GROWING UP THE WALL

"...the visual effect of vertical gardening is incredibly beautiful."

TREVOR COCHRANE

Trevor Cochrane has worked in many areas of the horticultural industry, including plant growing, garden retailing, marketing and as a garden adviser on TV and radio. Trevor co-authored *The Garden Gurus Guide to Waterwise Gardening, Delish, The Rose* and *The West Australian Garden Guide*. He writes and presents *The Garden Gurus* TV Show on Channel Nine each Saturday afternoon.

Athenaeum Hotel in London *Photo Credit: Patrick Blanc*

The hottest trend in gardening around the world is vertical gardening. In heavily populated cities where room for gardens is limited, utilising the walls and fences that surround us to green the environment we enjoy and to improve air quality is becoming increasingly popular.

The trend of vertical gardening was started by Patrick Blanc, a French botanist. While on a work assignment in the rainforests of Borneo and Malaysia to record the number of species growing on the trees and rock faces in the jungle, he was struck by the incredible diversity of life in the trees. He realised that both plants and animals depend upon the forest to provide a high-rise living area. This realisation got him thinking about recreating the effect in cities. His return to France saw the creation of a landscape company specialising in vertical gardens, where they convert the walls of skyscrapers and office blocks into living works of art.

When you think about it, with the number of high-rise buildings in our cities – whether it is a two-storey building stretching 12m in height or a 100-storey skyscraper – the visual effect of vertical gardening is incredibly beautiful.

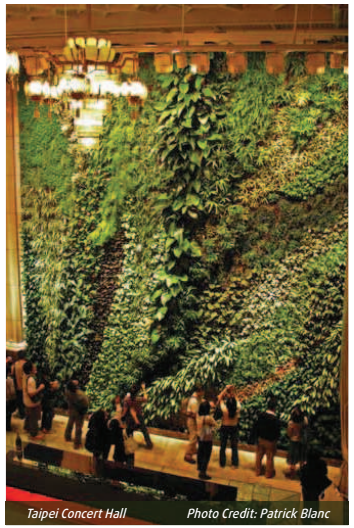
There are also countless health benefits for the inhabitants of the building. Big, fast-paced cities are a known stress creator. As gardens are a documented stress reliever, vertical gardening will create a calming effect. Plants not only convert air-borne pollutants into fresh air, but they also cool the environment during summer and warm it in winter. Their ability to moderate temperature reduces energy demand, which is a major challenge for any city these days.

More plants also create additional habitats for creatures that are pushed out by urbanisation. These creatures, that range from insects to birds, mammals, amphibians and reptiles, are all desperately seeking respite from man's rapid expansion and ecosystem destruction.

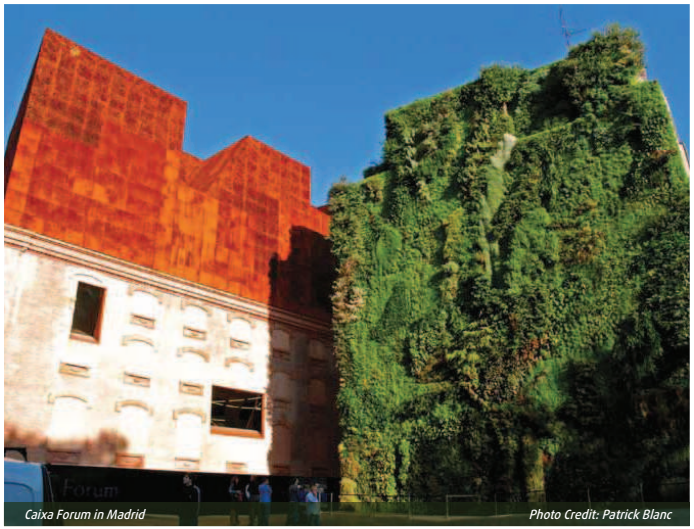
There are some arguments emerging that vertical gardens may create more problems than they solve. For instance, the use of water is of concern. Some believe that vertical gardens use more water. However, because the vertical movement of water is from top to bottom, evaporation levels are at a minimum with vertical gardens. The microclimate created by the plants not only benefits them but also moderates the immediate climate of the city, making it more enjoyable to inhabit.

Vertical gardening may also solve problems of wastewater in cities. Currently, wastewater treatment from multi-storey building environments is a considerable challenge and to send wastewater away for treatment is a great cost for governments and building owners. Self-contained treatment systems are becoming the norm now. It would be far more practical for wastewater that would otherwise be sent to treatment plants to be used for south-facing vertical walls, after treatment in a self-contained treatment system in the building.

Another concern is the maintenance of these beauties. In multi-storey situations, maintenance is going to present challenges. However, the intensity of these gardens' growth and maintenance will be dramatically reduced as the plants best suited for the environment are identified and applied more universally.



