



Going out on a limb

by Mark Paul

The Greenwall Company (Sydney, Australia)

www.greenwall.com.au

1. The development of vertical planting systems for modern gardens

The term “green walls” refers to planting vertical surfaces with the aim of integrating the garden with the architecture, part of a contemporary global movement towards sustainable integration of the built and natural environments

Reclaiming the built environment, Why would you Greenwall.

- Modern architecture leaves less available space for green space and this is one way of reclaiming it. (In Sydney 2 Councils have accepted greenwalls as green space as part of the planning process)
- Loss of green space is generating excessive heat build up in cities and urban areas, combined with smog, lenses of hot smoggy air divert weather systems over and around cities (i.e. Sydney has NE sea breezes, sometimes?!) Aesthetics, acoustics, insulation etc
- Countries such as Germany, UK, Canada and USA have legislated for green roof and wall systems to alleviate this and it is mandatory to incorporate them. Australia is drafting similar legislation.
- Biodiversity, pockets of epiphytes and saxicoles using plants that have evolved for impoverished environments and seasonal drought.
- Cost effectiveness → Heating costs, insulation and soundproofing = reduced energy use
- At ground level in building facades you can be competing against granite, marble, sculptures, water features, glass balcony balustrades, privacy screens between apartments and planter boxes (All can be replaced by greenwalls).



Qantas First Class Lounge Sydney

2. The Greenwall Company



Mark Paul – Exparrot Landscapes and The Greenwall Company
Wittrockia superba at the Maths Institute (Rio, Brazil)

The Greenwall Company is the premier producer of modular and custom designed greenwalls in Australia. An unequalled product, Greenwall can be used like cladding to produce instant 'greenspace' both inside and out.

The system developed by Mark Paul at The Greenwall Company (www.greenwall.com.au) over approximately 15 years, presents an innovative system based on inorganic media and adjustable substrate depth that retains moisture and simulates conditions resembling natural soil. In addition, by using plants adapted to impoverished environments and seasonal drought, The Greenwall Company achieves a water efficient planting that is resilient to inevitable short term human and mechanical failures.

3. Garden plantings of Epiphytes and Lithophytes. How we started using them in landscaping and other examples.



Alloxylon flammea Tillandsias on *Athertonia excelsa* + *Eucalyptus robusta* + *Aechmea nudicaulis* Newport Beach Sydney.

I have always been fascinated by epiphytes and saxicoles. At first I started planting them in garden plantings into mulch, over compacted roots, hot colours amongst cool succulents, onto bare rocks and tree trunks, all those places other plants will not go.

Aloes, Agavaes + *Aechmea blanchettianas*



More garden plantings of Epiphytes and Lithophytes.

Roberto Burle Marx, the famous Brazilian landscape architect, used them extensively in his work. As accent, colour and structure in tropical and sub-tropical plantings they are unsurpassed.



Alcantarea roberto kautskii *Aechmea ramosa* *Alcantarea burle marxii*
Aechmea branchettiana SRBM



Bismarkia nobilis *Aechmea blanchettiana* *Tradescantia pallida*

4. Tree and rock planting of epiphytes and lithophytes replicating habitat

I started also planting trees and rocks, replicating nature, but nothing shows this better than habitat. Here a granite insulberg coastal frontal, a tidal island, lushly clothed in lithophytes.

Rockplanting at Palm Beach, *Aechmea*,
Aloe and *Furcraea*



Rockplanting Pontal
Island Alcantarea
glaznouiana, *Tillandsia*
araujei,
Coleophaloscerus
fluminensis

Al gaznouiana + *Tillandsia araujei* *Coleophaloscerus fluminensis* Pontal Is.





Bromeliads orchids + ferns in *Melaleuca viminalis*
Longreef Sydney

Tree planting are fun although time consuming. They can be such an effective focal point in a garden! Diversity is important but like all horticulture, grouping plants with similar cultural requirements into a community is the key.

How understanding horticulture in a vertical plane you spend a lot of time looking up trees...

Screening garage between house + carp pond



Looking up more trees...
some of them concrete



Sophrontis + Tillandsias on Roystonea oleraceae



Tillandsia + Platyceriums + other bromeliads on concrete display tree.
Collectors Corner Melbourne



5. Container plantings (plants in pots) of epiphytes and lithophytes. A simple concept that is a beautiful fit for pots and logs ...

Aechmea distichantha Long Reef
Billbergia amoena v. *viridis* in *Livingstonia australis* trunk pot
Guzmanias mauii





Aechmea fosteriana granite plinth SRBM

It is so easy to produce a stunning display or raise or isolate a planting to focal point status. Using any means, method, material or object. Absolutely anything goes.

... to deck chairs



Tillandsia latifolia etc. on old metal deckchairs portable sculptures



The step between specimens in pots + garden plantings. Greenpots on a lattice base + *Philodendron erubescens*

It is labour intensive to deal with the individual pots and repotting. They need watering by hand and feeding, but I have turned a number of peoples "collections of plants" into gardens, most of them vertical. They look like a greenwall and it's very easy to do.

6. Pseudo Greenwalls (plants in pots on lattice).

The most simplistic form of greenwall, the point from where our greenwalls developed.



