

# 垂直花园设计

——从零到整进阶指南

艺力国际出版有限公司 编



大连理工大学出版社

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# PREFACE 序言

**“The eye sees, memory re-sees and imagination trans-sees. We ought to trans-view the world.”**  
(Manoel de Barros, *The Book about Nothing*)

The main urban centers of the world are ill. The rapid growth of cities has caused permanent wounds that remain open. Particularly in Latin America, car-oriented mindsets and the amount of concrete and asphalt on the landscape generate an unhealthy environment with immeasurable consequences to the lives of most of the population. The average green area per person is 2.6 sq. m. in São Paulo city, whilst the WHO (World Health Organization) recommends an average of 12 sq. m.

The arrival of urban vertical gardens in Brazil, based upon the visionary Patrick Blanc's project, was developed in a way that the technique was adapted to the country's own reality. Some of the innovations proposed by Movimento 90° (m.90°), led by the Brazilian landscape artist Guil Blanche, include modular plates made of recyclable material, reuse of rainwater on the irrigation system and adaptability to several types of surfaces. This pioneer technique allows vertical gardens to be developed in urban scale with reduced costs, prompting the creation of Green Corridors and expanding their benefits throughout the city's every corner.

Nevertheless, it is the center of São Paulo city that calls for most of the attention. In this area, there are more than 30 thousand buildings and, in particular neighborhoods, approximately 95% of their occupation consists of vertical constructions. An historical factor contributes to this data: the buildings in the city center were mostly constructed in a time where the exterior sides of buildings could not sustain windows or openings. In the 1970's, the construction of connected buildings was allowed, therefore the shared wall between them could not have openings. From 1972, with the Brazilian Civil Code and the prohibition of connected buildings, blind facades were still at large, for windows and openings were forbidden within 1.5 meters of the neighboring building. Due to the factors mentioned above, the landscape of the central region of São Paulo today is extremely dense, formed by the presence of excessive buildings and several blind facades.

A road stands out in this landscape. The Elevated Highway “Presidente João Goulart”, commonly known as “Minhocão”, illustrates a symbol of the city's deteriorated state. Whilst a widespread public debate seeks for resolutions — at times antagonic — for this deadlock, São Paulo's City Hall approved, by means of the Environmental Commitment Term (TCA), the installation of the world's first Green Corridor, an endeavor carried out by Movimento 90° that has recently completed in September 2017.

The movement for a greener city does not fail to consider, side by side, the artistic relevance of urban vertical gardens. It was by taking into account the demands for more access to culture within the city that the Green Corridor of Minhocão project invited 7 artists to imbue the gardens with artistic expression. Such an example is the garden composition of the Bonfim building, designed by artist Paulo Monteiro, in which the various layers of vegetation resemble the traces of paint that run through a canvas.

Works like this are only beginning in São Paulo. The mapping of approximately 500 blind facades (about 258 sq. m.) only within the expanded city center demonstrates that we live in a moment of transition. On the other hand, vertical gardens in urban scale do not intend to be definitive, but serve as a gesture, a response, a step towards the direction of a more pleasant, less polluted and unhealthy city, as well as a less anthropic landscape, but decisively more cultural.

May there come the bees, the bicycles, the return of the rivers, the planting of trees where they may grow and where we didn't even imagine it so, the electric cars, the shared economy, the green roofs, the rain gardens, the new parks and qualified public spaces.

“记忆可以将眼睛看到的重新回忆，想象则将眼睛所看到的再造重塑。我们应以后者的方式待之于这个世界。”  
(曼努埃尔·德·巴罗斯, 《无关紧要的书》)

May the beginning of the realization of one vision give strength to the fulfillment of all others.

Natasha Asmar  
Movimento 90°

这个世界的主要城市中心都是病态的。城市的迅猛发展已经给地球造成了永久性的、仍然无法愈合的创伤。尤其是在拉丁美洲，尾气排放污染，以及地面上大量的混凝土和沥青，都造成了一种不健康的环境，给大多数人的生活造成了无法估量的后果。世界卫生组织建议，城市人均绿地面积应为 12 m<sup>2</sup>。然而在圣保罗，人均绿地面积仅为 2.6 m<sup>2</sup>。

巴西城市垂直花园的出现，建立在有远见卓识的帕特里克·布兰克的项目基础之上，它的发展方式使这项技术适应了巴西的实际国情。其中一些创意思法来源于巴西景观艺术家吉尔·布兰奇以及他的团队 Movimento 90°，包括可循环材料制成的组合模板、收集雨水再利用的灌溉系统以及对一些不同地表的适应性。这种领先技术降低了垂直花园的成本，并在大城市中得到发展，从而推动了绿色廊道的建立，还将益处扩散到城市的每一个角落。

