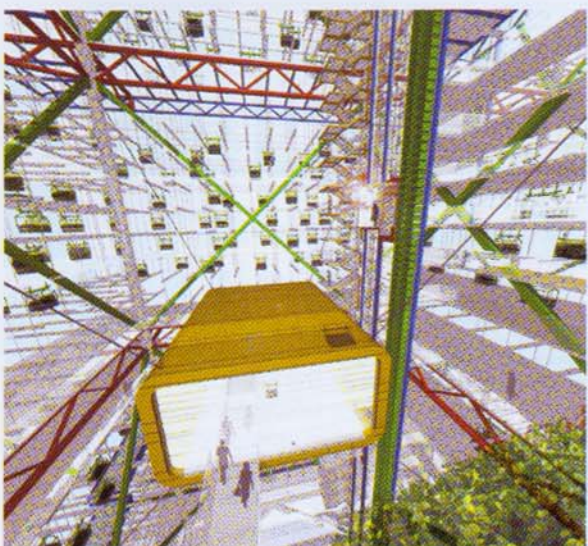
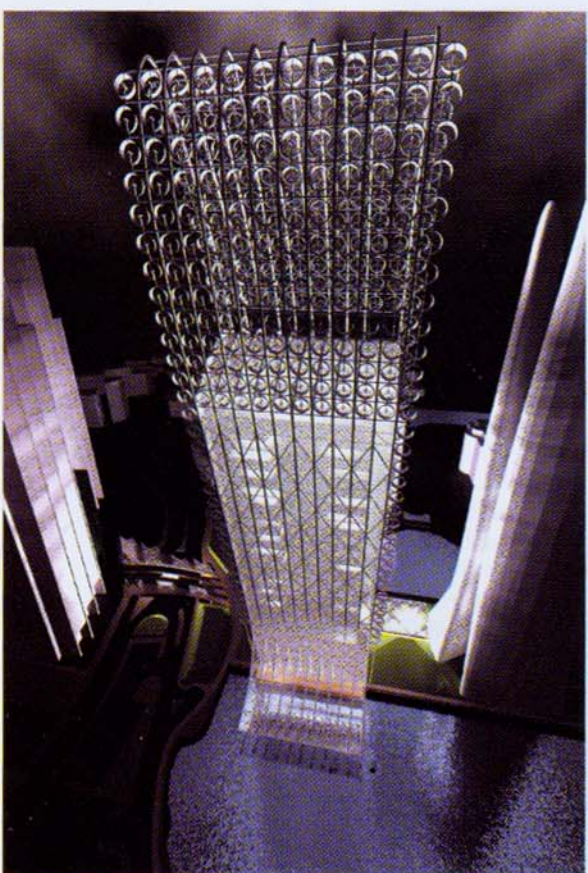


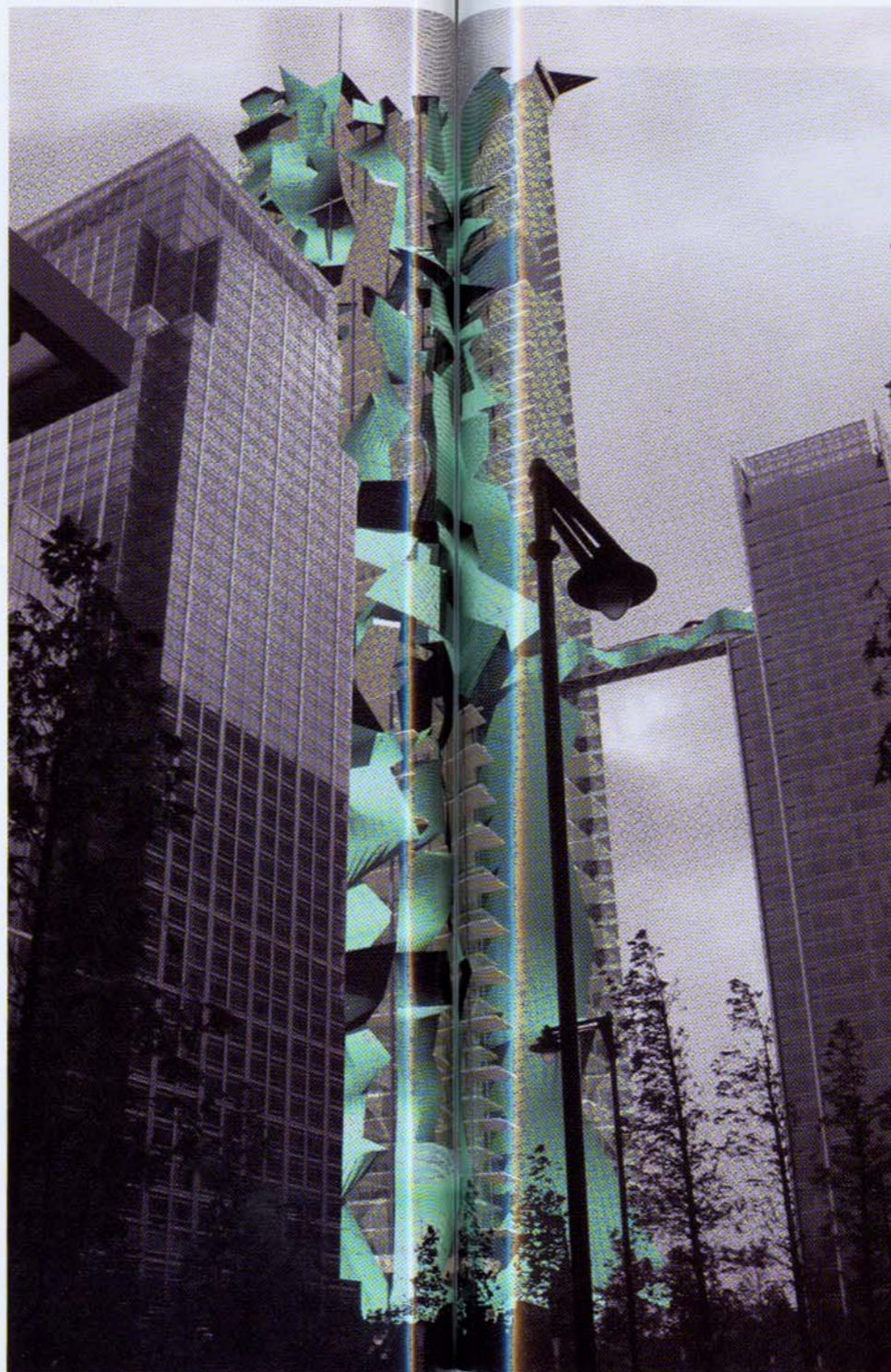
The 'next generation of tall buildings?' High Rise Villages proposal (copyright: Eva Young / Antony Wood, Council on Tall Buildings and Urban Habitat)



