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Tall Buildings in Future Development of Metropolitan Universities

高层建筑对于大城市高等院校未来发展的作用



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Abstract

In the future, the University will need to consider vertical models to co-exist within their urban cores and create a living and working balance. With the rise of commercial real estate values and densities in many major metropolitan areas, the ability to expand within the urban core is being challenged. A successful vertical model is the recently completed 425 S. Wabash Building at Roosevelt University in Chicago. It builds on the lessons of other vertical educational institutional buildings, utilizes a constricted urban site to support a wide range of educational uses, and adds to the vibrancy of the surrounding urban area. This paper will summarize the lessons from other vertical educational structures internationally, the application of these lessons in the Wabash Building, and a positing of the increasing importance of the "vertical model" for urban educational institutions.

Keywords: High-Rise, University, Sustainability, Community, Urban Habitat, Chicago

摘要

未来高等院校需考虑垂直模式使之与城市核心区共存，并平衡人们的生活与学习。在很多大城市里，伴随着商业地产以及建筑密度的增长，位于城市核心区的高校扩张正在接受挑战。位于芝加哥中心区425号南沃巴什大街的新落成罗斯福大学综合楼则是一个垂直模式的成功案例。它是在吸取其他垂直高校教学楼的经验的同时满足教育的多种需求而又为周边的都市环境增添活力。本篇将总结国际上其他垂直模式教学楼的经验，以及这些经验是怎样应用在沃巴什罗斯福大学综合楼上的，并讨论城市中教育机构的“垂直模型”不断增加的重要性。

关键词：超高层建筑，高校，可持续性，社区，都市人居环境，芝加哥

Vertical Organizational Models for Universities

The Tall Building has historically been a phenomenon of market-driven development for commercial and residential structures in metropolitan areas where real estate is at a premium. Their logic of planning and construction has served programs which are "homogenous" in nature, (composition of like parts) and unconnected to other structures. Myron Goldsmith's "Thesis of a Concrete Skyscraper" is a diagrammatic example of this (see Figure 1).

In the past four decades, there have been many examples of tall building and super tall building developments with mixed-use programs, combining retail, office, residential and hotel uses. These have been developed in America, specifically in Chicago and New York, and in China in Shanghai's Pudong District. Many mixed-use developments have consisted of separate towers hosting distinct functions, but the focus here regards single tower structures with vertical zoning or "stacking" of different uses. Two distinguished examples would be the John Hancock Building in Chicago and the Jin Mao Tower in Shanghai.

高等院校的垂直组织模型

在地价昂贵的大都市中，高层建筑一直是商业和居住建筑为市场导向的产物。他们规划和建造的逻辑服务于本质上“同质的”的业态（同类别的组合），而且与周边建筑没有联系。迈伦戈德史密斯的《关于混凝土摩天大楼的论文》即是一个形象的例子（图1）。

在过去的40年里，已经出现了很多高层和超高层建筑的案例是结合商业、办公、住宅以及酒店的综合体项目。在美国尤其是芝加哥和纽约以及中国的上海浦东开发了很多类似的项目。许多综合体项目都是由各自拥有不同功能的塔楼组成，而本篇文章聚焦单个塔楼内的竖向功能分区，亦称功能的“叠加”。在这方面有两个著名案例分别是芝加哥的约翰·汉考克大厦和上海的金茂大厦。

在高校建筑中，高层建筑曾经以住宅的形式出现过但是鲜有作为教学功能使用。而将教学、行政、学生生活、宿舍组织在同一建筑中的案例更是罕见。不同的高校建筑对功能上的要求与传统意义上的高层建筑截然不同，他们在本质上是“异质的”。斯塔雷特-范·傅勒克在纽约市中心设计的健身俱乐部正是这种方式应用的案例（图2）。

传统意义上的高校功能上的组织都是水平方向的，不同功能的建筑通过庭院等开放

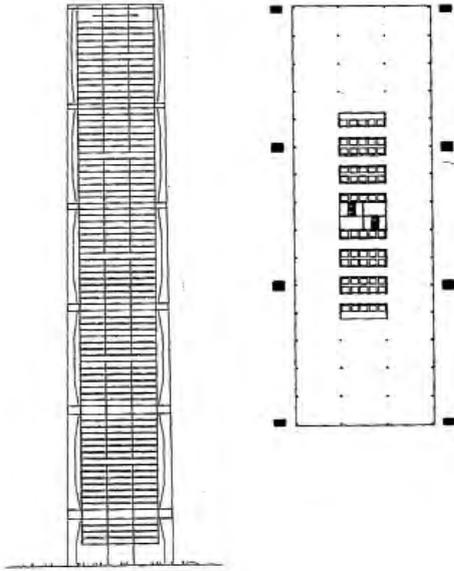


Figure 1. Myron Goldsmith, Concrete Skyscraper, 1953
图1. 梅陇高德史密斯, 混凝土摩天楼, 1953

Institutions of higher education have used high-rise concepts for their residential programs but rarely for their core academic programs. Even rarer are examples of vertical organizations that combine the separate components of academic, administration, student life and student residential in single structures. The program requirements of the different university functions are widely divergent from traditional typologies of tall buildings. They are “heterogeneous” in nature. The Starrett and Van Vlek Downtown Athletic Club in New York is an example of this approach (see Figure 2).