然而，圣保罗城市中心仍然是人们最关注的地方。在这片区域，有着超过 30000 座建筑，主要是居民楼，且大约有 95% 的建筑都是垂直结构。导致这种情况出现的一个历史因素是：市中心的大多数建筑都是在建筑物外部还无法支撑门窗的时期建成的。在 20 世纪 70 年代，开始允许人们搭建相连建筑，因此，连接在建筑之间的公共墙壁是无法被打开的。自 1972 年以来，随着巴西《民法典》和针对连体建筑的禁令的颁布，例如邻近建筑 1.5 m 范围内禁止建造门窗，但不少连体百叶窗外墙仍然存在。根据上述原因，到今天为止，过多的建筑物和数面无用的外墙导致圣保罗市中心区的建筑规划仍然十分密集。

在这样一片景色中，有一条公路尤为显眼。高架桥“Presidente João Goulart”（通常被称为“Minhocão”，一种神秘的南美巨型蚯蚓）是整个城市日益恶化的象征。当公众在辩论中寻求打破僵局的方法（有时甚至充满对抗性）的同时，圣保罗市政厅通过了环境承诺条款（TCA），建立了世界上第一条绿色长廊。这条由 Movimento 90° 团队所打造的绿色廊道于 2017 年 9 月施工完成。

绿色城市的运动并没有忽视同样重要的城市垂直花园的艺术感。也正是考虑到城市内多样文化的需求，“Minhocão”绿色走廊的项目邀请了 7 名艺术家，为其注入艺术表现力。例如，艺术家保罗·蒙泰罗设计的邦芬地区的一座组合花园，各式各样不同层次的植被就像贯穿画布的颜色痕迹一般铺开。

类似这样的工作目前还只在圣保罗市开展。在城市扩建中，仅有大约 500 个（约 258 m<sup>2</sup>）百叶窗立面在城市中内存在，映射出我们生活在一个转型时期。另一方面，城市垂直花园的定义并不是固定的，可以作为一种姿态，一种回应，一种朝着更积极、更环保和更健康的城市迈出的步伐，同时也是一种减少人为化，但更具多样文化的景观。

但愿蜜蜂重飞，自行车重启，河流重流，树木种植在它们想要生长的和我们想象不到的地方。愿电动汽车、共享经济、绿色屋顶、雨水花园、崭新的公园和合理的公共空间都会到来。

希望一个愿景能够得到实现，并给其他心愿的实现带去力量。

娜塔莎·阿斯玛  
Movimento 90° 团队

# THE EDITOR'S NOTE

## 编者寄语

Plant is the quietest friend of human beings. Its species are very abundant and it has millions of shapes. Plant is an important element in our environment.

City is the main habitat of human beings, while buildings separate human beings from nature.

Perhaps the distance between human and nature is just a green wall. Plants growing on the wall are nothing new. However, thousands of plants growing on one wall are definitely rare in the world.

***Ecological plant wall may have become the fifth revolution — the green revolution, after agricultural revolution, industrial revolution, information revolution as well as internet revolution. It has gradually spread in more and more places all over the world.***

At first, ecological plant wall was invented by a French botanist named Patrick Blanc. As a kind of Horticultural model, it is called the "breathing wall" because it is built on the wall. Its irrigation system functions are just like capillaries of human; it collects rainwater, and can realize plant diversity within limited space. In Patrick Blanc's project, about 44,000 plants can be grown on 1,263 square meters building wall; soil and artificial irrigation are no longer needed. Plants on the building wall can adjust the temperature and provide us with fresh and cool enjoyment.

This building wall also has a poetic name — vertical garden. In 2009, TIMES ranked vertical garden with AIDS vaccine and Ares rocket of NASA as one of the fifty most important inventions in the world. The ecological plant wall plays an important role in the city because of its ecological functions. This vertical planting realizes maximal greening area at the cost of maximal greening area within minimum space. It creates a small forest that consists of lots of green walls, and it also provides a chance for city to embrace forest.

In 2004, The National Afforestation Environmental Protection Commission and SFA (State Forestry Administration) had proposed to construct forest cities, in the meanwhile, they also promote the construction of ecological civilization, creating a comfortable environment for human and building

a natural ecosphere for residents in the city. Later on, the government put forward the concept of "green building", which aimed at relieving urban heat island effect through green plants and making the green walls become important in city construction.

No matter where we see the ecological plant wall, we will be surprised that a little garden can be planted on a wall, always purify the air and adjust the temperature, bring natural and comfortable feelings to people. It's a green forest in gray city. While the ecological plant wall is a green safeguard outdoors, it is always full of vitality. Besides its unique appearance, people may marvel at its design. What kind of system can support the growth of this green wall?

