



推動可持續建築的重鎮——中大建築學院 Promoter of Sustainable Architecture: School of Architecture

「在香港，一座大廈東南西北立面的設計是一模一樣的，但如果想減少耗能的話，東西兩面的立面設計，須能遮擋早上和黃昏太陽照射，所以應該跟南北不一樣。但到現在有意識去注意這點的人還太少。」建築學院院長何培斌教授說。



這幾十年來，香港經濟急速發展，建築業也蓬勃興旺，新大樓不斷落成，但卻一味追求裝潢豪華，忽略可持續發展的概念，例如為人詬病的屏風樓，蔚為壯觀，卻造成熱島效應，導致基本生活品質下降，我們逐漸嚐到苦果。

何教授說：「過往香港建築界對可持續性發展觀念不夠重視。我們落後於其他國家，也落後於我們技術上能及的層次。」

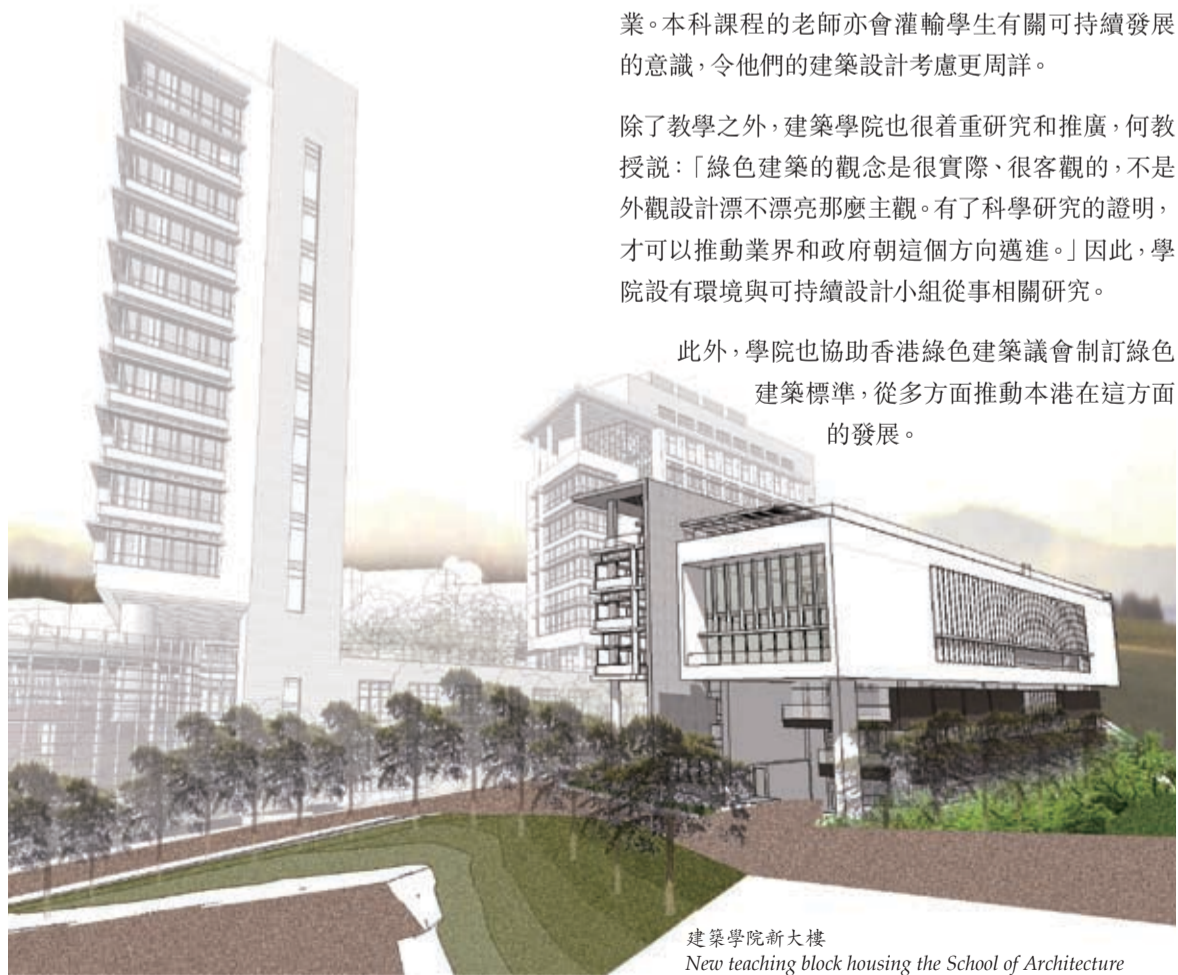
可持續建築或綠建築是很廣闊的概念，由基本的空中花園、綠屋頂、自然通風、天然採光這些最簡單的設計，到廢水回收、熱交換系統乃至更高層次的要求，都包括在內。根據美國環境保護局的定義：綠建築是指在建築物的生命週期，由選址、施工、使用、管理、翻新以至拆卸的一系列過程中，其建造措施和程序都能保護環境，並有效地運用資源。