Traditionally universities are horizontal organizations of purpose-built structures that are connected by open spaces of quadrangles and courtyards. However, there are examples of universities that have employed vertical organizational strategies to overcome site constraints and, in some cases, to create an expression of symbolic importance. The examples below discuss successful case studies past and present in America, Asia and Europe. An expanded discussion is presented on the Wabash Building at Roosevelt recently opened in mid-2012 in which the authors have been directly engaged in the design and engineering. The Wabash Building discussion also highlights how the growth of the educational and cultural institutions alongside commercial expansion has led to a balanced and sustainable urban habitat in the Central Loop area of Chicago.

Cathedral of Learning, University of Pittsburgh

The Cathedral of Learning was designed and built between 1926 and 1937 and is the third tallest university building in the world at 535 feet (163 meters) and 42 stories. It contains a vertical mix of uses including classrooms, libraries, faculty offices, and the university administration as well as support spaces for dining, student services and a computer center (see Figure 3).

The tower was the vision of Chancellor John Bowman who wanted to solve the issue of a critical shortage of facilities and land to handle the dramatic increase in enrollment for the University of Pittsburgh after the First World War. The tower solution was to also to be, in the words of Chancellor Bowman, a “symbol of the aspirations of the City”.

The Tower is stepped with a base that hosts the magnificent “Commons Room” patterned and built like a nave of a Gothic Cathedral,

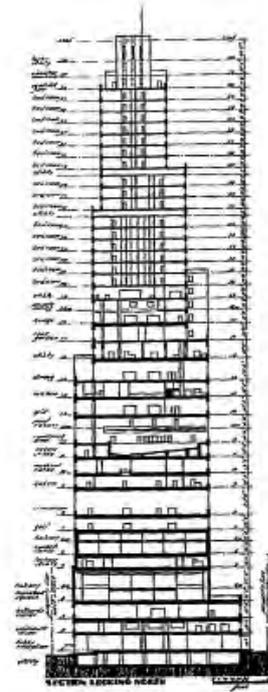


Figure 2. Starrett & Van Vlek, Downtown Athletic Club, New York, 1931
图2. 斯达瑞、特凡威客, 市中心运动员俱乐部, 纽约, 1931

空间相连。但是也有些案例通过垂直向组织功能来解决场地的限制, 某些情形下还要表达建筑的标志性。下面的案例将探讨美洲、亚洲和欧洲现在和过去的成功案例。本文将对最近2012年年中落成使用的坐落在沃巴什大街的罗斯福大学大楼进行广泛的讨论, 作者直接参与了设计与工程过程。该讨论也强调出教育和文化建筑的发展与商业的扩张是怎样将芝加哥城中心发展成为一个和谐、可持续性发展的都市居住区。

匹兹堡大学学术堂

学术堂在1926至1937年间设计并建造完成, 高535英尺(163米), 42层, 是世界上第三高的高校建筑。它由教室、图书馆、教师办公、行政、以及其他辅助功能如餐厅、学生服务和计算机中心通过垂直向功能组织的方式组成(图3)。



Figure 3. Cathedral of Learning, University of Pittsburgh. (Source: Image from : <http://www.thisplaceiknow.com>)
图3. 匹兹堡大学学术堂, 匹兹堡大学 (来源: 图像: <http://www.thisplaceiknow.com>)

as well as the landmark “Nationality Rooms” which were special Classrooms and lecture halls representing the cultures of countries around the world.

The architect Charles Klauder from Philadelphia worked to fuse modern skyscraper technology with the ideas and forms of the Collegiate Gothic style prevalent in many university campuses at that time and still considered a symbol of the cultural value of higher education.



Figure 4. Moscow State University
图4. 莫斯科国立大学

Lomonosov Moscow State University, Moscow, Russia

Lomonosov Moscow State University is the highest University building in the world at 788 feet (240 Meters) and 36 stories plus a spire designed in the Neo-Classical style by the Architect Lev Vladimirovich Rudnev. The building was part of a larger program decreed by Joseph Stalin to surround the City of Moscow with seven Neo-Classical towers of which this was the tallest (see Figure 4).

The design and construction took place between 1948 and 1953 and it opened on September 1, 1953. At that time it was the tallest building outside of New York and Chicago, and it was the tallest building in Europe until 1990. The tower is connected and flanked by four massive wings that include accommodations for faculty and students as well as other support facilities. The tower itself hosts the offices, classrooms and laboratories for the Faculties of Geology, Geography, Mathematics and Mechanics and the Fine and Performing Arts. Also within this complex are a theater, opera house, sports facilities, administrative space as well as support retail and dining space.

