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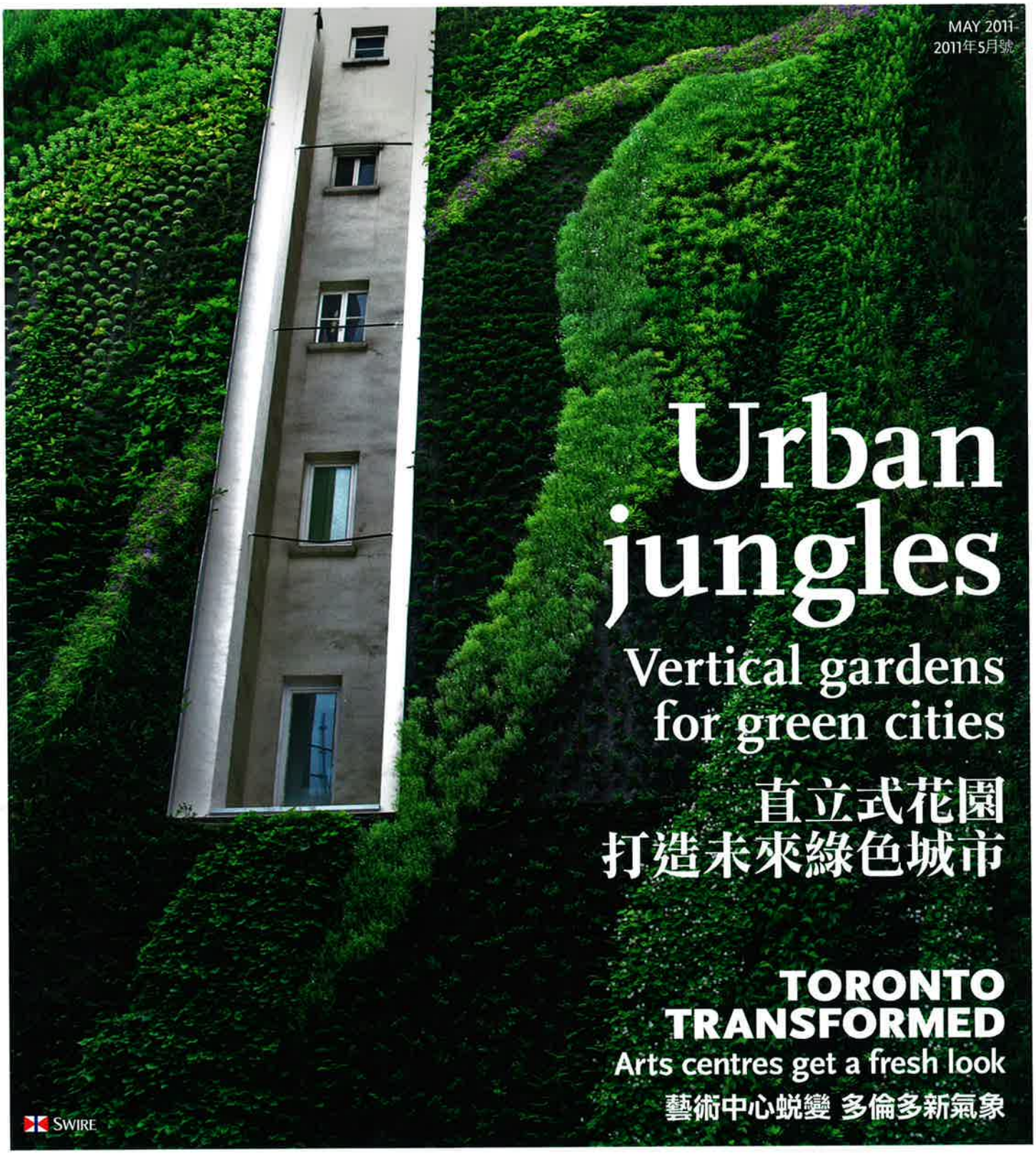

