

**Jockey Club Environmental Building, Kowloon Tong**  
 From the workers' perspective, social status and recognition can sometimes be attributed to the number of jobs a person holds, the hours he or she works and the number of calls they get on their mobile. These are accepted signs that someone is getting there. Recent surveys and polls suggest that workers and students in Hong Kong work longer hours than their counterparts in the rest of Asia. And whilst they were never too choosy about their work environment in the past, the demands of today's more discerning workforce provide an opportunity for local architects. Most of the time this means another expensively clad high-rise tower, but with sustainable design, the office in Hong Kong changes its fundamentals.

Another significant project is the Jockey Club Environmental Building by Simon Kwan & Associates, completed in 1996. The building adapted the principles of traditional Chinese building typologies, technologies and methods to contemporary urban circumstances. According to Simon Kwan:

'If the cylindrical building form and its attendant fenestration refer, stylistically, to the traditional Hakka village fortress, then the decision to carve a public corridor through the building represents an interesting extension of this respective building typology. Two key insights apply. First, the permeable rendering of the building constitutes a signal of openness, optimism and confidence. Secondly, and perhaps more important, such a tactic complements and facilitates the building's environmental agenda.'<sup>1</sup>

The building has purity of form and planning. An open-air public corridor runs through it demarcating and defining the symbolic north-south axis of traditional Chinese architecture. An open atrium on the route provides ventilation and natural lighting to the surrounding office spaces and the transparent double-glazed atrium cap admits daylight whilst controlling heat gain. Smaller windows dominate the external facade. The solid east and west elevations need no additional help to shade the sun at this latitude. The recessed, but fully glazed, windows emphasise the circular form: the gesture is symbolic as well as environmental.

'The conscious act of place-making is intrinsically linked to the environmental features of the building,'<sup>2</sup> Simon Kwan revealed in a subsequent lecture. The interplay of inside and outside, the joy of light and shadow, solid and void, natural and artificial, and Yin and Yang has its genealogy in Chinese architecture and philosophy. To be this close to the remote heritage from which all these come is to acknowledge forces beyond the natural elements. If there is a hidden agenda, and if it has to be explained with the term sustainability, it appears that the building is portraying it with poise and civility – almost like a mandarin. 'We search for solutions that elevate the pragmatic aspects of an

**Table 1**  
 Energy Consumption and CO<sub>2</sub> Emission  
 – Hong Kong vs Other Key Industrialised Countries

Industrialised Nations	Emission		Consumption	
	CO <sub>2</sub> /capital Metric tonnes	CO <sub>2</sub> Kg/PPS \$ of GDP	Kg of oil Equivalent/capita	\$ GDP/Kg of oil equivalent
Hong Kong	3.7	0.2	1,931	12
China	2.8	1.0	902	0.7
Singapore	21.6	0.9	7,835	3.8
Japan	9.3	0.4	4,058	10.5
USA	20	0.7	8,051	3.4
UK	9.5	0.5	3,992	4.8

\* 1997 data [source: United Nations Statistics Yearbook, 1997]

architectural challenge, transform presumed constraints into engaging design and celebrate the refinement of necessity,'<sup>3</sup> Simon Kwan concluded.

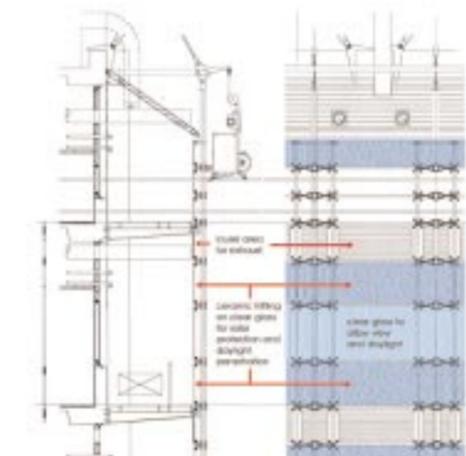
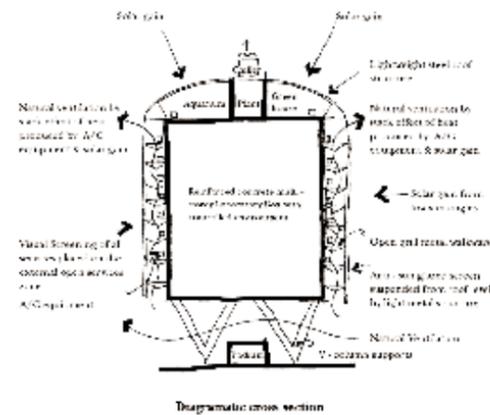
**Kadoorie Biological Science Building, Hong Kong University**

In marked contrast to the Jockey Club Environmental Building, the Kadoorie Biological Science Building by Leigh & Orange Architects provides an elegantly innovative architectural solution for a highly technical building on a small and constrained site. The 10-storey building sitting on eight 10-metre-high upturned pyramidal columns contains eight floors of laboratories and one upper floor of aquariums and greenhouses. The east-west orientation of the site means the building's major facades will be exposed to long hours of solar heat gain. To the credit of the architects, the environmental challenge was conveniently translated into a powerful and yet effective architectural solution. The 'black box' laboratories were enveloped with a concrete enclosure and semiperforated outer curtain walls. They are set 2.5 metres apart and form external zones for services, maintenance and a filter to the external environment. The double-skin arrangement was designed to

prevent solar gain and create a stack effect to take unwanted solar and equipment heat away. The result is a calculated reduction of 37 tonnes of CO<sub>2</sub> per year.

These four projects in Hong Kong may be unrelated in their inceptions. However, they all share common agendas such as: how the building addresses the land and the urban fabric around it; how it contributes to a matrix of movement and human needs; how the spaces are designed to be as dense and as flexible as possible to minimise the resources used; how sustainability can be developed in a hot, humid climate.

To evaluate these buildings in isolation according to the amount of energy used, the materials spent and the waste they produce is missing the point. In a dense built environment, it is not the building that matters. It is the collective whole of buildings, supporting human life with the minimum effort and maximum efficiency, that counts. Buildings in Hong Kong are compact, efficient, mostly mixed use and provided with well-planned amenities generally within walking distance. The various settlements are so compact that they can be served by a highly efficient and cost-effective public transport system (Table 1). The per capita energy consumption is low compared to cities of an equivalent size and economic standing. What is more important is that the energy has been very efficiently used to generate wealth and a material quality of living. This is the real measure of sustainable development in a high density metropolis. Δ



Top  
 Leigh & Orange Architects. The podium and the upturned pyramidal column bases of the Kadoorie Biological Science Building, Hong Kong University, 1999.

Middle  
 Drawing illustrating the concepts behind the environmental provisions in the Kadoorie Biological Science Building, Hong Kong University, 1999.

Bottom  
 Section and elevation of the double-skin glazing system of the Kadoorie Biological Science Building, Hong Kong University, 1999.

Notes  
 1. Simon Kwan & Associates Ltd./Architects Planners Designers, Project Portfolio: AD monograph: *Green and Sustainable Design in Hong Kong*.  
 2. *Ibid.*  
 3. *Ibid.*