The design of this complex was driven by the will to express symbolically the prestige and power of the Soviet Union more than the educational values of the Institution itself. The suburban site location and design is reminiscent of Versailles in its grand and monumental scale. The central tower of 1,370,000 SM is developed off a cruciform with a spire of over 40 meters placed on top.

Raimondi College, Hong Kong

Raimondi College is a co-educational English-medium secondary school in Hong Kong. It was established in 1958 and is located in the Mid-Levels on Hong Kong Island halfway between Victoria Peak and the Central Business District in a prestigious expatriate international community. This Roman Catholic Institution is adjacent to both the

塔楼是应校长约翰·鲍曼想解决一战后设备与土地的短缺和急剧增长的学生数量之间的冲突而设计并建成。该建筑同时也被鲍曼校长称为“城市抱负的标志”。

塔楼的裙房中包含类似哥特教堂中的“公共休息室”以及著名的代表各个国家文化的教室及演讲厅，即“国家教室”。

来自费城的建筑师查尔斯·克劳德融合了现代的高层建筑技术与哥特式的理念和外观，这在当时的高校建筑中很流行，而在今天这种形式仍被看作是高等教育文化价值的标志。

罗蒙诺索夫莫斯科国立大学，莫斯科，俄罗斯

罗蒙诺索夫莫斯科国立大学大楼高788英尺（240米），是世界上最高的高等教育建筑，36层之上还有一个新古典主义尖塔，建筑师是列弗·弗拉基米罗维奇·鲁德涅夫。该建筑是约瑟夫·斯大林倡导的“在莫斯科周围建7幢新古典主义建筑”运动中的一部分，也是最高的一幢。（图4）

该建筑于1948至1953年之间设计并建造完成，于1953年9月1日落成使用，在当时是纽约和芝加哥之外的最高的建筑，也是1990年之前欧洲最高的建筑。该塔楼四周的翼楼与之相连，翼楼中有教职员和学生宿舍以及其他辅助设施。主塔楼则由地质学、地理学、数学、机械、美术和表演艺术学院的教师办公室，教室及实验室组成。同时该项目中还包含了影院、剧院、运动场地、行政用房以及配套的商业和餐饮空间。

除了表达学院本身的价值之外，该项目的设计同时也反映出当时苏联强烈向世界展示自己的强权和威望的愿望。该项目地处郊外的特性和设计令人联想到凡尔赛宫宏大的尺度。中心塔楼位于一个十字之上，总建筑面积达到1,370,000平方米，塔楼顶端还立有40余米高的尖塔。

高主教书院，香港

1958年成立的香港高主教书院是香港一家英文授课的合办中学，位于香港半山区，维多利亚港与中环之间的一个国际社区。这家天主教会学校紧邻圣母无原罪主教座堂和宏基国际宾馆（图5）。

校园由三幢建筑组成。A座为一14层建筑，位于山坡顶端，由教室、阅览室、实验室和活动室以及行政办公空间组成；B座10层，由教室、实验室和辅助活动空间组成；C座4层，包含预科教室、多媒体教室和计算机房。

该项目是亚洲在面对高密度和高地价问题所提供不同类别的高层建筑方案的一个范例。



Figure 5. Raimondi College, Hong Kong (Source: VOA Associates Inc.)
图5. 高主教书院，香港（来源：VOA 事务所）

Immaculate Conception Cathedral and The Bishop Lei International House Hotel (see Figure 5).

The campus consists of three buildings. Block A, a 14 story structure, is at the crest of the hill and contains classrooms, libraries, laboratories, activity rooms and the administrative offices. Block B, a 10-story structure, contains class rooms, laboratories and support activity rooms. Block C, a four-story structure, contains preparatory class rooms, multimedia facilities and computer rooms.

This is an example of the heterogeneous hi-rise structural solutions that institutions are creating in Asia to address density requirements and the high-cost of land.

University of Sheffield Arts Tower, Sheffield, UK

The Art Tower for the University of Sheffield, designed by Architects Melvin Ward and Partners, is a 20-story tower at 255 feet (78 meters) in height and is the tallest university building in the UK. It contains the Departments of Landscape, Modern Languages, Philosophy, Biblical Studies, and Architecture. It also has two levels below grade which house nine lecture theaters, a cafeteria and a computer center. The below-grade spaces effectively act as the base of the building. The above-grade spaces contain classrooms, studios, offices and libraries (see Figure 6).

To accommodate both a substantial program and the desire to maintain the open lawns and green areas that distinguish this campus, a hi-rise solution was used that contrasts with the smaller-scale traditional masonry buildings existing on campus. The Arts Tower connects into the existing campus through a landscaped promenade including a lake and a bridge at the building entry. This modern structure was elegantly designed and became a landmark for both the University and the City.

The significance here is the adaptation of the hi-rise modern prototype for the academic institutional building and its expression of institutional presence on a city scale.