建築學院將在2012年遷入新址。為起示範作用，推動香港綠色建築的發展，這座即將興建的學院新大樓會貫徹可持續發展理念，注重立面設計、自然通風，又會採用綠屋頂和再生能源。何教授說：「在中大比較容易採取環保設計，第一，校園比較空曠；第二，我們是研究這方面技術的機構，具有可資利用的研究基礎；第三，我們是學術機構，不是牟利機構，所以有多些空間嘗試不同的新點子；第四，大學管理層也很重視綠色概念。」不過，環保始終是需要成本的，許多高階的環保設計，限於資源無法全部採用。

社會對可持續建築漸有訴求，建築學院開設的可持續與環境設計理學碩士課程，就是回應此趨勢；而其建築碩士課程也開設環保與可持續設計科目。何教授希望未來再多加一些專門科目，例如可持續城市規劃、文物保護等，令學生日後可以在這方面發展事業。本科課程的老師亦會灌輸學生有關可持續發展的意識，令他們的建築設計考慮更周詳。

除了教學之外，建築學院也很着重研究和推廣，何教授說：「綠色建築的觀念是很實際、很客觀的，不是外觀設計漂不漂亮那麼主觀。有了科學研究的證明，才可以推動業界和政府朝這個方向邁進。」因此，學院設有環境與可持續設計小組從事相關研究。

此外，學院也協助香港綠色建築議會制訂綠色建築標準，從多方面推動本港在這方面的發展。



建築學院新大樓
New teaching block housing the School of Architecture



建築學院院長何培斌教授
Prof. Ho Puay-peng, director of the School of Architecture

In Hong Kong, the north, east, south and west façades of a building are all identical. If you want to reduce energy consumption, you should have different designs for the east and west façades to block sunlight in the morning and evening. But not many people pay attention to this,' said Prof. Ho Puay-peng, director of the School of Architecture.

Hong Kong's building industry had its heyday when the city's economy took off in the past few decades. Many new buildings were constructed. However most buyers of property only paid attention to features like interior decoration. Rarely was consideration given to the energy-saving properties and sustainability of the building design. Hence we have gigantic high-rises creating wall effect and urban heat islands in our city, lowering our quality of life.

Professor Ho said, 'The Hong Kong building industry has not paid enough attention to sustainability. We are lagging behind other countries in the awareness and the technology.'

Sustainability or green building is a concept comprising a wide spectrum of features, including the most basic ones such as sky gardens, green roofs, natural ventilation, natural lighting to the more sophisticated ones like grey water recycle and heat exchange. According to the definition of the US Environmental Protection Agency, green building is the practice of creating structures and using processes that are environmentally responsible and resource-efficient throughout a building's life-cycle from siting to design, construction, operation, maintenance, renovation and deconstruction.

(接下頁 To be continued)



The School of Architecture will move to a new teaching block in 2012. To promote the concept of sustainability, the building is designed with green features, such as natural lighting, ventilation, green roofs, renewable energy sources. Professor Ho said, 'It's easier for us to adopt environmental designs. First, our campus is spacious. Second, as a research institution, we have the technology. Third, as an academic institution, we have more room than profit-making organizations to try out something new. Fourth, the University management attaches great importance to building a sustainable campus.' But going green comes with a price tag. Due to limited resources, many higher-level but more expensive eco elements cannot be incorporated into the design of the building.



