这些工具能开创设计新的可能性，能提高大型综合建筑群项目的效率和效能。

Abstract

As the pressures of global urbanization and climate change continue to grow, dense high-rise development is increasingly viewed as a key tool for forging a more sustainable future. At the same time, with the rise of the idea economy, many cities have reclaimed their position as hubs of creativity and innovation, and businesses have followed. The confluence of these disparate forces has set the stage for a new kind of high-rise, one rooted in principles of community, connectivity and sustainability rather than image and economic return alone. Counterintuitively, examples from the past decade suggest that this shift in priorities can reap its own gains in corporate reputation and fiscal returns. This paper traces the drivers behind and evolution of the Synergy Tower concept, presents a recent case study and discusses its future developments.

Keywords: workplace, urbanization, synergy, positive polarization, density, vertical campus

摘要

随着全球城市化和气候变化的压力持续增加，人们渐渐认识到密集的高层建筑开发是建造一个更加可持续性未来的关键工具。同时，随着理念经济的兴起，很多城市重新将自己定位为创造性和创新性枢纽中心，相应的商务活动也随之而来。这些迥异的力量汇合为新型高层建筑的出场提供了舞台，这种新型高层建筑植根于社区性、连通性和可持续性的原则之中，而并非只是一种形象或者单纯的经济回报。过去十年的例证违反直觉地使人想到，这种优先级的转变在公司声誉和财务回报中还可以大有收益。本文将追踪背后的动因和“协同大厦”概念的演进，介绍最近的个案研究，并讨论其未来的发展。

关键词：工作场所、城市化、协同、正向极化、密度、垂直校园

Why Synergy, Why Now

In 2007, for the first time in human history, the number of people living in cities exceeded the number who did not—a trend that will intensify as this ‘urban century’ proceeds. This represents close to a 1,700 percent increase in the urban population since 1800, when only 3 percent of the world’s population lived in cities. This unprecedented growth rate signals an urgent need for urban designers, architects, and engineers to rethink the city and one of its defining elements—the high-rise.

Historically, image and economic return have defined the high-rise, but as cities become more dense and land values rise, compelling more high-rise development, a new tall building typology must manifest itself. Central to this new typology is the changing nature of work, the emergent idea economy, and growing global demand for constant innovation. Conventional tall buildings tend to hinder communication and other foundations of innovation. Remaining competitive, therefore, will also require a new approach.

The Rise of the Iconic Tower

The development of the high-rise in the late 19th and early 20th centuries was enabled by innovations in material and building system

为什么要协同，为什么是现在

2007年，人类历史上首次出现城市人口超过非城市人口——这是一种趋势，它将会随着这个“城市化世纪”的继续而强化。这也代表着自1800年以来城市人口增加了几乎17倍，当时全世界仅只有百分之三的人口生活在城市中。这种前所未有的增长率标志着急需城市设计师、建筑师、和工程师对城市及其定义的元素之一——高层建筑进行重新思考。

从历史的观点来看，建筑形象和经济收益曾是定义高层建筑的主要因素，但是越来越高的城市密度和日益飙升的土地价值，迫使高层建筑放量发展，一种新型高层建筑类型学势必兴起。这种新型类型学的核心就是工作方式的转变、新兴的理念经济、和日益增长的对持续创新的全球化需求。常规的高层建筑往往倾向于阻碍沟通和创新的产生。因此，为了保持竞争力，也需要一种新的方法。

标志性大厦的兴起

十九世纪末期和二十世纪初期高层建筑的发展是以建材和建筑系统技术的创新而得以实现的。然而，正是第二次世界大战之后的财政和工业的繁荣为高层建筑的激增输入了动力，这些高层建筑标志着那个时代的经济和文化的强盛。作为一种在相对较小的面积之内最大化房地产和人力资源的有效手段，高层建筑可以为开发商和商

technologies. However, it was the post-WWII financial and industrial boom that sparked the proliferation of the high-rise, which came to emblemize the era's economic and cultural prowess. An efficient means for maximizing real-estate and human resources within a comparatively small footprint, high-rises offered greater profit for developers and businesses, and represented the most rational way to house a growing urban populace.

Today, a second boom in tower building is underway in Asia and the Middle East, where urbanization and new city building efforts are creating a more vertical skyline. In China alone, the current urban explosion—more than 100 cities' populations exceed one million residents—points to a need to reconsider the form and function of the typical high-rise, which has changed little since the mid-20th century. Tall buildings will continue to serve as important landmarks and economic generators, but evolving environmental and social concerns, along with shifting organizational values, call for innovative models that address the challenges of living and working in a predominately urbanized world.

Getting Beyond the Icon

High-rises have an opportunity to play a more active role in addressing the environmental concerns raised by population growth and ongoing industrialization. While well-planned cities can more efficiently support a larger population than non-urban areas, urbanization can nonetheless strain a city's resource supply, consume its open space, and compromise air and water quality. These strains raise the need for sustainable solutions that can keep pace with the anticipated rate of growth. As some of the largest structures in the city, high-rises have the potential to harness cutting-edge technologies that not only decrease the building's resource footprint, but transform them into active resource generators. Their surface area and square footage offer creative armatures for new forms of green space, while their visibility lends them an important role in broadcasting these environmental strategies.