Mode Gakuen Towers, Tokyo and Nagoya-shi, Japan

These two towers were completed in 2008 for a consortium of Universities: Mode Gakuen, a fashion design school; Hal Tokyo, an information technology school; and Shuto Iko, a medical welfare school. All are operated by Mode Gakuen in both Tokyo and Nagoya with the exception of the medical welfare school in Nagoya.

The Tokyo structure, called the Cocoon Tower, is the second tallest university building in the world at 668 feet (204 meters) tall, has 50 stories and was designed by Tange Associates. It is located in the Shinjuku Central Business District and is an important component in the revitalization of this area. The plan consists of three rectangular core buildings rotated at 120 degrees around a central core. The tower is curvilinear at the perimeter, tapers to the top floor and is zoned into three parts vertically with each zone having its own bank of elevators to reduce congestion. Three-story atria between the classroom blocks replace the open spaces of the traditional campus open space or quads, creating views to the city and promoting social interaction throughout the structure. The plan repeats itself in the tower with smaller classrooms toward the top. The base connects to the underground pedestrian and transit system with retail support shops and parking. Separated and articulated above the base are two large lecture halls stacked one upon the other (see Figure 7).



Figure 6. University Arts Tower, University of Sheffield, UK.
图6. 谢菲尔德大学艺术楼，谢菲尔德大学，英国

谢菲尔德大学艺术楼，谢菲尔德，英国

谢菲尔德的艺术楼的设计者是梅尔文·沃德建筑师事务所，该塔楼有20层，255英尺（78米）高，是英国最高的高等教育建筑，为景观设计系、现代语言系、哲学系、圣经研究系和建筑系共用，地下的两层包含有9间讲堂、一间餐厅和一间计算机房。地下空间有效构成了建筑的基础。地上功能包含了教室、工作室、办公室和图书馆（图6）。

为了承载丰富的使用功能和开放的绿地空间来让校园变得与众不同，该项目采用了与周边传统小规模砖石建筑截然不同的高层策略。设计通过包含了湖面和入口桥的景观性漫步场所来连接艺术楼与周围校园其他设施。现代结构经过精心的设计成为校园乃至城市本身的地标。

值得称道的是，这座塔楼将高层现代建筑和传统教育设施的蓝本完美契合的同时突出了在城市尺度上的高校的形象。

东京时尚学院塔楼，东京和名古屋，日本

这两座塔楼都于2008年完工，为若干个学院共用：东京时尚学院、东京数码学院和医学护理学院。除位于名古屋的护理学院，这三个学院都是由东京时尚学院集团管理。

东京的塔楼被称为蚕茧大厦，有50层，高668英尺（204米），由丹下健三建筑师事务所设计。该建筑位于新宿中央商务区，并成为复兴该地区的一个重要部分。平面上，三个互相之间呈120度角的长方形围绕中央核心筒。塔楼边缘呈曲线，向上逐渐向内收起，竖直方向上分成三个功能分区，三个分区分别有自己的电梯组，以便减少人流上的阻塞。教室组之间的三层通高的中庭代替了传统意义上水平铺开的校园中的开放型空间，提供了朝向城市的景观并在整个建筑中促进人与人之间的交流。随着形体的变化，越靠近顶层，教室越小。底层在地下与人行通道和公共交通系统相连，并包含商业和停车场设施。与结构脱开的裙房中上下两层叠加两个大的讲堂（图7）。

名古屋的塔楼被称为螺旋塔楼，功能设施与东京的蚕茧大厦相似，日建设计，高558英尺（170米）是世界上第三高的高等教育建筑。平面本身与蚕茧大厦相似，但是教室的位置随着高度的升高在平面上进行旋转，底层与步行系统、名古屋火车站周边的商业相连。塔楼将容纳超过8000名学生，为当地注入新的活力。

这两幢塔楼的重要性在于，在竖向组织其教育设施的基础上战略

The Nagoya structure, called the Spiral Towers, has a similar program to the Tokyo Cocoon Tower. Designed by Nikken Sekkai, Ltd., it is 558 feet (170 Meters) in height and is the third tallest educational building in the world. The planning of the tower is similar to the Cocoon Tower, however the Spiral perimeter of this tower shifts the positions of the classrooms as they move up the structure, accommodating the pedestrian movement around its site adjacent to the Nagoya Train Station with retail and shops at the ground floor level. Over 8,000 students will use this facility and bring new energy to this area.

The significance of these towers is that they are vertically organized academic buildings strategically placed within the existing public infrastructure of their respective cities, connecting to mass transportation and creating density that sustains the economy and culture of their respective communities.

Broadcasting Place, Leeds, UK

Broadcasting Place is a new academic complex for Leeds Metropolitan University that is sited close to the city center of Leeds. It is one of a number of projects that is designed to tie together the urban fabric of Leeds by overcoming the divisive effects of motorways dividing separate sections of the city (see Figure 8).

The project provides offices, teaching facilities and student residences for the Leeds Metropolitan University Faculty of Arts and Society. The complex incorporates the Old Broadcasting House (the BBC Television Studios where the first motion picture was developed in the late 19th Century) and a new Baptist Church.