***We cooperate with All Greening to create a book titled Vertical Garden Design for designers who prefer green environment and environmental protection. All Greening is the first enterprise in China that provides vertical greening services based on Internet. The essence of this book is the internal design of comprehensive vertical greening engineering. In this book, you can not only enjoy comfortable green space and the most up-to-date ecological healthy design concept, but also the classical ecological plant wall design projects both at home and abroad. Finally, through solving the problems of design system, construction process, as well as plants selection of ecological plant wall, it enables the readers to have a brand new understanding of plant wall.***

We would like to express our sincere appreciation to all designers and companies who made significant contributions to the compilation of this book, without their help, this book would not be published. In the meantime, we would also like to express our sincere appreciation to Patrick Blanc, the inventor of vertical garden; Shenzhen All Greening Ecological Environment Science and Technology Ltd. and other designers. Thanks to their contributions to promote the green industry development and their strong support to this book. May their thoughts and contributions be sustainable, and bring more green space to us.

植物，是人类最安静的朋友。它有千百万种姿态，物种极为丰富。人类赖以生存的环境中，从来都不能缺少植物的陪伴。

城市，是人类的主要栖息地，高楼林立，广厦万千，一个又一个小格子间，隔离着人类和自然。

但也许自然与人类只隔着一道绿墙的距离。植物长在墙壁上，并非什么新鲜事。但是，上万株植物长在一面墙上，绝对举世罕见。

**生态植物墙，或将是继农业革命、工业革命、信息革命、互联网革命后的第五大革命——绿色革命，它已悄悄渗进全世界各个城市的小小角落。**

最初，生态植物墙由法国植物学家帕特里克·布朗克研发，是一种建造在建筑墙壁上的园艺模式，被称作“会呼吸的墙”。它的浇灌系统功能类似毛细血管，可收集滴落的雨水，在最小范围内实现植物多样性。在他的项目中，

1 263 m<sup>2</sup>的面积可种植约44 000棵植物，不需要土壤，不需要人工灌溉，依附在冰冷的建筑之上，隔离暴晒，调节温度，更为我们带来清爽绿意的慰藉。

它还有一个更诗意的名字——垂直花园。在2009年，《泰晤士报》将垂直花园与艾滋病疫苗、美国太空总署的战神火箭，并列为全球五十项重大发明之一。正是因为生态植物墙这样一种立体绿化的工程艺术，在人口大量聚集的城市发挥着不可替代的环保作用，它能在最小的空间里，达到最大化的绿化面积，它能真正让由一座座绿植墙组成的生态小森林走进城市，让城市拥抱森林。

早在2004年，全国绿化委员会、国家林业局就提出建设国家森林城市。大力促进生态文明建设，打造人居舒适环境，为城市中的人们建设自然生态圈。之后，政府提出“绿色建筑”的概念，旨在让绿植缓解城市热岛效应，让植物墙在城市建设中大放异彩。

无论在哪里看到生态植物墙，人们总会眼前一亮，惊讶于一大片小花园能种植在高墙之上，常年不败，并时刻净化与调节空气和温度。它带给人们自然、自如、自由的舒适感受，是灰色都市中的绿光森林。于室外，生态植物墙是一层绿色保护衣；于室内，它是永远春意盎然的小森林。在它独具自然魅力的外表之下，人们更惊叹于它的设计。究竟是怎样的系统结构，支撑着绿色植被的生长？

**编者携手国内首个互联网垂直绿化品牌——绿意空间，面向广大设计师朋友和喜爱绿意环保的家庭用户，全力打造《垂直花园设计——从零到整进阶指南》这样一本小百科全书。本书的核心，就在于这项综合性的立体绿化工程的内部设计。不仅带你进入自然惬意的绿意空间，领略前沿的生态健康设计理念，也一览国内外经典生态植物墙案例，最终深度挖掘生态植物墙的设计系统，解密工程及植物适配性等疑惑，让读者对植物墙有一个立体的、全新的理解。**

真诚感谢本书所有投稿公司和设计师，如无他们的支持本书未必能如期出版。同时，我们也特别感谢法国植物学家、垂直花园发明者——帕特里克·布朗克，深圳市绿意生态环境科技有限公司和所有供稿设计师为推动生态植物墙的绿色行业发展所做的倾情贡献以及对本书的大力支持。愿他们的情怀与贡献源远流长，为人居生活带来更多的绿意空间。

# THE POWER OF SEEDS, GREEN REVOLUTION

## 绿色革命之种子的力量

Along with the rapid urbanization and human activities of more than 7 billion populations, our environment has been seriously polluted. Nature is moving much further away from us. We live in a crowded city with tall buildings. The gray sky and scattered green plants have become the background colors of our life.

We live with the increasingly extreme weather, dirty air and polluted water; the natural resources have been destroyed by some utilitarian. The blue sky and the dense forest became our childhood memories. We are hungry for the green environment, that's why we'd love to decorate our windowsill and balcony with green plants.