Next-generation high-rises must also support, and not hinder, the strong social ties that form the basis of robust communities. Cities in general and high-rises in particular are often blamed for social isolation. While the degree of responsibility is arguable, with more of the world's population destined to live and work in tall buildings the quality of social interaction enabled within such structures will become a more pressing challenge for designers.

Shifting cultural habits informing how people relate also call for new priorities in high-rise design. The rise of social media and ubiquitous communication enabled by mobile technology has intensified collaborative values and expanded the boundaries of what defines 'community'. Relatedly, information proliferation has broadened awareness beyond the immediate environment, fostering a desire for transparency and feedback in everything from resource consumption to community activity.

These changing cultural norms affect workplace habits in particular. While traditional offices relied on hierarchy and systematization to ensure efficiency and productivity, technology and access to information is leveling organizational structures, breaking down conventional hierarchies in the interest of innovation and teamwork. The compartmentalization common in workplace design is giving way to a demand for more flexible, open configurations that support interaction, communication, and seamless technologies (see Figure 1).

Considering today's environmental, community, and workplace values, the traditional high-rise is constrained by several disadvantages. Constructed from identical stacked floor plates wrapped in an

业活动带来更大的利润，并且代表着为不断增加的城市平民提供住所的最理性的方式。

如今，塔式高层建筑的第二次繁荣在亚洲和中东不断发展，这些地区的城市化和新城市建设正在创造出一种更加垂直的天际线，仅仅是在中国，当前就出现了城市大爆炸——一百多个城市的人口超过一百万居民——都表明需要重新思考典型的高层建筑的形态和功能，而高层建筑的形态和功能自二十世纪中期以来几乎未曾发生过什么变化。高层建筑将继续被看作是重要的城市地标和经济催生器，但是人们日益增长的对环境和社会关注，以及组织机构价值观的转变，需要创新的模式以应对在高度城市化的世界中生活和工作的挑战。

超越标志之外

高层建筑有机会在解决人口增长和持续工业化所带来的环境问题中扮演一个更为积极的角色。尽管精心规划的城市有可能较之于非城市化地区更有效地维持大量的人口，但毕竟城市化会造成资源供应的紧张、消耗其开放空间、并危害到空气和水的质量。这些紧张因素需要有与预期增长率协调一致的可持续性解决方案。作为城市中最大型建筑物中的一部分，高层建筑具有利用当代最新技术的潜能，这些新技术不仅能减少建筑物的资源足迹，而且还能将其转化成具有活性的资源生成源。这些建筑物的表面积和建筑面积给绿色空间的新形式提供了创造性的架构，而它们的可见度则使其在这些环境策略的传播中扮演了重要的角色。

新世代的高层建筑必须支持，而不是阻碍构成生机勃勃社区基础的强力社会连接。人们通常将社会隔绝问题归咎于广义上的城市，特别是高层建筑。尽管这种责任程度有待商榷，但随着世界上越来越多的人口将要生活和工作在高层建筑之中，而此类建筑物之内所赋予的社交互动的质量，对于设计师而言，将会成为更加紧迫的挑战。

转变说明人与人之间如何依存的文化习惯同样也需要在高层建筑设计中赋予新的优先级别。移动通讯技术使社交媒体和无处不在的信息交流崛起，强化了合作的价值，延伸了“社区”定义的界限。与此相关的是，信息激增扩大了超越所处环境的意识，培养出一种对任何事情包括从资源消耗到社区活动等都希望透明和得到反馈的欲望。

这些不断变化的文化规范对工作场所的使用习惯造成了深刻的影响。尽管传统的办公楼依赖于层级和系统化来确保效率和生产率，但科技和信息的获得使组织结构平整化，并为了创新和团队协作而打破常规层级。这种工作场所普遍的区域划分模式，渐渐转变为更为灵活、开放的配置模式，能满足互动、交流、沟通和技术无缝连接的需求(见图1)。

考虑到当今的环境、社区和工作场所的价值，传统的高层建筑受到数种弊端的束缚。建筑堆积式楼层包裹在不可渗透的外壳之中，传统高层建筑的整体模式限制了居住者之间、建筑物与周边的自然和城市环境之间的互动性。

僵化和密封的建筑体系所反映的高层建筑的功能，即是对高度自治的标志，它缺失充分利用周围自然资源的机会。中心核的结构系统形成了互相隔断的内部空间，表皮的封闭功能主要在于调节自然光线和保温隔热。由于建筑物内部有限的视觉和空间连通性，因此可以说传统的高层建筑阻碍着当代公司非常重视的、视为创新基础的沟通、社会互动和社群的形成。