The plan creates pedestrian spaces on the ground level that reconnects significant existing city pathways. The 68,815 SF (6,496 SM) complex includes a 240-unit residential tower of 228 Feet (70) meters in height as a landmark for the University and the community. Although the complex is not a vertically-stacked organization, it is a remarkable design that uses hi-rise principles for the service of the expression of the institution and its contribution to the urban habitat.

The Wabash Building, Roosevelt University, Chicago, USA

The Wabash Building at Roosevelt University in Chicago is the newest example of a "vertical campus" design that includes a variety of stacked university functions in a constricted site and also functions as a symbol of renewed energy at the university and in the area. The building is scheduled to open in mid-2012.

The Central Loop area of Chicago has seen growth in employment (Fortune 500 companies and governments), residential population (both for-sale and rental) and new retail shopping. Accompanying this demographic and commercial growth over the last two decades has been the expansion of educational institutions as well as cultural, entertainment, assembly and recreational opportunities.

Part of this has come from public sector investments that have supported the premises and intentions of the Burnham Plan. The development of Navy Pier into a cultural, conferencing and entertainment attraction, the development of Millennium Park, the expansion of existing cultural institutions, and the redevelopment and expansion of McCormick Place have all contributed to the vibrancy and health of the Central Loop. There has been balanced growth in commercial, residential, cultural and institutional development that has sustained and enhanced Chicago. There is a quality of "heterogeneity" to the growth and composition of the City (see Figure 9).

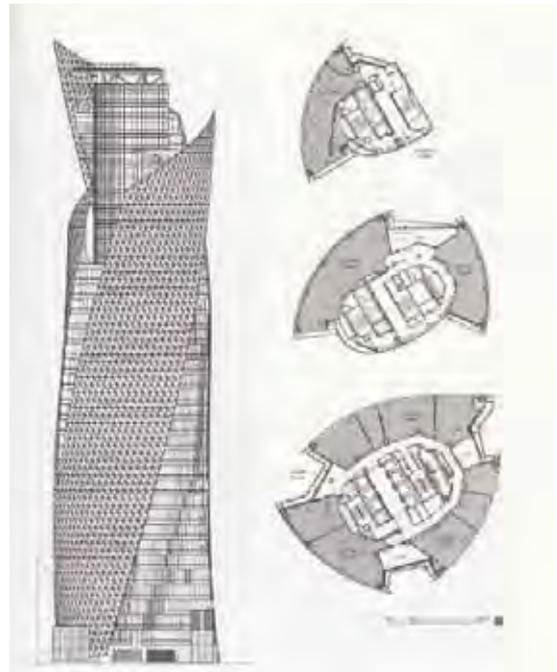


Figure 7. Mode Gakuken Tower, Tokyo (Source: A. Wood, Best Tall Buildings 2009, CTBUH International Award Winning Projects)

图7. 东京时尚学院塔楼，东京（来源：A 伍德，最好的高层建筑 2009，高层建筑协会获奖建筑图片）

性融合了城市中现有的公共基础设施，并与公共交通系统相连，创造保持社区经济和文化所需的密度。

广播中心，利兹，英国

广播中心是利兹城市大学的新的教学综合楼，位置靠近利兹城市中心。是众多旨在以克服高速路将城市分化的影响，来将利兹城市肌理紧密结合的项目之一（图8）。

项目为利兹都市大学艺术与社会学院提供办公，教育和学生居住设施。综合体包含了旧的广播大厦（原BBC电视制作中心，暨19世纪晚期第一部电影制作的地方）和一个新的近信会教堂。

平面上在首层设置了步行空间，重新连接了众多现有城市道

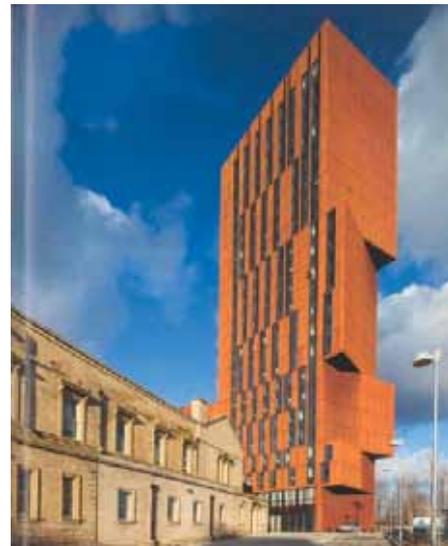


Figure 8. Broadcasting Place, Leeds UK (Source: A. Wood, Best Tall Buildings 2010, CTBUH International Award Winning Projects.)