建築學院新大樓的設計貫徹環保原則
The new teaching block of the School of Architecture is designed with green features

The school's Master of Science Programme in Sustainable and Environmental Design is a response to the growing awareness of sustainable architecture in society. Its Master of Architecture Programme also has courses on environmental and sustainable design. Professor Ho plans to offer more specialized courses like sustainable city design, heritage conservation, etc., to students so as to equip them for a career in those fields. For undergraduate students, the teachers will instil the concept of sustainability into them through different channels so that they will pay attention to it when doing their designs.

In addition to teaching, the School of Architecture also stresses research. Professor Ho said, 'Whether a building is beautiful or not is subjective, but the concept of a green building is practical and objective. We need scientific proof to convince the industry and government to move along that direction.' The school's Environmental + Sustainable Design Unit is dedicated to such research.

The school has also helped the Hong Kong Green Building Council to formulate standards for green buildings, thus promoting the concept of sustainable architecture in Hong Kong from different fronts. ✨



走出象牙塔：建築學教授的社會角色 Beyond the Ivory Tower: Role of Architecture Professor in Society

領導建築學院環境與可持續設計小組的吳恩融教授說：「香港是高密度城市。高密度環境的環保設計知識很少，而且外國現有的知識大都無法應用到本地的情況。你不能把倫敦所用的方法應用於香港，所以我們要做很多研究，累積適用於本地的知識。」

當社會願意為環保付出，政府也有政策去推動，那就需要對這方面有認識的人去執行。吳教授說：「二十年前你叫人建綠屋頂或裝太陽能板，沒有人懂，因為根本不需要知道，但現在都要懂，這就是專業技能。」這就和教育有關。

吳教授認為建築學院可以通過教育來普及專業技能，除了建築學以外，還教環保、城市設計、文物保護等專門技能。現時社會很缺乏這類人才。他說：「每年都有公司問我：你有多少學生？政府問，私人機構也問，但培訓人才是很漫長的過程。」

可持續建築的知識除了可應用於本土，也可幫助中國農村。吳教授在當地的建築項目屢獲國際獎項，更為地方政府認可。他說兩方面的工作都帶給他滿足感：「農村有農村的問題，城市有城市的問題。我在中國農村幫有需要的當地人，而我是香港長大的，當然也想能幫助有需要的香港人。」



Prof. Ng Yan-yung Edward is the director of the Environmental + Sustainable Design Unit of the School of Architecture. He said, 'Hong Kong is a high-density city. And the knowledge on eco designs in high-density environments is scarce. Most of the existing knowledge from foreign countries cannot be applied to the local situation. You can't apply the way they do it in London to Hong Kong. Therefore, we have to conduct studies to acquire knowledge relevant to the local situation.'

When society is willing to pay for better environment and the government has introduced policies for improving the environment, we need people who know how to do it. Professor Ng said, 'Twenty years ago if you asked someone to create green roofs or install solar panels, no one knew how to do it. They didn't need to. But now it has become a skill set in the industry.'

Professor Ng believes that the School of Architecture can popularize the required skill set through education. In addition to architecture, specialized skills like environmental design, city design, and heritage conservation should also be taught. People with these skill sets are lacking in society. He said, 'Every year the government and the architecture firms would ask me: "How many students do you have?" But talent training is a long process.'