寻求新模式

协同大厦提出了一种新模式，这种模式对未来日益逼近的环境、社会、经济挑战重新构思了一个重要和强有力的对策。除了能源效率之外，协同大厦还提供了一种整体处理方法让建筑功能和设计可以和谐一致地发挥作用以节省甚至产生资源，同时支持人类发展所有潜能。

这种新模式是经过横跨十多年时间一系列早期项目发展而来，更多的是升级而不是革命，并将关于未来工作场所和城市模式的当

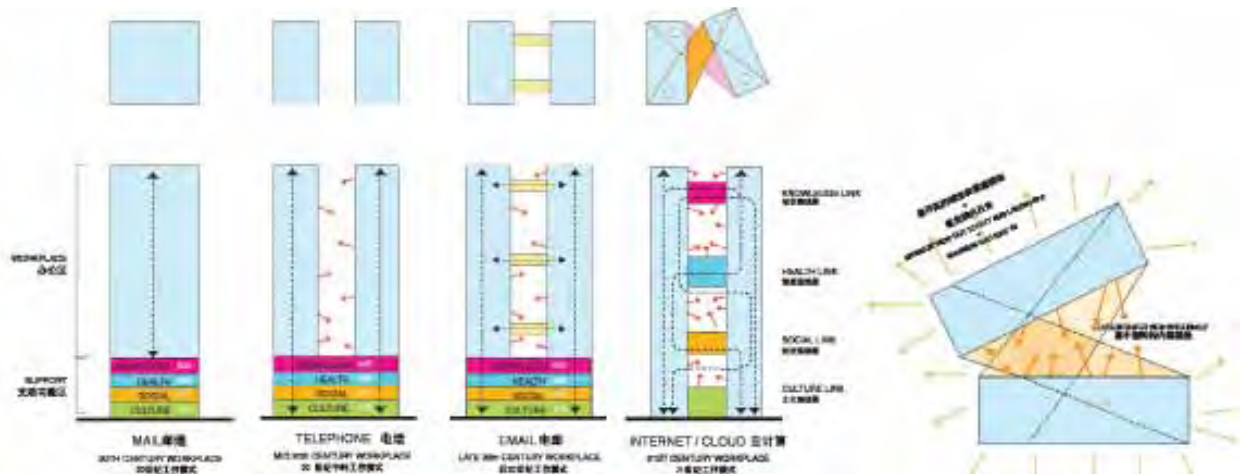


Figure 1. The standard modern high-rise city tower consists of a podium at the base with public and urban functions, while the remaining vertical mass is dedicated to internalized organizational functions, the occupants of which are isolated and introverted. With the Synergy Tower, the building brings the energy of spontaneous and serendipitous encounters and movement of a dense urban setting into the interior of the high-rise tower, such that people experience the building as an extension of the vibrant interactivity of a youthful, technologically advancing, popular and urban culture.

图1. 标准的现代化高层城市塔式建筑，底部含有具备公共和城市功能的裙房，剩余的竖向体量专用于内部功能组织，但塔楼的居住者往往被隔绝和封闭。协同大厦则与此不同，建筑物将高密度城市氛围中自然发生的能量，偶然的交流，及动态的活力引进了高层塔式建筑的内部，使人们能体验到建筑物是朝气蓬勃的、技术先进的、流行及城市文化的延伸。

impermeable envelope, the monolithic form of the conventional high-rise limits interaction between its occupants, and between the building and its surrounding natural and urban environments.

Inflexible and hermetic building systems reflect the high-rise's function as an autonomous icon, missing an opportunity to harness ambient natural resources. Central core structural systems create a disjointed interior, while exterior enclosures function primarily to temper natural light and heat gain. With limited visual and spatial connectivity within the building, one could argue that the conventional high-rise hinders the communication, social interaction, and community building that are the foundations of the very innovation that companies value.

Toward a New Model

The Synergy Tower proposes a new model that reconceives the high-rise as a critical and powerful response to the looming environmental, social and economic challenges ahead. Beyond energy efficiency, the Synergy Tower offers a holistic approach in which building program and design work in unison to conserve and even produce resources while supporting the full potential of the human endeavors taking place.

More evolution than revolution, this new model, developed through a series of earlier projects spanning more than a decade, unites current thinking about the future of both workplaces and cities. The following projects explored and advanced key concepts underpinning the Synergy Tower typology.

The Hybrid Workplace

While advances in office environments and work styles are driving demand for a new high-rise workplace model, these cultural changes, which were developed primarily in low-rise corporate campuses, are perhaps the most challenging to integrate into a high-rise concept. Understanding these new workplace strategies is essential to defining how these two models can merge.