图8. 利兹城市大学广播中心，利兹，英国（来源：A 伍德，最好的高层建筑 2010，高层建筑协会获奖建筑图片）



Figure 9. Plan of Chicago Central Area (Source: Chicago Loop Alliance, "Loop Economic Study and Impact Report")

图9. 芝加哥中心地区平面（来源：芝加哥环路联盟“环路经济研究和影响报告书”）

Chicago is famous for its innovations in architecture, especially the developments of the modern tall and super tall building, as well as its innovations in planning. The Burnham Plan of 1909 provided the vision upon which the city developed in the 20th Century and continues to do so. The Plan developed a comprehensive system of land uses, transportation networks, park systems and neighborhoods with a primary focus on the Central Business District and the development of the Lake Michigan shoreline. The Lakefront was developed as a continuous park that extends the entire length of the shoreline along the city. Public and institutional buildings were given expression in this grand setting, creating the memorable identity which Chicago celebrates today. It is one of the few modern Cities in the world where the institution plays such a prominent visual role in city planning.

Roosevelt University is located in the center of this historical development at the central gateway of the Lakeside Park in the Auditorium Building, completed in 1890 by Louis Sullivan. The Auditorium building is a landmark in the history of architecture and was one of the first modern vertically-organized mixed-use structures in America. It is comprised of the Auditorium Theater, world-renowned for its acoustics and development of modern theater technology, office space and a hotel (see Figure 10).

Roosevelt University has been a steward of this cultural monument since it took ownership in 1945. Their decision to create a larger campus with the Herman Crown Center, a 300-bed student residential addition built in the early 1950's, signaled their commitment to continue this stewardship. It also led the way for the development of other educational institutions, such as DePaul University and Columbia College, to expand in the South Loop area. Today over twenty colleges and universities with over 60,000 students are drivers of the redevelopment and revitalization of this area.

The Wabash Building is designed to address a dramatic growth in enrollment and facilitate a transition from a part-time, commuter student base to a full-time, traditional urban university experience. It provides large classrooms, science laboratories, administrative offices,

路。68815平方英尺（6496平方米）的综合体作为大学和社区的地标建筑，其包含了240个住宅单位，高度228英尺（70米）。尽管综合体不是垂直功能叠加的建筑，它仍然是一个运用了高层策略对城市人居环境作出贡献的卓越设计。

沃巴什大厦，美国罗斯福大学，芝加哥

芝加哥罗斯福大学的沃巴什大厦的“垂直校园”设计是最新的案例，该项目在一个紧凑的基地上叠加了各种大学功能，也是代表大学及这一地区的新生活力的标志。该大楼预计在2012年年中投入使用。

芝加哥市中心近几十年来持续体现就业增长（财富500强企业和政府部门），居住人口增长（包含自购房和租赁房）和新的零售业增长。伴随着过去的二十年里这一人口和商业的增长的是教育机构的增长，以及文化、娱乐、集会和体育设施的增长。

这其中部分来自公共部门的投资以完善支持伯纳姆规划。将海军码头发展成为文化、会议和娱乐的旅游景点，加上千禧公园的开发、现有文化机构的延伸和麦考密克中心的扩建和重新开发，这些都对市中心的活力和健康发展做出了贡献。商业，居住，文化和教育机构发展是协调共进的；这些举措维持并平衡了芝加哥地区的发展。城市的成长和组成中存在一种“异质性”（图9）。

芝加哥因其建筑的创新而闻名，尤其是其现代高层和超高层的发展以及在规划方面的创新。1909年的伯纳姆规划为城市二十世纪的发展提供蓝本，今天也仍然是城市发展的基础。规划制订了一个全面的系统，包括土地使用，交通网络，停车系统，公园系统和街区，重点为中央商务区 and 密歇根湖滨地带。湖滨地带被整合成为一个连贯的公园系统将城市所有的沿湖地带联通起来。公共和教育机构建筑在如此宏大的规划蓝图中创造出一系列令人难忘的建筑形象。这也正是芝加哥今天为之骄傲的地方。芝加哥也成为世界上少数几个由教育机构在城市规划中扮演如此的突出视觉角色的城市之一。

罗斯福大学正处于这一有着悠久历史的区域的中心，毗邻在1890年由路易斯·沙利文完成设计的大礼堂建筑和湖滨公园的门户中心。这一礼堂建筑是在建筑史上的一个里程碑，是美国第一个现代垂直组织综合体。礼堂剧院是其中的组成部分，其声学效果、现代剧院技术、办公空间以及酒店设计都享誉世界（图10）。

罗斯福大学一直是这个文化古迹的管理者，大学于1945年取得该建筑的所有权并决定创建连同赫尔曼皇冠中心在内的一个更大的校园。在19世纪50年代早期，一栋包含300个床位的学生宿舍扩