Perhaps, the change lies in a seed.

Do you believe in the power of a seed?

With the help of sunshine and water, seeds are able to grow up and cover everything, even towering skyscraper.

The tiny seeds show their powerful vitality by growing up under various environments.

Seed is the source of green revolution. It brings green color back to our life, suspended forest as tapestry to hang on the building, blooming flower to the coffee house at the corner of the street.

The fresh smell of plants, blooming flowers under the sunlight, dust washed away by rain. These gifts from nature bring pure comfort to our bodies.

We can choose a purer life style — "live naturally".

Let our body and soul be immersed in natural.

In recent years, creating forest city has become more and more popular in China, it aimed at city pollution problem's solving, a livable city environment's creating, nature backing to our daily life and citizens' living with nature.

As a landscape designer, our designs focus on the balance of nature and human. We are not aimed at creating nature, no one can create nature. In

随着极速推进的城市化、严重的工业污染、超过 70 亿人口的人类活动，自然，已经与我们渐行渐远。我们在城市这个小盒子里聚集，麻木地行走在钢筋丛林中，灰茫茫的天空、零星点点的绿化，仿佛成了我们的背景色。

当已不堪重负的我们忍受着越来越极端的天气、浑浊的空气和水，我们赖以生存的资源仍然被功利主义者严重掠夺。童年时的蓝天和树林已经成为褪色的回忆，我们喜欢在窗台，在露台，洒下自然的原色，何尝不是对绿色的期盼呢？

也许，改变，就在于一粒种子。

你相信种子的力量吗？

渺小的种子，经过阳光和雨水的洗礼，可以覆盖一切，哪怕高耸入云的摩天大楼。

微弱的种子，在各种环境下长出绿芽，抽出枝丫，展现它难以被击败的生命力。

种子，是绿色革命的源泉。在汹涌的城市污染面前，用它磅礴的生命，让绿色回归到我们的视野，让悬空森林像一张挂毯依附在大厦，让花团锦簇回归到街道转角的咖啡屋。

清风中绿植的清新味道，艳阳下盛放的花朵，洗去灰尘的和风细雨，这些自然的馈赠能够维系我们的生活，赋予心灵以纯澈，以诗意，以舒悦。

我们可以选择一种更纯粹的生活方式——“活得自然”。

让身体与灵魂，都浸润在自然里。

近几年来，国内掀起了一股打造森林城市的清新风潮，旨在积极解决城市污染问题，营造宜居的城市环境，让自然回归人居空间，让城市人与自然共生。

而作为景观设计师，我们设计的一切出发点，都是放在自然与人类的平衡上。我们要做的不是创造自然，没有人能创造自然。在我们的设计中，建筑装饰与景观之间并没有清晰的界限，让绿色植物取代玻璃幕墙，让建筑开始呼吸，给人们带来更舒适美好的空间体验。

our design, there is no clear boundary between building decorations and landscape. We use green plants to replace glass wall, allow the building to breathe and create a comfortable environment for us.

In order to realize the design of ecological wall, we need to take overall consideration at first when we planned it. This kind of comprehensive project involves plants selection, structure system, irrigation system, water-cycling system and the following maintenance which is an important step to ensure the sustainable growth of the ecological wall.

The more complex the internal system is, the simpler appearance of design is. Clients don't need to worry about the hardware system, what they will see are the tremendous power of seeds, the freshness of green revolution, and the brand new ecological living style which originates from nature.

要想实现绿意生态墙的空间设计，从设计之初的规划阶段就要通盘考虑，以便最终形成一个和谐的整体。这种综合的工程涉及植物设计、结构系统、灌溉系统、水循环系统以及后期维护等问题，以确保绿意生态墙的可持续性生长。

内部系统越复杂，呈现在用户眼前的内容就会越简单。用户不需要去操心与硬件系统相关的难题，他们会看到的，是种子磅礴而发的力量，是绿色革命带来的清新不同，是源于自然的生态人居新格调。



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CHAPTER

# 1

## Interviews

人物访谈

Patrick Blanc

*Inventor of Ecological Plant Wall Design*

Lan Xuan

*Pioneer of Ecological Plant Wall Industry*

帕特里克·布朗克

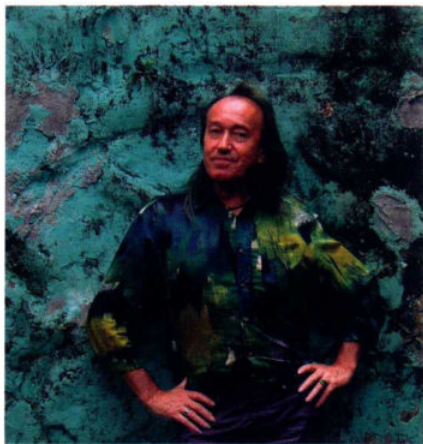
全球生态植物墙设计第一人

蓝轩

生态植物墙绿色行业推动人

# Inventor of Ecological Plant Wall Design

全球生态植物墙设计第一人



**Patrick Blanc** / (French)

Patrick Blanc was born in France, 1953. His exploration on botany has spread all over the world. He has several identities: Doctor, Scientist, Artist, and also a famous designer. He is the creator of "vertical garden", and he grows plants on different vertical surfaces, so people are willing to call him "Mr. Green", while his surname "Blanc" literally means "white" in French.