An early benchmark is the 137,000-square-meter (1.48 million-square-foot) Oslo headquarters for Telenor, the Norwegian telecommunications giant, completed in 2003. This six-story building is designed as an urban workplace, which, like a city, benefits from density, mobility, and interaction. The branching building, comprising two glass-enclosed "boulevards" linking eight wings, establishes an active, social environment for the company's 7,500 employees. With

前思考结合在一起。以下项目探索和发展了支撑协同大厦类型学的关键概念

综合式工作场所

尽管办公环境和工作方式的进步不断促进一种新型高层建筑工作场所模式的需求，但主要在低层公司园区建筑中形成的文化变更，或许是整合进高层建筑概念中的最大挑战。理解这些新型工作场所的策略，对于定义这两种模式如何合并是至关重要的。

于2003年竣工，位于奥斯陆的面积为十三万七千平方米（一百四十八万平方英尺）的挪威电讯巨头——挪威电讯总部（Telenor）就是一个早期基准。这座六层建筑物设计作为一个城市工作场所，其本身就具备城市功能，从密度、移动性和互动性获益。其分部建筑的构成是由两条玻璃封闭的“林荫大道”连接八个侧楼，为公司的7500名员工打造出一种生机勃勃的社会环境。不设办公区或指定工作空间，员工可以依工作需要选择各种工作环境一个人的、团队的、正式的、非正式的、室内的、室外的。通过强调灵活性和创造性协同，这种模式的作用在于提高生产力、激发创新流程和产品，以及加速决策的作出（见图2）。

随着越来越多的研究表明，日常工作之外的邂逅和机缘会造成一种多产的思维交叉启迪，“中间状态”或混合空间的重要性日益见长。大型的自助餐厅、会议室和展览中心均设置在这些主要循环“林荫大道”的沿途以提高活动性和日常互动，而侧楼则通过调节建筑物的规模和延伸海湾的景色加强了内部连接性。在每一栋侧楼内，提供全套工作设施的移动办公隔间围绕着一个中庭布置，每一个中庭均有一个咖啡厅和坐席区以供个人或群体聚会。而中庭则会增强自然光照和提供楼层之间的视野，将各个同事联系在一起，继而将他们与公司联系在一起（见图3）。

该设计以前所未有的规模成功地应用了协作的工作场所之策略，而今天的挪威电讯总部仍然是世界上最大型的无固定位置、无线网络的工作场所之一。将这些策略转化成一种高层建筑形式会遇到更多难以处理的技术上或经济上的挑战。然而，向着更加协作化和移动办公方式发展的趋势，已经为一种新建筑模式的出现提供了明确的动力（见图4）。

正向极化

2006年承建的三星电子公司学习中心首次引入正向极化的概念以作为一种开放中央核心筒塔楼和营造一种富于活力的垂直园区的手段。正向极化同时包含了建筑形式和功能。在本案例中，两座纤细的塔楼——一座作为教室，一座作为学员的宿舍——联合构成一座连锁大厦。将形式与功能分开——而不是像常规塔楼那样堆

no offices or assigned workspaces, employees instead choose from a spectrum of work environments—individual, group, formal, informal, indoor, outdoor—on an as-needed basis. By emphasizing flexibility and creative synergies, this model works to spur productivity, stimulate innovative processes and products, and drive faster decision making (see Figure 2).

As more and more studies show that chance encounters outside of daily routine engender a productive cross-pollination of ideas, the importance of “in-between” or hybrid spaces grows. Large cafeterias, meeting rooms and expo centers are set along these main circulation boulevards to increase activity and day-to-day interaction, while the wings strengthen internal connections by mediating the building’s scale and extending views of the Fjord. Within each wing, office pods offering a full range of work settings are organized around a central atrium. A coffee shop and seating area in each atrium invite individuals and groups to gather. The atrium in turn enhances natural light and provides views between floors, connecting colleagues with each other and their larger shared enterprise (see Figure 3).

The design successfully applied collaborative workplace strategies at an unprecedented scale, and today Telenor’s headquarters remains one of the largest free-address, wireless workplaces in the world. Translating these strategies to a high-rise form poses more intractable challenges, both technical and economic. However, the growing trend towards more collaborative, mobile work styles has provided a clear incentive to evolve a new approach (see Figure 4).

Positive Polarization

The Samsung Electronics Corporate Learning Center, undertaken in 2006, first introduced the concept of positive polarization as a means of opening up the center-core tower and creating an active vertical campus. Positive polarization encompasses both building form and program. In this case, two slender forms—one housing classrooms and the other guest rooms for trainees—join as an interlocked tower. Pulling the form and program apart, rather than stacking program elements in a conventional tower, creates space for people to see



Figure 2. Telenor World Headquarters (Source: Tim Griffith)
图2. 挪威电信世界总部 (出自: 提姆·格里菲思)

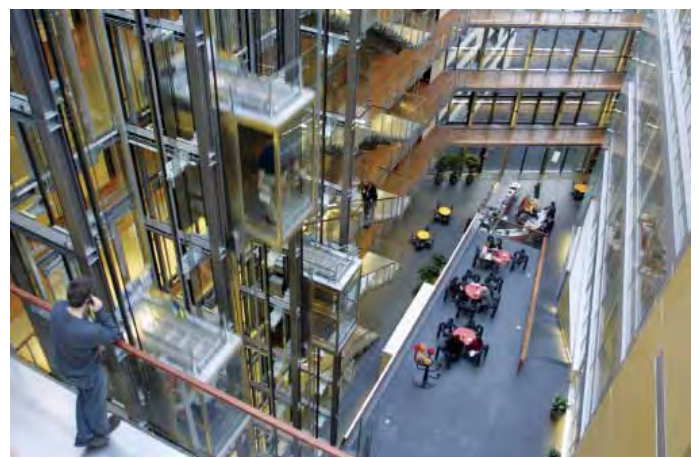


Figure 3. Large cafeterias, meeting rooms and expo centers are placed along these main circulation boulevards to increase activity and day-to-day interactions. (Source: Telenor)
图3. 大型的自助餐厅、会议室和展览中心均设置在这些主要循环“林荫大道”的沿途以提高活动性和日常互动 (出自: 挪威电讯)