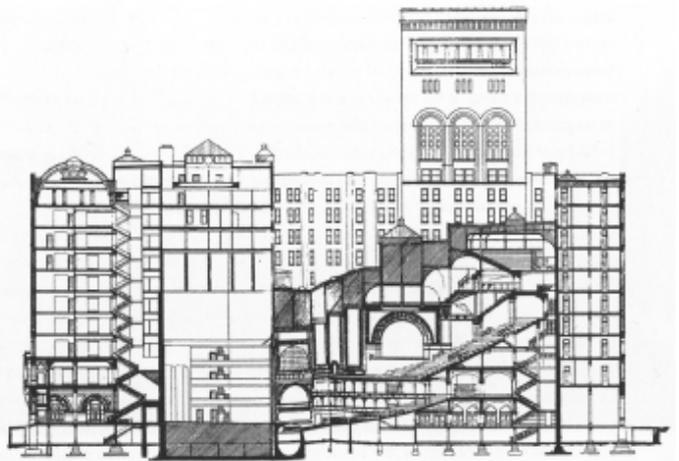


Figure 10. Adler and Sullivan, Auditorium Building, Chicago, 1887-1889, Longitudinal Section

图10. 阿德勒和沙利文，大会堂建筑，芝加哥，1887-1889，纵剖面

a student union and residential facilities to improve the quality of academic instruction and student life. The university's decision to build adjacent to the Auditorium on a site that was relatively small (17,300 square feet) with a program of 417,000 SF implied that a "high-rise" of over 30 stories would be required to satisfy the program. The decision to use the site adjacent to the Auditorium allowed the use of both the infrastructure of the original campus and the city infrastructure of utilities and public access. The expansion would create a more functional and flexible "campus" through its interconnections on multiple levels serving both Roosevelt University and the Auditorium Theater. There was also a provision by the City Landmark Committee to maintain and restore the landmark façade of the Fine Arts Annex designed by a student of Louis Sullivan, Andrew Rebori, in 1923.

The design approach was to create a Servant - Served space relationship by offsetting the core and support spaces to the north side of the site and placing the "served" spaces to the south. This facilitated the maximum possible span to address the assembly spaces that were the core of the program, the multiple connections required on different levels to the adjacent Auditorium building, and the maximum amount of light and views of the surrounding Burnham Lakefront Park.

To create a university environment, which is typically a horizontally connected organization, a series of vertically connected "neighborhoods" were created through atrium and social space on each floor. These spaces induce the "out of class" opportunities so important in the university experience. The four "neighborhoods" starting from the ground level are dedicated to the Student Services, Student Union, Academic and Student Residential areas. It is a "heterogeneous" approach to the design of the tall building (see Figure 11).

The 32-story structure is steel construction, while the core at the north end cantilevers the structure over the adjacent Auditorium Building to avoid disruptions to the foundations. The form of the building

建, 标志着他们承诺将继续这一管理。这也同时引领了其他教育机构的发展之路, 例如德宝大学和哥伦比亚学院在市中心南区的扩展。今天这个地区拥有超过20所高校和超过60,000名的学生, 成为这一地区重建和振兴的动力。

沃巴什大楼的建筑, 致力解决入学人数的急剧增长的问题, 并促进以兼职通勤学生为主的大学向全日制学生为基础的传统城市大学的转变。它提供了宽敞的教室, 实验室, 行政办公室, 学生中心和住宿设施, 全面提高学术教学和学生生活质量。大学决定在与大礼堂建筑毗邻的狭小基地 (17,300平方英尺) 上建造417000平方英尺的空间来承载各种功能, 意味着必须超过30层的“高层”建筑才能满足需要。利用礼堂旁的这块基地的决定让学校利用原有的校园、城市基础设施和公共交通系统到达校园成为可能。此次扩建将创造一个功能更强大和灵活的“校园”, 通过多楼层交互连通来服务于罗斯福大学和世界著名的礼堂剧院。城市地标委员会还要求保持和修复工艺美术大楼具有标志性的建筑立面, 建筑由路易斯·沙利文的学生安德鲁瑞博里在1923年设计。

为创造一个服务与被服务的空间关系, 设计采用偏移核心筒和结构体系至基地的北侧的方法, 将被服务空间放置在南侧。这使得可以利用尽可能大的跨度来安排主体功能核心即集会空间, 这样还能满足不同楼层与大礼堂建筑的连通要求, 同时拥有最充足的光线和最大的面向伯纳姆湖滨公园的景观朝向。

为了创造大学校园氛围, 传统的设计手法是横向地组织联系。在本项目中我们设计了一系列的垂直向连通的中和和其他公共空间作为“邻里空间”。这些空间包含了很多“课堂以外”的机会, 是大学生生活里非常重要的校园体验。四个邻里空间从首层开始, 包含学生服务中心, 学生活动中心, 学术中心以及上部的学生宿舍。这是一种“异质化”的高层设计手法 (见图11)。

32层的塔楼设计成钢结构的体系, 核心筒位于北面, 将建筑主体悬挑于大礼堂建筑之上, 以避免对该建筑基础的破坏。建筑的形象表达了社区及邻里概念, 中庭和社交空间随着建筑向上延伸, 布置在建筑体的向外突出的部分。建筑的形象还很好的体现了罗斯福大学“超越”的办学宗旨 (见图12)。