Mr. Blanc's first plant exploration was in Malaysia and Thailand. He became a researcher at CNRS (The French National Center for Scientific Research) when he was 29. In the meantime, he taught botany at the University of Paris VI as a professor. He was the first person that presented plant wall to the public in Paris, and he redefined the relationship between architecture and plants.

Having been involved in botany study for 40 years, Mr. Blanc has rich field exploration and theoretical research experience. In his unique vertical garden, hundreds of plants species grow harmoniously. For each of his work, he selects the local representative plants carefully. It reflects the regional characteristics of the work. More importantly, he takes space, structure and user's needs into consideration. Plus his superior aesthetic perspective, Mr. Blanc definitely has a special leading position in the vertical garden design field. He also points out that "Knowledge and first-hand experience about the botany are keys to my creation".

According to Mr. Blanc, "Soil is nothing more than a mechanical support. Only water, minerals, light and carbon dioxide are essential to plants, which can make them photosynthesize. The core innovation for vertical gardens is using plants' root to grow not only in a volume of soil, but also on a soilless surface. This is just what they do in their natural environment when their roots are growing on tree barks or among mosses covering rocks."

**帕特里克·布朗克** / (法国)

帕特里克·布朗克生于1953年，来自法国的他对植物学的探索足迹已经遍布整个世界。他有好几种身份：博士、科学家、艺术家，还是一位著名的设计师。因为他的创意“垂直花园”——把植物种在各种垂直的表面上，人们都愿意叫他“格林先生”（注：格林，Green，英文常见姓氏，也有绿色的意思），而他的真实姓氏布朗克（Blanc）在法语里却是“白色”的意思。

布朗克先生的第一次植物探索之旅是在马来西亚和泰国。他在29岁的时候就加入了法国科学研究中心（CNRS）成了一名研究员。同时，他还是巴黎第六大学（University of Jussieu）的教授。并且，作为把植物墙壁介绍给巴黎大众的第一人，他重新定义了建筑与植物之间的关系。

投身植物学40年之久，布朗克先生有着丰富的实地探索与理论研究经验。在他独创的垂直花园中，100多种植物争奇斗艳，和谐相生。他的每一个作品都精心挑选了当地的代表性植物，体现了作品的地域性特点。更加重要的是，他还会贴心地考虑到空间、构造以及用户需求，再加上他出众的美学视角，布朗克自然在垂直花园设计领域有着特殊的领先地位。他也特别指出，“植物学知识与一手经验是我创造中的关键。”

布朗克还表示：“对植物生长来说，土壤本身仅仅起到一个支撑的作用，真正重要的是其中含有的水分和各种矿物质，再加上光和二氧化碳，植物就可以进行光合作用。垂直花园的核心创意就是，利用植物根系的功能，让它们在无土环境下生长。它们在自然中也会这样，有时候长在树皮上，有时候长在岩石表面的青苔上。”

# Sit down with Mr. Patrick Blanc

和帕特里克·布朗克先生面对面



*Mr Blanc among a vegetative population of *Danaea ofwendlandii* at Utria NP, Colombia.*  
在哥伦比亚的乌特里亚国家公园，身处地蕨类植被丛的布朗克先生。



*Patrick Blanc observing *Phyllanthus phillyreifolia*, Belouve, La Reunion.*  
帕尔米斯特平原，在观察 *Phyllanthus phillyreifolia* 灌木（学名）的布朗克先生。

It was 10:12 am, I met Mr. Blanc or Mr. Green (since all his outfit was in different shades of color green, his hair, glasses and clothes) at the café of Hotel Icon, and this was the place where Mr. Blanc's second vertical garden in HK was located in.

Mr. Blanc came to Hong Kong as one of the speakers at BODW (Business of Design Week), so I started the conversation by asking him the important things that he wanted to talk about in his speech.