NEW HEADQUARTER TYPOLOGY: VERTICAL CAMPUS
新总部大楼类型学: 竖向园区

Transforming traditional campus typology in an urban setting
将传统企业园区类型学转化到城市环境中来

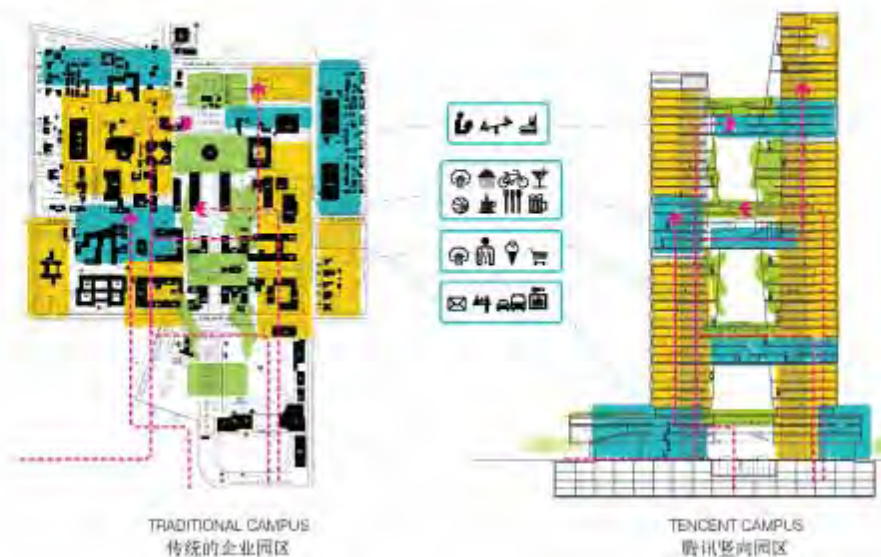


Figure 4. The traditional campus typology was translated into a vertical format. Thus, there are clearly recognizable public-scale elements for movement, congregation and celebration. (Source: Courtesy NBBJ)
图4. 传统的园区类型学转换成一种垂直模式。因此，对于活动、集会和庆典，存在明显可见的公共维度的元素。(出自: NBBJ提供)

each other and engage. Social magnets—common learning and living spaces such as dining facility, fitness center, library, cafe and other social meeting zones—draw trainees from across different corporate divisions and hierarchies to meet, interact and learn outside the classroom. This synergy unfolds in this interior space and cultivates a continually engaging learning environment. When completed, the Learning Center will serve as a hub for a new research and development campus (see Figures 5 and 6).

Flexible Systems

Also undertaken in 2006 was a new 102,000-square-meter (1.1 million-square-foot), 28-story-high headquarters for NHN. Korea's leading online gaming media and search-based internet portal presented an opportunity to explore enhanced flexibility within a conventional tower form. The tower, completed in 2010, clusters diverse amenities at its lower levels including shops, restaurants, cafes, lounges, an 800-seat auditorium, a rooftop garden, and childcare facilities. These more social environments complement the headquarters' large, open workspaces, fostering interaction and collaboration amongst employees.

The ability to control interior light levels was especially important to NHN's large contingent of computer programmers, a requirement that initially appeared to conflict with the company's desire for a transparent tower with its attendant light and views. A system of vertical louvers placed behind the curtain wall not only reconciled these goals, but also strengthened the tower's presence. As employees adjust the green floor-to-ceiling louvers throughout the day, the subtly fluctuating façade reveals the role of individuals within the growing company.

Effectiveness Versus Efficiency

The Chinatrust Commercial Bank's headquarters, designed in 2007 and nearing completion this year in Taipei, Taiwan, advances new thinking around effective versus efficient connections and the expanding potential of atria as conduits of internal communication. The project includes a 30-story headquarters building, a 21-story commercial office building, a 10-story hotel and a four-level retail center.