Taipei Concert Hall *Photo Credit: Patrick Blanc*



Caixa Forum in Madrid *Photo Credit: Patrick Blanc*

Pont Juvenal in Aix-en-Provence *Photo Credit: Patrick Blanc*

The visual effect of vertical gardening is beautiful.

An argument often presented against vertical gardens has been the significant cost of their development, in particular, the initial installation. Three years ago, a vertical garden would have started at $2,500 per square metre of coverage, with the most expensive at $10,000 per square metre. However, the popularity of vertical gardening has seen innovation and competition driving prices down to levels around $750 per square metre. There are also many shorter-life models that cost in the range of $100 to $160 per square metre, available in DIY domestic applications. Considering the average landscape renovation project investment is in the range of $125 to $150 per square metre, the installation of vertical walls is going to become a feasible financial investment.

Vertical gardens have a very practical domestic potential that should be considered carefully if you're looking to impress friends or improve property values. For instance, do you have an ugly fence you would love to screen or beautify? Many of us have this problem; it's one of the most common problems and, in the past, would have involved creating vertical visual barriers. The idea of converting the ugly fence to a living feature is extremely appealing, adding enormous aesthetic appeal and real value to the property. What about people with a small courtyard or a balcony garden? Using a vertical garden system, they can green the area with all the environmental benefits that come with it.

SO HOW DO YOU DO IT?

Buying a tried-and-proven system is the easiest way. These modular systems are often installed fixed against the fence or wall and can be made as big or small as you wish. They have strict recommendations as to how to use them – what soil mediums to use, what watering system/

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technique to use, etc. Following the given recommendations almost always guarantees success, and these companies provide considerable backup advice and after-sales service.

You can also create your own system. Basic systems utilising coco peat and charcoal-growing medium are wrapped in long, flat panels by a weed mat and chicken wire, which is then wrapped around the outside tightly to get solid panels that are set against a wooden or steel frame that holds them up. You then plant direct into the coco peat by cutting holes into the panels and pushing plants into them. Next, a very simple drip irrigations system is run across the top of the living wall, and the wall should stand and look great for many years. There's no doubt it's a very cost-effective way to work.

On a smaller and sometimes easier scale to work with, you can create 60cm x 60cm x 10cm deep panels using a wire mesh with the growing medium placed inside a sandwiched panel. This means you can apply panels individually to create living walls. If one dies, simply remove it and replace.

A PRIMITIVE BUT HIGHLY EFFECTIVE OPTION

Another option is simple - edible vertical gardens. The edible vertical gardening concept has evolved from my desire to help children in schools in high density, big cities. Malnutrition is often considered something that only happens to children in Third World countries.

However, more and more, research is showing that children in First World countries in the biggest cities, including Los Angeles, Sydney and Seoul, suffer nutritional problems related to poor diet. Children in these large cities often go to schools with a small amount of room to play in, yet alone room for school gardens. Most of these schools have playgrounds with 4m-high link mesh wire fencing, locking them into playgrounds.

Imagine growing edible plants in pots that the kids could grow as part of their biology curriculum but then also benefit by being harvested daily for lunches. These plants would be grown in pots that are simply wired to the link mesh fences in lines from top to bottom. Classes could plant out panel by panel, loading the fences with beautiful and edible greenery that could deliver summer tomatoes, salads and herbs. The lines of pots would have a simple dripper system placed at the top, and the water would pass through from top to bottom.

I presented this idea to the Australian Rotary's introduction of the world president at the Palladium in the Crown Casino in Melbourne last year with the hope that Mitre 10 and Rotary could work together to adopt schools to encourage and assist the with the implementation. Unfortunately whilst the idea was widely applauded by the audience on the night, it disappointingly has not been turned into actions that would benefit the children of schools with limited garden space.

I think this very primitive form of living wall has enormous potential for schools with limited space availability and hope to see it adopted and trialled sometime soon in Australia. Interestingly, it has been picked up in Los Angeles and in Singapore where we are working on a community program and TV series called the *Garden Revolution*, which is embracing such new ideas.

The living wall has so many benefits, including providing a new way to grow edible plants. Living herb walls are extremely clever way to bring flavour close to your kitchen. The benefits to our environment if we were to adopt the concept and make standard as part of building code for south-facing walls of all buildings (both high rise and single storey) would be truly amazing. Not only would the air we breathe in cities be cleaner and fresher, the atmosphere we live in would be better.

Maybe one day, all cities will be green living walls, and we will recreate the environment our ancestors enjoyed before emerging from the forest to create civilisation, as we know it.

Quai Branly *Photo Credit: Patrick Blanc*

Sky Team Lounge, Heathrow Airport, in London *Photo Credit: Patrick Blanc*

The Dolce Vita Teja in Lisbon, the largest indoor vertical garden.

A vertical garden on a smaller scale.

The stunning living wall.

Vertical gardens help to create additional habitats for birds and other creatures.