Expertise in sustainable architecture can contribute to the Hong Kong community and also serve rural China. Professor Ng's projects on the mainland have won a number of international awards and recognition from the municipal government. He said his work on the two sides of the border have brought him satisfaction. 'Rural China has its problems and our city has our problems. I want to help those in need in rural China. And I grew up in Hong Kong, so I naturally want to do my bit to help those in need in this city.' ✨



綠色泳池

A Naturally Green Swimming Pool

前一陣子經過中大游泳池的人，會發覺池內仍有池水。不過，即使不懼寒冬的泳客大概也不敢跳進池中暢泳，因為池水是呈綠色的。

其實這是大學的一項環保新措施。以前泳季結束後，游泳池的水會排入崇基學院未圓湖，大學再從湖中抽水供灌溉或冷卻系統和沖廁之用。

因為抽取湖水到校園較高處灌溉，需要耗用電力，今年物業管理處採取了新措施，減少這方面不必要的消耗。游泳池內一千六百萬立方米的池水不再排入未圓湖，而是留着供灌溉草藥園的部分地方（約一千四百平方米），並用作空調裝置的冷卻水。估計這樣每年可節省四千千瓦時的電力，足夠四十平方米辦公室的空調系統運作一百二十天。

物業管理處屋宇設備組高級經理黎國榮先生（圖）說：「我們曾問過本處園藝組的意見，也諮詢專家意見。池水在用作灌溉前，會靜置一段時間，讓殘留的氯氣消散。池水內的其他物質不會對灌溉植物有不利的影響。」

他解釋池水變綠是因水藻生長所致。「一旦停止注入氯氣，水藻就會在水中出現。但這種微生物對魚類和植物無害，所以池水是適合灌溉的。」而在泳池重新開放前，只須以正常程序清洗，已可保證清潔衛生，無需額外措施。



黎先生說，大學也在構思其他省水措施。「我們還想收集淋浴廢水，估計在夏天每天可以收集約二十立方米這種生活廢水。但淋浴廢水混有沐浴露、洗髮水和護髮素，我們不知道是否對植物有害，所以還在研究這類廢水是否能在經過初步處理後循環再用。」

Those passing by the swimming pool in the winter months might have been surprised to find that the pool was not only still full of water but that the water was of a dubious green.

In fact, this was due to one of the university's green measures to save resources and reduce energy consumption. In the past, the water was drained down to Lake Ad Excellentiam in Chung Chi Campus when the swimming season ended and the university would pump water from the lake for irrigation, cooling systems, and flushing.

This year, the Estates Management Office (EMO) took one more step forward to reduce unnecessary electricity consumption by pumping water from the lake to water plants on the higher levels of campus. Instead of draining the 1600m³ of water from the pool into Lake Ad Excellentiam, they used the pool water to irrigate part of the Herbal Garden (around 1400m²) and as cooling water for air-conditioning plants. It is estimated that the

measure can save about 4000 kWh of electricity, enough to power the air-conditioning system for an office of 40m² for 120 days.

Mr. Godwin Lai (photo), senior manager, Building Services and Administration of EMO, said, 'We consulted our Landscaping Section and sought expert advice. Before using the pool water for irrigation, we let the water "calm down" to allow residual chlorine in it to dissipate. Other substances in the pool water do not critically affect its suitability for irrigation.'

He explained that the pool water turned green because of algae growing in it. 'When chlorine dosing is stopped, green algae may appear in pool water. But this microorganism does not pose any harm to fishes or plants. It is safe to use the pool water for irrigation.' After being used for water storage, an ordinary pool cleaning will be good enough to safeguard its hygiene before reopening.

Mr. Lai added that the university was thinking of more measures to conserve water. 'We also intend to collect shower water and estimate that around 20m³ of such grey water can be collected daily in summer. However, because it is mixed with shower gel, shampoo and hair conditioner, we are not sure if it is suitable for irrigation purposes. We are now studying how to recycle shower water with minor treatment.' *



環保校園再獲肯定

CUHK Recognized Again for Going Green

2010年剛開始，中大的環保成績再獲肯定，連獲兩個獎項。先是「U Magazine您想綠色生活大獎」，繼而在「2009香港環保卓越計劃」的節能標誌獎項計劃中，獲頒卓越級別。

「U Magazine您想綠色生活大獎」由U Magazine舉辦，嘉許積極承擔環保社會責任的機構。「2009香港環保卓越計劃」是由政府發起的認可計劃，目的是協助機構採取節能措施，並表揚此等機構對節約能源的貢獻。計劃列出共十類節能裝置，要取得卓越級別，須對最少三類裝置實行九項或以上節能措施，並且之後須每年至少新增一項。本校實施的節能措施，分屬照明裝置；升降機及自動梯裝置；鍋爐；燃氣、燃油耗能系統；中央控制及監察系統；以及再生能源應用效益。