Because conventional offices prioritize efficiency—the use of elevators to transfer between floors, for example, or rigid workstation layouts—they diminish opportunities for the informal or serendipitous exchange. In contrast, Chinatrust's headquarters tower incorporates a series of atria that act as vertical courtyards, opening up and creating connections between floor plates. These stacked and linked atria provide varied settings for valuable interaction and exchange, and help



Figure 5. Samsung Electronics Corporate Learning Center. This project was one of the first explorations into positive polarization. (Source: Courtesy NBBJ)

图5. 三星电子公司学习中心。该项目是首次对正向极化进行的探索之一。（出自：NBBJ友情提供）

栈功能要素——可以营造出一种人员互动和交流的空间。社交磁力——诸如餐饮设施、健身中心、图书馆、咖啡厅和其他社交聚会区等共同的学习和生活空间——吸引着来自公司各个不同部门和层级的学员们会晤、互动和在教室之外进行学习。这种协同在这种内部空间中展示出来，营造出一种持续参与式的学习环境。学习完成后，该学习中心还可以用作新研发园区（见图5和图6）。

灵活的系统

也是在2006年动工的面积为十万零两千平方米（一百一十万平方米），二十八层的高楼是NHN公司的新总部，这家韩国最大的在线游戏媒体和互联网门户网站给在常规塔楼形式中探索增强的灵活性带来了机会。这座塔楼于2010年竣工，集较低层级多样化设施于一体，包括商店、餐厅、咖啡厅、休闲厅、和一间八百座的礼堂、一个屋顶花园和托儿所设施。这些更加社会化的环境与总部大型开放式工作场所形成互补，营造出员工之间的互动和协作的氛围。

能控制室内光照等级的能力对于NHN公司庞大的计算机编程团队尤其重要，但这种要求最初看起来与公司希望的透明大厦及其伴随的光线和景色有所冲突。安装在玻璃幕墙后面的一个垂直百页窗系统，不仅使这些目标协调一致，而且还加强了塔楼的外观。随着员工在白天调节从底层到顶层的绿色百页窗，微妙波动的外立面彰显出这家欣欣向荣的公司内部每个个体角色的职责。

效能与效率

中国信托商业银行设计于2007年，今年在台湾的台北市几近竣工，该项目提高了关于效能和效率之间联系的新思维，并将前庭的潜能扩展为内部交流的汇集中心。该项目包括一座三十层的总

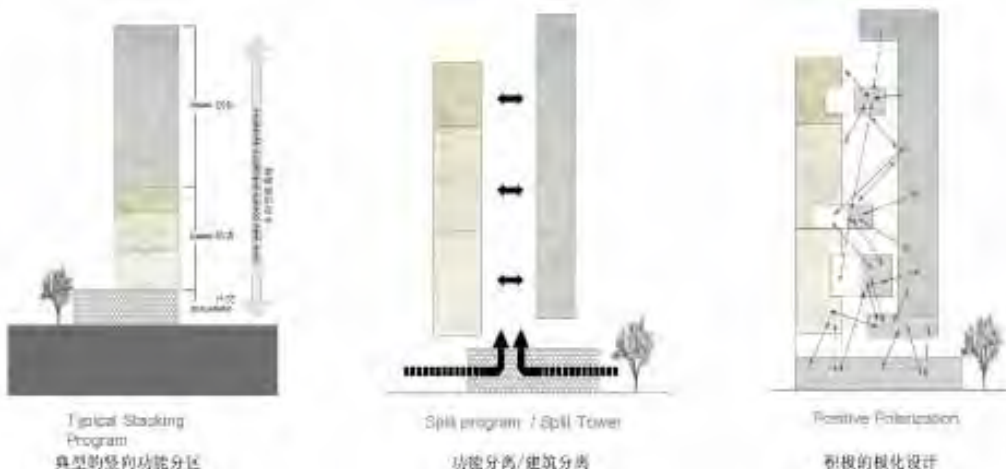


Figure 6. By pulling the form and program apart, rather than stacking program elements in a conventional tower, the building creates space for people to see each other and engage. (Source: Courtesy NBBJ)

图6. 将形式与功能分开，而不是像常规塔楼那样堆栈功能要素，营造出一种人员互动和交流的空间。（来源：NBBJ提供）



Figure 7. Chinatrust's Headquarters Tower advanced thinking around effective versus efficient connections and the expanding potential of atria as conduits of internal communication. (Source: Courtesy NBBJ)

图7. 中国信托商业银行总部大楼提高了关于效能和效率之间联系的新思维，并将前庭的潜能扩展为内部交流的汇集中心。（出自：NBBJ友情提供）

to reduce energy use by increasing natural light within the interiors (see Figures 7 and 8).

KT Corporation's new Seoul headquarters—designed in 2008 and comprising two towers—pushed these ideas further by introducing building-high atria in the main tower flanking the center core to the north and south. The resulting H-shaped floor plan, effectively two thin column-free floor plates joined by the central core, provides improved natural light and visual connections between floors, and expanded views outward to the city. Within the south atrium, connecting ramps facilitate movement between floors and integrate spaces for individual retreat, small group meetings and informal presentations.

The connectivity afforded by the atria enables a decentralized, three-dimensional workplace in which connections and interactions transcend individual floor plates. As an added benefit, the atria allow for natural ventilation and increased access to natural light, thus reducing energy demands for heating and cooling.