Mr. Blanc said: "Now we can grow plants vertically in many circumstances, even in the hash places. Such as my project in Saudi Arabia, a desert country with extreme climate. And the point is, only with deep understanding and experiences about plant species, can we create a vertical garden that is sustainable and economical while showing diversity in terms of plant species. Knowing the plants is particularly important when it comes to plant selection — how to create a harmonious combination of diverse plant species, how to integrate plants into the local environment, which local plant species to choose for reflecting local characteristic. All these questions demand rich knowledge. That's what I'd like to highlight in the speech. "

上午10点12分，我在香港唯港荟的咖啡厅里见到了布朗克先生，或者说是“格林（绿色）先生”，因为他的全套行头都是绿色系的（包括头发、眼镜、衣服等）。他在香港的第二个垂直花园项目也坐落于此。

布朗克先生此次来港主要是参加设计营商周（Business of Design Week）的活动，并在活动中致辞。于是一开场，我就询问他能否说说致辞中的亮点内容。

布朗克先生回答说：“现在，我们已经可以在许多条件下垂直种植植物了，我有个项目甚至是在沙特阿拉伯那样极端的沙漠自然条件中。只有对植物种类有了深刻的理解，并且在这方面有了丰富的经验，我们才能建立可持续的、经济实用的垂直植物花园，并确保植物种类的多样性。在植物选择环节中，这些丰富的知识和了解就显得格外重要，因为你要考虑如何在确保植物多样性的同时，让它们和谐共处；如何让植物适应当地环境；选择哪些当地植物可以更好地展现地域特色。所有这些问题都需要丰富的知识来解答。这也是我在演讲中想强调的问题。”

## *Every project is a new challenge. Replication is not allowed.*

每一个项目都是新的挑战。重复是不被允许的。

### *The growth habits of plants should be part of your vertical garden design plan.*

"In order to ensure the plants co-exist with each other harmoniously," Mr. Blanc explained: "I try to choose plants with the same growth rate to avoid over-shaded, and I also avoid using plants that grow too fast for less maintenance cost. The growth habits of plants should be considered in your vertical garden design plan, so the knowledge of plants is needed."

### *Every new project is a new challenge.*

As knowledge and experience grew, things could have become easier for Mr. Blanc, but it's actually quite the opposite. He highlighted: "Every project is a new challenge. Replication is not allowed. And in the recent 10 years, more and more challenges have been posted by the changing climate, increasing buildings and also some human factors." Considering these factors, the selection of plants played a key role in all of these projects.

In terms of plant selection, Mr. Blanc explained his general principles to us, "the higher plants of the vertical garden are more likely to encounter more growth challenges than the lower plants, especially the exposure to the weather, and the problem of uneven irrigation. In order to ensure a success in the sustainability of the vertical garden, the first thing is to use plants which naturally grow in soilless condition or in a thin layer of soil."

### *A variety of plants are not only visually attractive, but also more likely to survive when the climate change occurs.*

Mr. Blanc highlighted: "Every plant is beautiful as long as they grow up well, and arranging them together is not just for aesthetics, but more importantly the diversity that comes along." It's known that Biodiversity is a key factor in ensuring the survival of species in a region, and of course it's going to be the same with the vertical garden. This is mostly due to the fact that when under the same condition such as climate, the frequency of water distribution and nutrients, uneven water distribution is good for some plants, because some plants need more water while some others need less; some plants can consume minerals that other plants do not need; some will grow better when upper foliage throw a shadow over them (Mr. Blanc used French word "foliage" to express leaves).



*For his vertical garden on One Central Park, Sydney, Mr. Blanc has chosen 200 different native species and 150 exotic.*

在悉尼中央花园的垂直绿化公寓项目中，布朗克先生选择了 200 种当地植物，150 种外来植物。

## 垂直花园的设计方案应该考虑到植物的生长习惯

“为了确保植物之间和谐共生，”布朗克先生解释道，“我尽量选择生长速度一致的植物，避免出现互相遮挡。同时我也避免使用生长过于迅猛的植物，这样日常养护的开销就可以降低。在进行方案设计时，就应该考虑植物的生长习惯，因此必须具备植物方面的相关知识。”

## 新的项目，新的挑战

知识和经验随着时间积少成多，我们以为花园设计对布朗克来说也会愈发变得容易，但其实不然。“每个新的项目都是一个新的挑战，单纯地复制是行不通的，而且近10年来，气候变化巨大，高层建筑拔地而起，加上一些人为因素，挑战也越来越大。”布朗克强调说。考虑到这些因素，植物的选择就起到了关键性的作用。

在植物选择方面，布朗克先生向我们解释了他的总体原则：“垂直花园高处的植物更容易遭遇生长条件方面的挑战，风吹日晒都首先落在它们头上，而且还有灌溉不均匀的问题。因此为了确保垂直花园的可持续性，首先我们要优先使用天生可以在无土条件下生长的植物，或者那些仅需薄薄一层土就可以生存的植物。”

*PAMM museum. Mr. Blanc resists the wind and spray of typhoon season by choosing particular plants and irrigation system; in the meantime, he has to make sure that the water can not drip on visitors.*