Vertical Farm proposal (copyright: Darran Oxley & Paul Foster / Antony Wood, Council on Tall Buildings and Urban Habitat)



Wind Farm proposal (copyright: Adam Chambers & Alex Dale-Jones / Antony Wood, Council on Tall Buildings and Urban Habitat).



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as the graph in **Figure 1** shows, the height increment by which buildings are now surpassing each other is increasing dramatically. For a little over a 100 years this height increment was an average of 35 metres and never surpassed more than 68 metres. Although a closely-guarded secret, the Burj Dubai upon completion in 2009 is expected to be more than 800 metres in height, some 300 metres taller than the world's current tallest, Taiwan's Taipei 101 at 509 metres.

However it is interesting to project this even further, to say what the tallest buildings will perhaps be in just a decade or two from now. Recent research by the CTBUH has projected the 'Tallest 20 in 2020', which is shown in **Figure 2 (pg 37)**. Based on a

selection criteria of these being 'real' projects (For example either built, currently on site or a proposal which has a developer and a full professional consultant team progressing the design beyond the conceptual stage) we can see that the world's current tallest – Taipei 101 – actually stands 16th in the list. On this trajectory, one could easily believe that the dizzy heights of Frank Lloyd Wright's 1957 hypothetical 'mile-high tower' is perhaps not that far from being realised.

Challenges

There is a tendency, given this rosy picture of a worldwide tall building construction boom, to consider that tall buildings have progressed to their most advanced

state. This is not, however, the case. Whilst sustainable design approaches and technologies are beginning to be incorporated into tall buildings, there is a long way to go before tall buildings can be considered as truly sustainable. The embodied energies (and carbon emissions) in constructing materials at height, combined with the high operating energy consumption through air-conditioning, lighting and vertical transport, means that tall buildings have to take every opportunity to both reduce energy consumption and harvest energy. The potential of energy harvesting at height – through wind, solar, other – cannot be denied. A minimum goal for future tall buildings should be for zero net energy consumption. A better goal would be true carbon neutrality by creating an energy surplus to eventually offset the embodied energy / carbon during construction (and destruction).

A second challenge for the tall building is to develop in design terms, and especially in the relationship between a tall building and its urban location. Many tall buildings historically seem to have been designed as either vertical extrusions of an efficient floor plan, or standalone pieces of high-rise urban 'sculpture'. In both cases the only relationship with the urban setting is a visual one, with the tall building usually dominating. This has led to the syndrome of tall buildings as 'isolationist' architecture – stand-alone, non-site specific models that are readily transportable around the cities of the world. This has served to create an alarming homogeneity across global urban centres – a creation of a 'one size fits all' skyscraper 'mush'. Future tall buildings need to relate to their specific location beyond just becoming synonymous with that location – the way forward is for the design to be inspired by both the physical and environmental aspects of place.

The third challenge for tall buildings lies in the functional programmes contained within; innovating beyond the standard functions that make up perhaps 95% of tall buildings worldwide – office, residential, hotel – and so help to create true, vibrant mixed-use facility within both building and city. At the CTBUH and through its affiliate division, the Tall Buildings Teaching and Research Group research into alternative design approaches has resulted in a number of not only innovative tall building forms but also tall building functions; vertical farms to help alleviate environmental problems of imported agriculture (and consequential food miles); tall buildings accommodating sporting functions where

swimming pools double as mass-tuned dampers and façade solar control layers double as climbing walls; tall buildings encompassing wind and solar farms and so on.

Some of this work, investigating the 'next generation' of tall buildings that respond to the environmental, design and functional challenges highlighted above, are shown in the images. These challenges form the basis of the CTBUH 8th World Congress which will be convened in Dubai, 3-5 March 2008. Entitled: 'Tall & Green; Typology for a Sustainable Urban Future', the meeting will involve the world's leaders in tall buildings who will present the very latest thinking on how the typology is reinventing itself in the current international building boom. Join us at this seminal gathering - all indicators are that the current tall building boom is set to continue for some time to come. **T.P.**

Antony Wood is Executive Director of the CTBUH, responsible for the day-to-day running of the Council and steering in conjunction with the Chairman and the executive committee. His field of specialism is the design, and in particular the sustainable design, of tall buildings. Based at the Illinois Institute of Technology, Antony is also an Associate Professor in the College of Architecture at IIT. Prior to this he worked in architectural practice in Hong Kong, Bangkok, Kuala Lumpur, Jakarta and the UK.