Achieving Synergy

With the competition-winning design for Tencent's global headquarters in Shenzhen, China, selected earlier this year, the vertical, urban campus finally takes shape. As one of China's largest internet service portals, Tencent could have easily followed a typical low-rise campus model. Instead the company selected a prominent site within the Shenzhen High-tech Industrial Park, in the Nanshan district, where land costs and development patterns necessitated a high-rise approach. The vertical campus typology provided Tencent with the advantages of a corporate campus while retaining the civic stature that a tall building affords (see Figure 9).

The powerful presence of the project's two slender towers linked by three sculptural bridges, belies the design's focus on user experience and environmental performance as key drivers of the building form. The 270,000-square-meter (2.9 million-square-foot) complex—through its hybrid program and design—integrates human connectivity, environmental responsiveness and long-term flexibility on multiple levels.

Dividing the headquarters program between two linked towers provided many environmental benefits. The atria with their vertical gardens increase the natural light available to the office floor plates, further reducing energy demands. The slender towers are turned slightly to take full advantage of prevailing winds, which help to naturally ventilate the atria, while minimizing exposure to harsh, direct sun to the east and west. To further control heat-gain while



Figure 8. Chinatrust's Headquarters Tower component diagram
图8. 中国信托商业银行总部大楼功能分布图

部大楼、一座二十一层的商务办公楼、一座十层的酒店和一个四层的零售中心。

由于常规办公室是以效率优先——例如，在楼层之间使用电梯上下，或是刚性的工作站布局——这样就减少了非正式或偶然的交流。相比之下，中国信托总部大厦将一系列前庭合并成为垂直庭院，开放并形成楼层之间的连接。这些堆栈的和连接在一起的前庭为有价值的互动性和交流提供多样化的环境，并且提高了室内的自然光照的利用率，有助于减少能耗（见图7和图8）。

韩国电讯公司新建的首尔总部——设计于2008年，由两座塔楼构成——在主楼中引入高大的前厅，并将中央核心筒放置于南北两侧，进一步推动了协同空间的理念。由此形成的H形楼层平面布局，两层薄型无柱式楼层由中央核心筒有效连接起来，改善了楼层之间的自然采光和视觉联系，并扩大了朝向市区的景观。在南前庭之内，连接坡道使楼层之间的移动更为顺畅，并将空间整合用于个人休息、小型群体会议和非正式展示。

由前庭提供的连通性使分散性三维工作场所成为可能，在这种工作场所中，连通性和互动性超越了单一楼层。还有一种额外的好处是，前庭考虑到自然通风并提高了自然光线的进入程度，因此减少了取暖和降温的能源需求。

实现协同

随着中国深圳的腾讯全球总部的竞标设计在今年早些时候入选，垂直性城市园区理念最终成型。作为中国最大型互联网服务门户网站之一，腾讯本来可以简单地遵循一种典型的低层园区模式，但相反，该公司在南山区深圳高新科技园区内选择了一个黄金地块，此地的土地成本和开发格局必须要采纳高层建筑模式。垂直园区类型学给腾讯带来的优势是，它既提供了公司需要的园区空



Figure 9. Tencent Global Headquarters (Source: Courtesy NBBJ)
图9. 腾讯全球总部 (出自: NBBJ提供)

admitting natural light into the interior, the curtain wall incorporates a modular shading system that can be adjusted according to the degree of sun exposure. These passive strategies alone will reduce energy consumption and carbon emissions as much as 40% over a typical office tower.

On a functional level, splitting the program into two towers allows for more flexible, open floor plates with minimal cores, and activates positive polarization. Conventional thinking would have placed Tencent's extensive program of social magnets or shared functions—which include retail, services, dining, transportation links, conference facilities, recreation space and social areas—at the complex's lower levels. Instead, the design disperses social magnets throughout the three transfer floors, significantly enhancing their interactive dimension. The transfer floors wrap and permeate the towers, further integrating the social hubs and office space. "Squares" and "plazas" throughout all the floors further promote chance encounters and community (see Figure 10).

The three transfer floors act as nodes on a larger transportation network that extends to the city. Employees move from the building's multi-modal transit hub (located on the B1 level) to a transfer floor, then use stairs and elevators to reach their destinations. By relating to the towers as a vertical campus or neighborhood, the central circulation breaks down the building hierarchy and therefore, any implied social hierarchy, thus aligning the headquarters with today's flattening social structures.

Tencent's workspaces are designed to quickly adapt to a range of team sizes and work styles. Zones for individual or collaborative work can be swapped or merged according to need, or expanded to join two to three floors connected by stairs, atria or bridges. The increased visibility between towers and transfer floors, as well as within the towers, strengthens the creative connectivity and sense of community intended to drive Tencent's continued market leadership (see Figure 11).

Next Generation Synergy

Just as Tencent reflects more than a decade of exploration and testing of ideas that push the potential of high-rises as social and environmental contributors, emerging technologies and evolving thinking promise further advances. Higher-performing materials, improved solar technology and new mobile tools, for example, will continue to inform new solutions and design imperatives. However, the foundational innovation embodied in the Synergy Tower typology is its extension of human-centered workplace strategies to the high-rise form.