迈阿密佩雷斯艺术博物馆。布朗克先生通过选择特定的植物和浇灌系统来抵御台风季的风和浪花，同时防止水滴落在到访者身上。



## 多样的植物不仅在视觉上实现美感，而且在发生气候突变时存活的可能性更大

“只要生长健康，每种植物都是美丽的。把它们放在一起不仅仅是为了好看，更重要的是这种多样性带来的深层意义。”布朗克强调说。现已证明，生物多样性是确保一个地区物种存活的关键条件，对于垂直花园来说也是同理。这主要是因为，在同样的气候状况、灌溉频率、营养摄取的条件，灌溉的不均对某些植物来说可能有利，因为有些植物需要较多的水分，有些则需要较少；有些植物可以消耗一些其他植物不需要的矿物质；有些植物因为有了上方植物的遮蔽，反而生长得更好（布朗克先生在此处还特别用了法语的“foliage”这个词，意为“绿叶”）。



## ***The gardening concept in Europe is quite different from that in some Asian countries such as China and Japan where plants in gardening are highly controlled and managed.***

Mr. Blanc thought that plants in the vertical garden should be treated as living species. "A great vertical garden to me is the one requires minimum maintenance. Regular cutting is unnecessary since the vertical garden is something evolving. And the factor of evolving, like I mentioned before, should be part of your garden planning and design", said Mr. Blanc, then he added, "And the vertical garden is something evolving, you need to consider this while planning your garden."

"Is it difficult to have vertical garden projects in countries like China and Japan? I think it really depends," said Mr. Blanc with a smile. Take China for instance, Mr. Blanc has worked with French architect Jean Nouvel on a vast arts complex project in Qingdao, which includes a museum, artists' studios and a marina. "The head of this project, Mr. Meng, is very sensitive to artistic work. He came to my house (studio) in Paris and proposed this project. His understanding of art really paved the way for our conversation, and this was a good example. While we got another client who spoke pretty good French, but I didn't know what she was talking about," he added.

Mr. Blanc pointed out that, according to his observation on many Chinese vertical gardens, plants are treated as a green decoration rather than living life, so people will trim plants after a period of growth in order to control their shapes. "So when the Chinese heard my vertical garden, they were shocked because I made the plants grow naturally," said Mr. Blanc.

"And I also found some local vertical gardens' plants were from their local environments, but people replaced plants every 3 to 6 months rather than maintaining it. That's not vertical garden for me but decoration," he continued saying that growing naturally was part of the vertical garden's beauty, and that required the knowledge of plants' characteristics at the beginning of the design and achieved balance between them for later maintenance.

As for the maintenance issue that everyone seems to worry about, despite a good irrigation system, selecting right plants can reduce maintenance costs, such as pruning, fertilizing and watering. In addition, examining whether the relationship harmonies or not among the building, people and vertical garden is also very important. "Last night, at 11 pm, I was asked to look after a bar by its owner, at that time the place was full of people who were dancing and drinking, and the lights were all on, therefore I got a better understanding of this place and knew what kind of vertical garden would be better for it."

### **欧洲国家的园艺理念与亚洲国家，例如中国和日本等国家的一些理念不同，后者会更多地对园艺植物加以控制和管理**

布朗克先生认为，应该把垂直花园中的植物真正作为生命看待：“在我看来，一个优秀的垂直花园应该越少打理越好，不需要经常剪来剪去，因为它自身应该是不断变化的。正如我之前提到的，变化这个因素，应该在规划的时候就考虑在内。”布朗克先生还强调，“垂直花园是一个变化的存在，所以你在规划方案时就要考虑到这一点。”

“在中国、日本等国家开发垂直花园项目就一定很难吗？我觉得这要看情况而言。”布朗克先生微笑着说。以中国为例，布朗克先生曾与法国建筑师让·

努维尔合作，在青岛开发了一个规模巨大的综合艺术项目，其中包括博物馆、艺术工作室以及码头等。“该项目的负责人孟先生（音），对艺术有着天生的敏感。他甚至亲自到我在巴黎的家（工作室）拜访，向我提出了这个工程的想法。他对艺术的理解着实为我们铺平了道路，这是好的例子。而另一位客户，尽管她的法语极其流利，但我们还是很难讲到一块去。”他又补充道。

布朗克先生特别指出，根据他对很多中国垂直花园的观察，他发现在这里人们通常把植物看作是一种绿色的装饰品而不是鲜活的生命，因此他们会人工控制植物的形态，生长一段时间后会对其进行修剪。“所以当中国人听到我的垂直花园时，他们都很震惊，因为我是让植物自然生长的。”他说。

“以前我还发现，很多垂直花园虽然是就地取材，但是人们每过3~6个月就会更换所有的植物。对于我来说，这样的设计不叫花园，仅仅是装饰。”他继续说。垂直花园一部分的美丽来自植物的自然生长，这需要在设计之初就对植物特性有所了解，实现它们之间的平衡，以便后期养护。