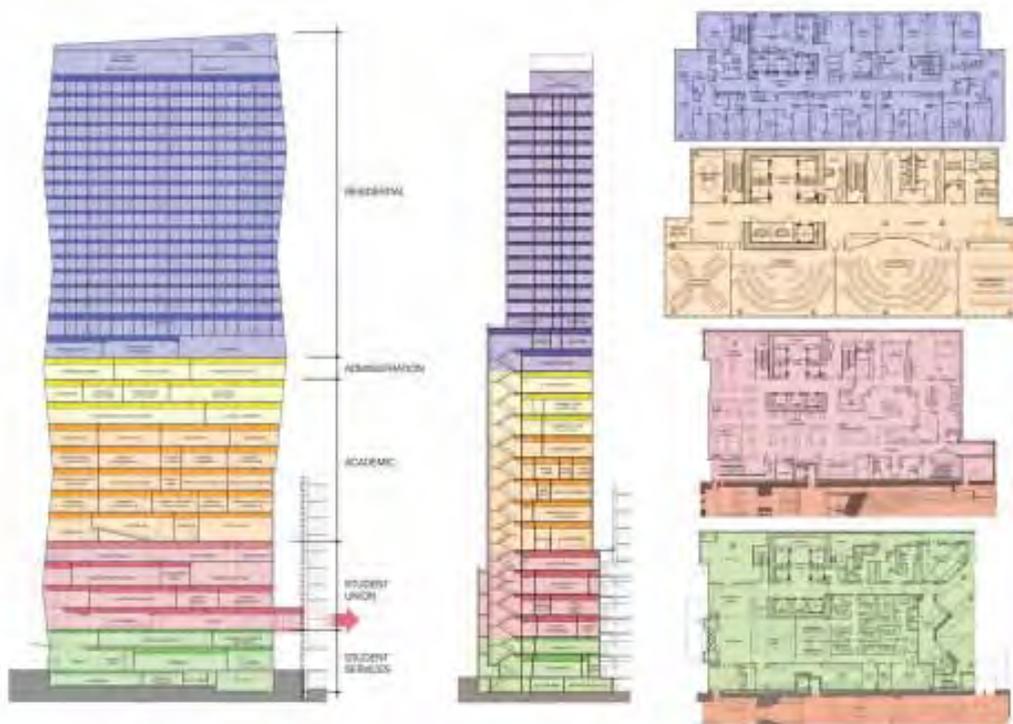


Figure 11. Section through Wabash Expansion, Roosevelt University, Chicago (Source VOA Associates Inc.)
图12. 罗斯福大学沃巴什扩建项目剖面, 芝加哥 (来源 VOA 事务所)

expresses the neighborhood concept: the atrium and social spaces are expressed in the outward bow of the building form as it rises up. This form expresses the transcendence of the university experience which is an authentic expression of the mission of Roosevelt University (see Figure 12).

What is significant about the development is that it is a vertically-organized university building with the complete components of a university program. As a tower, it is not a freestanding city block, but is rather connected to the whole block and to the community in general. Like the original Auditorium Building, the tower emerges from its mid-block location and gains expression and identity from Grant Park which emphasizes the significance of the Institution as an underlying premise of the Burnham plan. It sustains the Institution, the landmark Auditorium Building and the larger Chicago community.

Conclusion

Vertical organizations for universities are possible with benefits in adaptable strategies for dense urban locations and institutional identity. The “heterogeneity” of approach to the design of tall buildings with a similar approach to the planning of urban cores may be significant in improving the quality of urban habitat.

Sustainability is a balance of economic, environmental and social requirements. The role of the university within the urban core of growing metropolitan areas around the world will be to maintain the balance of activities vital to the health of the urban habitat. The presence of the university within these urban centers may in the future be based on their ability to and creativity in adapting to models of vertical organization.



Figure 12. Wabash Expansion, Roosevelt University, Chicago (Source: Tom Rossiter 2012)
图1. 罗斯福大学沃巴什扩建项目，芝加哥（来源 汤姆 罗斯特尔 2012）

这个项目的重要之处在于，这是一个垂直向组织的建筑，它包含了大学的全部功能。作为一栋塔楼，它不是孤立的，而是与整个街区甚至大的社区密切相关。像原来的大礼堂建筑一样，建筑从街区的中间部分涌现出，从Grant公园方向看过来也具有极高的辨识度。这样的组织既强调了学院的重要性，同时又与伯纳姆的总体规划一脉相承。建筑极好的体现了大学精神，又与标志性的礼堂以及整个芝加哥地区完美融合。

总结

高校建筑的垂直向组织对于结合高密度城市 and 高校自身特点的适宜性策略来讲是可行的。这种对高层建筑的“异质化”设计手法类似于城市核心区的规划方法，将极大地提升城市人居环境质量。

可持续发展需要平衡经济，环境，社会的需要。在全球范围内持续发展的大城市核心区，高等院校将对城市人居环境的健康起到极关键的平衡作用。未来这些城市中心区的高校形象将很可能基于其活动性和创造性对垂直组织的模型的适应性。

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