间, 又得到了高层建筑所带来的城市形象 (见图9)。

该项目两座纤细的塔楼由三座雕刻的栈桥连接在一起, 该建筑体型设计是以用户体验和环境绩效作为关键的动因。这座二十七万平方米 (两百九十万平方英尺) 的建筑联合体——通过其综合性功能和设计——将多层面上人的连通性、环境响应性和长期灵活性整合在一起。

将总部功能分置于两个互相联系的塔楼提供了很多环境益处。垂直花园的前庭增加了办公楼层的自然采光利用率, 进一步减少了能耗需求。两座纤细塔楼稍微转向以充分利用盛行风, 这有助于前庭自然通风, 并且使东边和西边直接暴露在严酷的阳光下的状况最小化。为进一步控制增热而同时允许自然光线进入内部, 玻璃幕墙中整合一个模块化遮阳系统, 可根据阳光暴晒程度进行调节。仅这些被动策略就能够减少一栋典型的办公大楼多达百分之四十的能耗和碳排放量。

从功能层面而言, 将建筑方案分置两座塔楼提供更为灵活的、开放的、有小核心筒的楼层, 并且促进正向极化, 常规思维可能会将腾讯巨大的社会磁力或分享功能配置在建筑群的较低层——这些功能区包括零售、服务、餐饮、交通枢纽、会议设施、娱乐区域和社交区域。相反地, 设计将社会磁力分散在三层转换层中, 显著提高其互动维度。转换层缠绕和渗透进塔楼之内, 进一步将社交集散中心和办公空间整合在一起, 整个楼层之间的“广场”和“集市”进一步促进了交流的偶然性和社区性的形成 (见图10)。

三层转换楼层是作为一个延伸到城市的较大型交通网络的节点。员工可以从建筑物多联换乘枢纽 (位于地下一楼) 移动至一个转换层, 然后利用楼梯和电梯抵达自己的目的地。通过连接塔楼成为一个垂直园区或邻域街区, 这中央循环系统分解了建筑物层,

TENCENT COMMUNITY AND CONNECTIVITY



Figure 10. Tencent community and connectivity
图10. 腾讯社区及其连通性示意图



Figure 11. "Squares" and "plazas" throughout all the floors further promote chance encounters and community. (Source: Courtesy NBBJ)

图11. 整个楼层之间的“广场”和“集市”进一步促进了邂逅机缘和社区性。（出自：NBBJ友情提供）

With this fundamental shift, the Synergy Tower concept will continue to work to accomplish the following:

- Establish a new urban typology which redraws the patterns of human-based cities as vertical communities
- Enable innovation as the foundation of the idea economy through new kinds of spaces and environments
- Drive a denser, more productive development pattern that preserves green edges and natural assets
- Forge a sustainable future by improving building performance across all measures, including resource efficiency, workplace productivity and satisfaction, and transportation links, among others.

Although it may seem counterintuitive, establishing human interaction and well-being as the core concern of architects, developers, business leaders and elected officials working in the urban realm increasingly proves economically sensible. By more effectively aligning people, industry, cities and the environment, the Synergy Tower typology works to maximize the social, environmental and economic advantages of high-rise development.

因此也就分解了隐含的社会层级，这样使总部大厦与现今平坦社会结构相连接。

腾讯的工作场所设计可以快速适应各种团队规模和工作风格。个人或协同工作区可以根据需要交换或合并，或透过楼梯、前庭或栈桥连通将二层或三层楼层扩展结合在一起。塔楼和转换楼层之间以及塔楼内部增强的可见度，加强了创造连通性和社区感，并驱动腾讯持续的市场领导地位（见图11）。

新一代协同

正如腾讯所体现的十多年来在推动高层建筑的潜能以作为社会和环境的贡献因素所进行的理念测试和探索一样，不断兴起的技术和进化的思维必然会带动进一步的进步。例如，性能更优越的材料、完善的大陆太阳能技术和新型移动工具将会继续完善新的解决方案和设计要求。然而，以协同大厦类型学所包含的根本创新就是将以人为本的工作场所策略延伸至高层建筑形体之中。

随着这种根本的转变，协同大厦的概念将会继续发挥作用以完成以下内容：

- 创建一种新型城市类型学，将基于人的城市格局刷新成为垂直社区；
- 通过新型种类的空间和环境使创新成为理念经济的基础；
- 推出一种更为密集、更富于生产性的、能保护绿色地带和自然资产的发展模式；
- 通过改善各种层级的建筑绩效，包括资源效率、工作场所生产效率和满意度、交通枢纽以及其他等等，来打造一个可持续性的未来。

尽管看起来可能似乎是违反直觉，但是建立人类的互动和福祉，作为在城建领域中活跃的建筑师、开发商、企业领袖和民选官员所关注的核心问题，越来越多的证据显示它在经济上也是明智的。通过更有效地连接人们、工业、城市和环境，协同大厦类型学致力于最大化高层建筑发展的社会、环境和经济优势。