对于人人担心的养护问题，除了需要具备性能良好的灌溉系统，选择适当种类的植物也可以在一定程度上降低养护成本，例如剪枝、施肥、浇水等。除此之外，考察花园与所在建筑、人群之间的关系是否和谐也是很重要的一个环节。“昨天晚上11点多，有一个酒吧老板让我帮他照看他的酒吧，那时候酒吧里挤满了喝酒跳舞的人，灯光全部亮起，所以我对这个地方有了更好的了解，知道什么样的垂直花园更适合用在那里。”

## ***His work process***

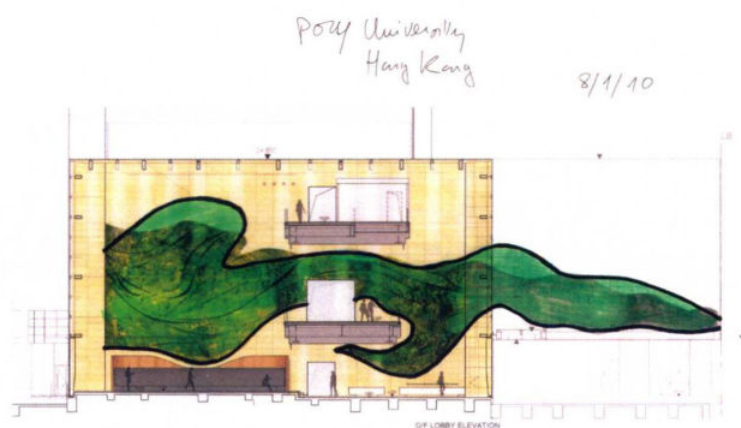
You may, like me, be curious about how Mr. Blanc has worked on his projects, "It totally depends on the project, I think it's important to know what is possible to do in a place before taking some methods. So I would discuss that with the owner of the place and the architect or interior designer, though sometimes I only got to meet the owner or the architect," said Mr. Blanc, and he kindly explained the process with two of his projects — an indoor vertical garden at Icon Hotel, Hong Kong and an outdoor project in Kuala Lumpur for French architect Jean Nouvel, Mr. Blanc's long-time friend.

### **工作流程**

你一定也和我一样想知道布朗克先生具体是怎么对垂直花园进行建设的——“这完全取决于项目类型，不过在使用某些方法之前，了解它在当地是否可行永远都是很重要的。所以我通常会与项目单位的所有者以及它的建筑师或室内设计师进行讨论，不过有些时候我只有机会和其中一方进行沟通。”布朗克说。之后他耐心地向我解释了他的两个项目——一个是香港唯港荟的室内花园，还有一个是吉隆坡的室外花园，后者是和他的老友让·努维尔一同设计的。

# Icon Hotel, Hong Kong

香港唯港荟



This project was completed in 2011, and it was the largest indoor vertical garden in Asia. It's located in the hotel lobby like a green backdrop stretching to leisure area's café and bar. This garden allows people to escape from city and to enjoy the nature for a moment. This small corner has 8603 plants, about more than 200 species.

"As for this project, I didn't meet the designer of this hotel, but I've worked with the hotel management team from Hong Kong Polytechnic University all the time," said Mr. Blanc, "at the first time, we planned to build two individual vertical gardens at the lobby and the café & bar area. But after my field trip, I suggested that it would be better to set up one garden so as to establish a link between the two regions instead of a strong sense of separation. So in that case, I did suggest to change the design. And after 6 years, we are now planning to extend our primary garden to the hotel's stone wall out of doors."

As to the plant selection, this project used native and imported plants both. "There are some Asian plants there, but most of the plants are actually from tropical America," Mr. Blanc explained.

该项目于 2011 年完工，是亚洲最大的室内垂直花园。它位于宾馆大厅，就像一道绿色的背景墙，一直延伸至宾馆休闲区的咖啡厅和酒吧，让人可以暂时逃离香港的水泥森林，享受片刻绿意。小小的室内一角，栖息着 8603 株植物，大约 200 多个品种。

“对于这个建筑来说，我就没有见到宾馆的设计师，不过自始至终我都与来自香港理工大学的宾馆管理团队一道工作，”布朗克先生说道，“最开始的设计方案是在大厅和休闲区设立两个分开的花园，但是在我进行了实地考察之后，我提议最好还是设立一个花园，从而建立两个区域之间的联系，并且更加有生气，这要好过两个花园带来的强烈分离感。所以我建议对原设计进行修改。6 年后的今天，我们正在着手把这个花园延伸到室外的石墙上。”

关于植物的选择，这个项目结合使用了本土与进口植物。“有一些植物是亚洲本土生长的，大部分植物其实是源自美国热带地区。”布朗克先生告诉我们。