中大一直重視校園環保工作，成績多次獲外界嘉許。今年新增兩獎，校內身體力行、切實推動環保的同仁無不大受鼓舞。

CUHK was twice recognized at the beginning of 2010 for its environmental endeavours. It was awarded the 'U Green Award 2009' and the 'EnergyWi\$e Label—Class of Excellence' of the 2009 Hong Kong Awards for Environmental Excellence (HKAEE).

Organized by U Magazine, the 'U Green Awards 2009' is aimed at recognizing the efforts of eco corporations. The Energywi\$e Label is a recognition scheme established to encourage Hong Kong businesses/organizations to take measures for saving energy and to recognize such efforts. To be eligible for the Class of Excellence, candidates must adopt nine or more energy-saving measures in any three energy-consuming facilities set by the scheme; and introduce at least one new energy-saving measure in each subsequent year. The University has implemented measures to improve the energy efficiency of lighting installations, lift and escalator installations, boilers, gas and oil fuel consuming systems, central control and monitoring system, and renewable energy application.

CUHK has won different prizes for its green measures in the past. CUHK members committed to building a sustainable campus are all excited about the new recognitions. *



校園環境委員會主席朱利民教授（左）代表大學領取「U Magazine您想綠色生活大獎」
Prof. Chu Lee-man (left), chairman of the Committee on Campus Environment receives the 'U Green Award 2009' on behalf of CUHK

綠色鋪路技術

大學在最近的停車場改建工程及重鋪行人路徑等項目，引進了植草磚綠色建造法。

如香港的現代大城市，馬路、人行道及停車場大都以柏油及三合土建成。這些路面均設有排水渠，故雨水未能吸收於泥土層內。而且三合土設施會形成聚熱體，在夏天尤其會大量吸熱，使周遭溫度上升，造成熱島效應。

植草磚的好處是能增加校園綠地面積，雨水又可滲透並吸收於土層之內，滋養附近的植物，減少熱島效應。不過，路面會因此而有些微起伏，所以只會於行人較少的地段鋪設，附近亦會張貼告示提醒行人。



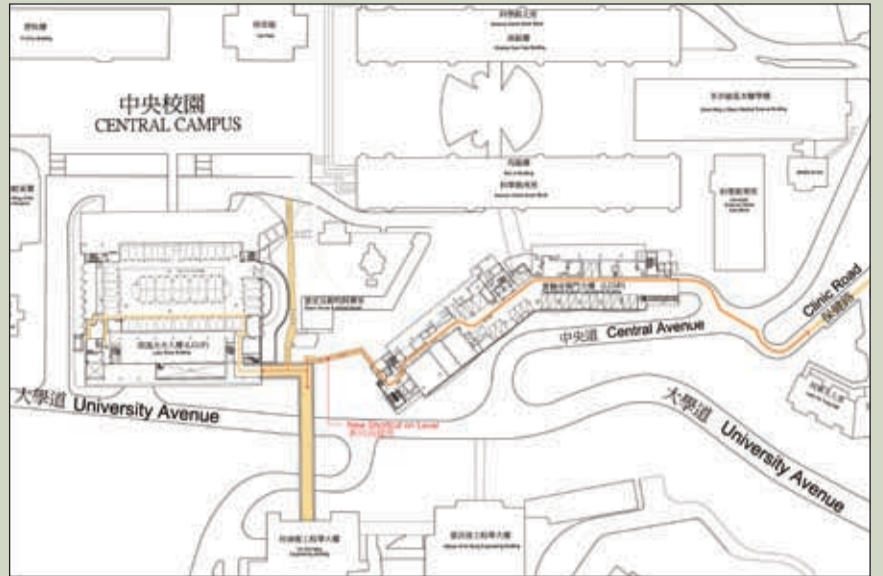
Green Paving

The University has used grass blocks, a green construction material, to pave pedestrian pavements and parking lots on campus.