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Urban jungles

Vertical gardens for green cities

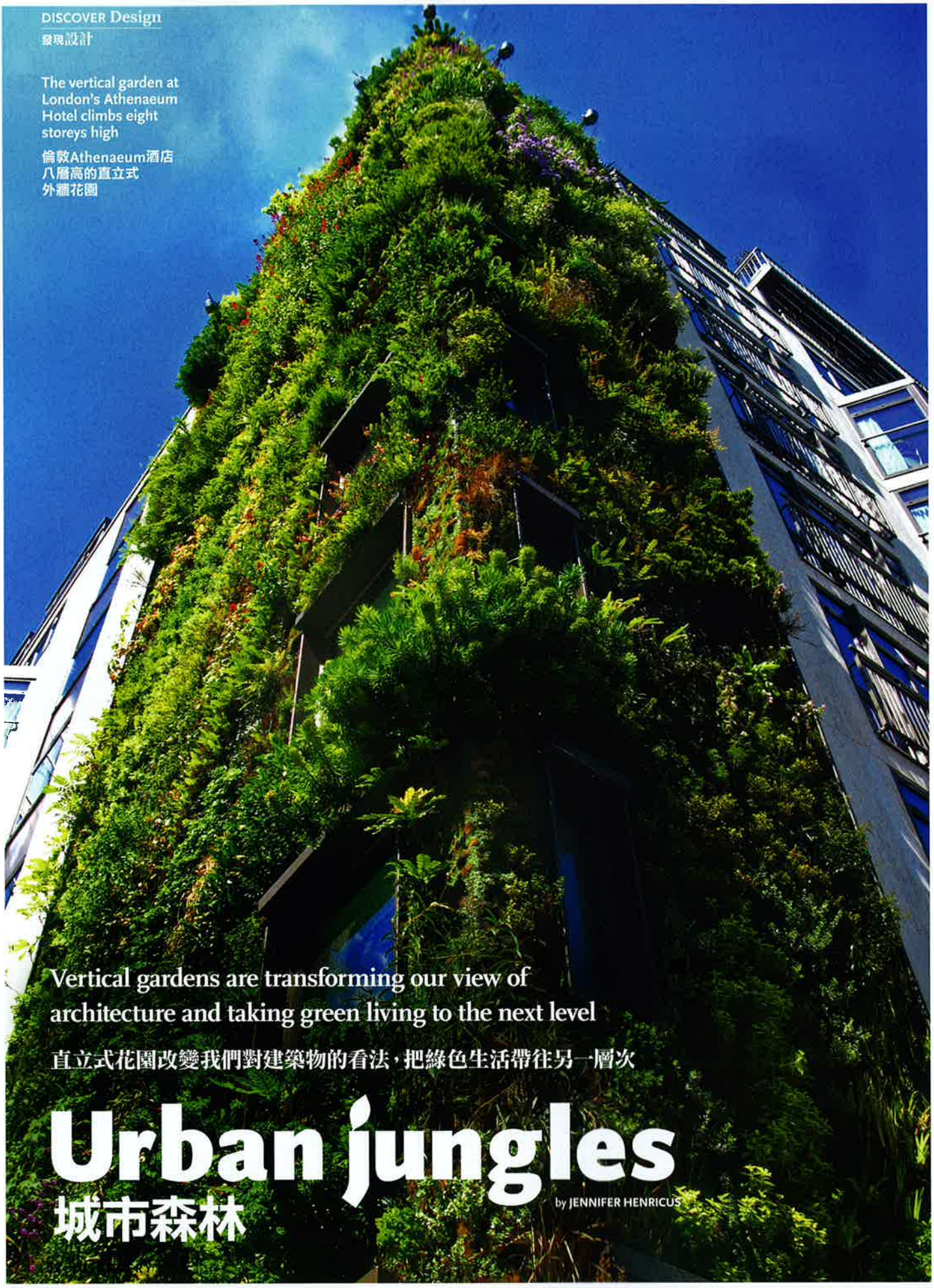
直立式花園 打造未來綠色城市

TORONTO TRANSFORMED

Arts centres get a fresh look

藝術中心蛻變 多倫多新氣象

SWIRE



The vertical garden at London's Athenaeum Hotel climbs eight storeys high

倫敦Athenaeum酒店八層高的直立式外牆花園

Vertical gardens are transforming our view of architecture and taking green living to the next level

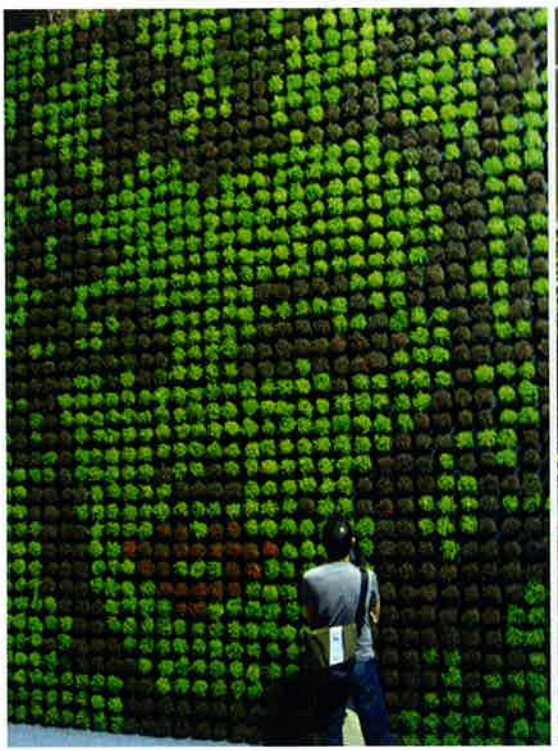
直立式花園改變我們對建築物的看法，把綠色生活帶往另一層次

Urban jungles

城市森林

by JENNIFER HENRICUS

Photos: Cab Mod and Athenaeum Hotel; Patrick Blanc



WHEN IT COMES to architecture, green is the new black, with architects now focused on designing buildings that are energy-efficient, have a low carbon footprint and are environmentally sustainable. But a few visionaries are taking green to another level, creating living walls as well as roofs with trees, shrubs and vines that serve as screens, insulators, living "oxygenators" and, most importantly, eye candy for stressed-out residents of concrete jungles.

French botanist and landscape architect Patrick Blanc has been called "the undisputed master of the vertically planted garden". Obsessed with the idea of greening tight urban spaces, Blanc designed a system using a metal frame, PVC, felt, hydroponics and hardy plants to create virtual green walls. His landmark work, which resembles painterly tapestries of foliage and flowering plants, can be found all over the world – from his home city of Paris to London, Tokyo and beyond.

Blanc began with interior living walls, such as the one in Club Med's offices in Paris, but now concentrates on outdoor creations, such as the eight-storey living wall he created for the Athenaeum Hotel in London.

His success, he says, is based on his scientific knowledge of the plants he selects; Blanc says if plants are chosen correctly they do not need to be replaced and require care perhaps three or four times a year.

Malaysia's foremost landscape architect, Ng Sek San, is an ardent follower of Blanc's approach, adapting it to what he describes as a "more third world, less technical" system. Of Blanc, Ng says: "He is an amazing botanist who truly understands habitats and growing environments all over the world and has transferred his intense knowledge into artificial urban settings."

Ng tends to concentrate his work in Kuala Lumpur, where he is based and where his living walls and roofs are popular, but he has expanded his reach to projects in Singapore, Indonesia and New Zealand, where he initially studied and worked. His recent vertical favourite is Lot 10 Rooftop in Kuala Lumpur.

Ng's V-shaped steel or concrete planters provide a more substantial growth media and "minimises the chances of failure due to poor maintenance". He says he draws inspiration from the landscape of his childhood: Ipoh's plant-covered vertical limestone outcrops. "Although these are very harsh growth environments with little soil media, they are filled with a diverse variety of plants which have adapted themselves to grow on these surfaces and provide important inspiration and reference when introducing greenery in canyon-like urban environments."

Ng uses about 80 species referenced from those

Ng Sek San designed Mao Marilyn (above) for the Singapore Garden Festival

黃錫山為新加坡花園節設計的Mao Marilyn（上圖）

Designer Patrick Blanc brings the garden indoors at Club Med's offices in Paris (above right)

設計師Patrick Blanc為巴黎Club Med辦公室引入的室內花園（右上圖）

Photos: Club Med and Athenaeum Hotel; Patrick Blanc

Felt and a metal frame secure the vertical wall at Musée du Quai Branly (above) designed by Patrick Blanc (below)

Patrick Blanc（下圖）用毛絨和金屬架設計的 Musée du Quai Branly 綠色外牆（上圖）

growing in Ipoh or the Batu caves; among his favourites are monstera and other philodendrons and bougainvillea, especially at higher levels. Most of his vertical gardens are about six storeys but recently he started work on a 10-storey garden. "There is really no limit on how high one could go as long as maintenance access is provided and irrigation and drainage can reach the vertical planters," he says.

Ng sees his green walls as part of an evolutionary process. "I want the surviving fittest to be joined by new plants introduced by wind and bird droppings. My hope is that the wall will take on a life of its own with little or no interference from the gardeners, save for water and the occasional burst of fertiliser."

His innovative, pivoted vertical planters designed for the National Parks Board of Singapore are being used for flower and vegetable gardens in public housing in the city state. "In most high-rise balconies sunlight is one-sided: plants facing the outside do very well but those facing in, because of the lack of direct sunlight, suffer," he says. "Rotating planters ensure plants do well on both sides and double as screens to regulate the amount of light into the apartments."

Vertical gardens are not an entirely new concept. In the early 1990s, the late Geoffrey Bawa, one of Asia's most revered architects, applied vertical planting to the 152-room Heritance Kandalama Hotel, located in Central Sri Lanka's dry zone. Professor David Robson, an architecture historian and Bawa's biographer, believes that Kandalama was one of the very first examples of a successful vertical garden. "The amazing part is that it has been flourishing for almost 20 years," he says.