The use of concrete and/or asphalt to make roads, parking lots and pedestrian pavements is a construction standard in Hong Kong and most cities. But these concrete and asphalt facilities create huge heat mass, resulting in the heat island effect and increasing the ambient temperature of the surroundings. They are also designed with surface channels to drain rainwater, thus preventing the opportunities for soil and vegetations to absorb water for natural irrigation.

The pavements, foot paths, driveways and parking areas built with grass blocks allow rainwater to be absorbed to soil and subsoil zones, improving irrigation to trees and planting areas nearby. Grass pavers can increase green areas on campus. Their good water permeability also prevents the heat island effect created by concrete paving surfaces.

The grass blocks will form a less even surface, so they will only be used in locations where pedestrian traffic is light. Notices will be posed to remind pedestrians.



通往保健路的步行新捷徑

大學最近開闢了一條步行新捷徑，方便行人由中央校園，利用何善衡工程大樓人行天橋通往大學保健醫療中心。捷徑入口位於邵逸夫夫人樓外的人行天橋，途經實驗室專門大樓低層三樓之停車場，橫過中央道連接保健路，直達學術交流處、五旬節會樓高低座、大學保健醫療中心、雅禮賓館、曙光樓、昆棟樓等。

有了這條新捷徑，從何善衡工程大樓、邵逸夫夫人樓或附近區域到大學保健醫療中心的行人，省卻了上下斜路（中央道）的麻煩，而路線上的有蓋停車場，在惡劣天氣下也可為行人遮風擋雨。

為了縮建樂步健行校園，大學日後會在適當地點開設更多步行徑，方便大家往來校園各處。

New Pedestrian Shortcut to Clinic Road

To facilitate easy and quick access from the Central Campus to the University Health Centre, a new shortcut has been created linking the East-West direction of the mid level. The shortcut entrance is located on the footbridges of Lady Shaw Building and Ho Sin-Hang Engineering Building. It goes through the covered car park at LG3 of Centralized Science Laboratory Building, and reaches the Office of Academic Link, Pentecostal Mission Hall (High and Low Blocks), University Health Centre, Yali Guest House, Chan Kwan Tung Inter-university Hall, Chiangs Building, etc., via first Central Avenue and then Clinic Road.

The new shortcut saves the trouble of walking up and down the steep Central Avenue for pedestrians going to the University Health Centre from Ho Sin-Hang Engineering Building, Lady Shaw Building or Mall area. The covered car park also provides good shelter from adverse weather.

To create a pedestrian-friendly campus, the University will build more pedestrian paths at suitable sites to encourage walking on campus.

校園自耕地

中大學生會的屬會「綠色天地」推出校園園圃計劃，在大學體育中心背後的斜坡旁，闢出二十塊約二平方米的農田，供中大師生租用，參與有機耕種。

該計劃目的向師生宣揚有機耕種和環保的意義。希望透過參加者親身參與，更深入認識有機耕作的方法及其對生態平衡的重要。為配合園圃計劃，該會還舉辦參觀有機農莊活動。

2010年第一期園圃計劃已於2月中展開，至5月中結束。有關第二期和第三期申請，以及該會的其他活動，可瀏覽該會網頁：<http://ihome.cuhk.edu.hk/~z044125/event.html>。



The first of the three courses of 2010 started in mid-February and will end in mid-May. For details about the second and third courses of the programme and other activities of Green World, please visit: <http://ihome.cuhk.edu.hk/~z044125/event.html>.

Campus Gardening Programme

Green World, the affiliated society of the CUHK Student Union devoted to the promotion of green lifestyle, has launched the 'Campus Gardening Programme'. Twenty two-square-metre plots of land on a slope behind the University Sports Centre are available for CUHK staff and students to rent for organic farming.

The programme is aimed at promoting organic farming to CUHK staff and students, and increasing their awareness about environmental protection. The organizer hopes that participants can learn more about organic farming and its importance to ecological balance. Green World also organizes a visit to an organic farm to familiarize participants with the knowledge of organic farming.