Bawa used roof gardens and planting frameworks – timber battens laid on pre-cast beams – to shade the façade, reducing the building's cooling load and camouflaging it in its surroundings. "Only the rooms have air conditioners. All the circulation and reception areas are open and this is indeed an achievement, particularly in harsh, dry-zone conditions," Robson says.

Bawa's work has influenced Laki Senanayake, a well-known artist, sculptor and landscape architect who worked with Bawa, creating sculpture and art for his projects. The Sri Lankan says he started to think about gardens when he was working on presentation drawings for Bawa's buildings on which "I drew detailed drawings of trees and foliage, usually to hide unresolved areas".

Senanayake is a master at establishing the transition from building to garden, avoiding sharp contrasts between darker interiors

Photos: Musée du Quai Branly; Hemis/ImagineChina

and strong sunlit exteriors. He usually uses vine-covered pergolas and large root-balled trees, some up to six metres tall that branch laterally, which he often grows himself. These are placed as close to the building as possible and, with careful pruning, he creates views between layers of branching. He says this technique "keeps direct sunlight away from large glass windows and facilitates a cool flow of air through the building".

Now he is developing living buildings, a concept he describes as bio-architecture. Located in his sculpture garden Diyabubula, in Dambulla, his house was built by pulling together two parallel rows of 7.5-metre-tall living areca palms to form an A-frame structure; corrugated sheet metal and coconut leaf thatch form the roof. The house constantly changes, as Senanayake improves a view or realigns rooms and even toilets. "I believe this is the next level of green – buildings made from living trees," he says.

Despite the initial high costs and the need for a long-term commitment to maintenance, the work started by visionaries such as Blanc, Ng and Senanayake will hopefully take root in future urban landscapes, making them green in every sense of the word. ■

Get close to nature at Heritance Kandalama Hotel (above)

與大自然融為一體的Heritance Kandalama酒店(上圖)

城市森林

綠色建築不只是講求能源效益，或使用可持續發展的環保建材，最新潮流是創造綠化的生態屋頂和外牆（部分綠色外牆更高達十層）。它們可用作遮陽、隔熱和有機「加氧器」，並為都市居民提供心曠神怡的綠色空間。

居於巴黎的法國植物學家兼園境師Patrick Blanc大力提倡這種建築設計，其作品遍佈世界各大城市。他利用水耕技術和耐寒植物，創造出恍如以植物編織的外牆掛氈。最近，他為倫敦Athenaeum酒店建造了八層高垂直的綠色外牆花園。

他認為只要選擇合適的植物，這些外牆花園上的植物並不用常常更換，也不用經常打理，一年修葺三至四次便已足夠。

馬來西亞園境師黃錫山深受Blanc的影響，創造了一種技術要求較低的栽種系統，即使用V字型金屬或水泥花架，種植蔓綠絨和九重葛等能在惡劣環境中生長的植物。他希望這些綠色外牆的生態環境不斷演進，隨風飄來或雀鳥帶來的種籽，均可為外牆加入新的植物。

已故斯里蘭卡建築師Geoffrey Bawa是最早期採用綠色外牆的建築師之一。早於1990年代初期，他已為Heritance Kandalama酒店帶來綠色外牆設計。

Bawa利用屋頂花園及於外牆設置木板框架，打造綠油油的外牆。此設計讓建築物更有效地散熱，並與周邊環境融合。酒店只有客房安裝了空調，其餘地方均採用開放式設計。對於一家位於酷熱乾燥地區的酒店，這並不是容易實行的計劃。

Laki Senanayake是園境師兼雕塑家，也曾是Bawa的合夥人。為了避免室內外光線的明暗對比過度強烈，他喜歡在建築物前設置以藤蔓植物覆蓋的涼棚及栽種高達六米、枝葉橫向生長的大樹。這樣可阻擋陽光直接照射於建築物的玻璃窗上，使室內空氣保持清涼。

他最新的項目是一幢「活的房子」。其設計是把兩列並行的7.5米高檳榔樹連繫起來，組成一個A字型的框架；屋頂以波紋型金屬板建造，並以椰子葉覆蓋。他說：「我相信這是更高層次的綠色建築，由生長中的樹木建成的房子。」

雖然綠色建築成本高昂，而且需要長期保養；但由這些高瞻遠矚的園境師掀起的建築新浪潮，可望改變未來都市的面貌，增添盎然綠意。

Photos: Kandalama Hotel: Alamy/ArgusPhoto.