Green pots of bromeliads on a lattice base



Some of a group of about 40 greenwalls with trial plantings + constructions. The oldest being 14 yrs old

7. Greenwalls
(many plants in a big pot or
plants+pots+lattice in one unit).

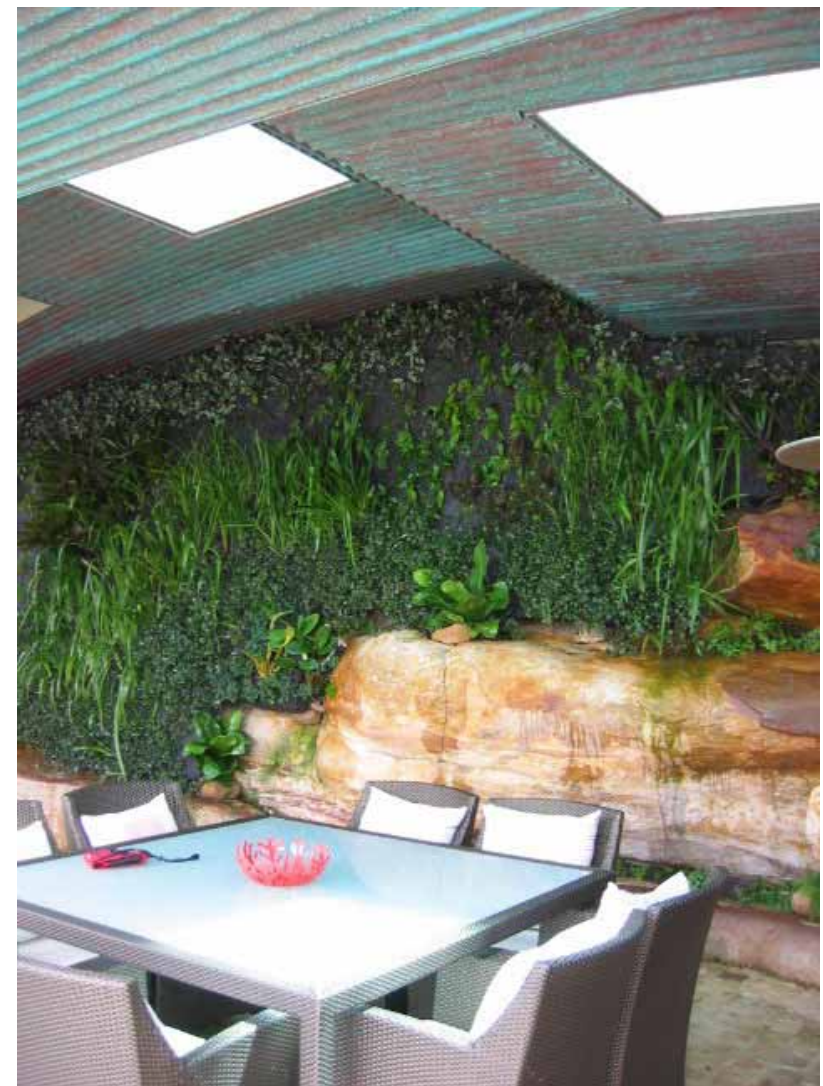
Larger scale vertical
plantings

Moving into inorganic mixes to prevent so much repotting in the pseudo-greenwalls and experimenting in our nursery (where we grow a lot of epiphytes and saxicoles from seed) led to panels of planting with automated drip feeds, for water requirements and seasonal nutrition.

Platynerium superbum *Canistropsis billbergoides* *Aechmea weilbachii* v. *pendula* *Adiantum aethiopicum* *Billbergia amoena* x's



We have spent many years trialling plants and their growth habits and requirements, mixes, nutrients, hydrolics, wicking agents, construction materials, engineering to Australian building standards, storm loadings, public liabilities etc...But eventually these parameters all seem basic and any form or shape or size or planting seem possible. It has also taken a long time to move the perception from "a painting on a wall" and retrofitted to a functional integration into the built environment. It is here where there is the greatest need and it can make a big difference to both people and the environment. It will eventually be a seamless integration on many levels.



A loggia beneath a swimming pool. A coastal frontal planting 3m from the water integrated into the sandstone boulders.

Greenwall and column greenwalls

Column greenwalls *Espiscia* + *Columnea* + *Tradscantia zebrina*
Neoregelia fosteriana + *Aechmea gamosepala*



Aechmea comata, *Neoregelia laevis*, *Dendrobium speciosum* *Acorus graminifera*
in a courtyard "picture"

Smaller scale Greenwalls



Subtropical garden in Castle Crag. The greenwall bridges the gap at the entry between the 1m thick boundary wall which holds 80,000 litres of rain water and the neighboring property, providing a focal point of high interest.

8. Projects

We do landscaping and I have a particular interest in large structural epiphytes and lithophytes. Most are not commercially available, so we started growing from seed and convincing others to do it for us as well. This was when our interest in inorganic mixes started, as organic mixes collapse quickly and require renewing and repotting. Besides large commercial jobs and residential Greenwalls, we are consulting and constructing a wide variety of projects both locally and overseas for Botanic Gardens, living sculpture art projects, Alcantarea greenroofs and vertical wetlands. There are endless possibilities and applications of the same basic principles and horticultural knowledge to a vast array of construction systems, materials and an immense diversity of plants.



Qantas Melbourne spa looking to tarmac

Qantas 1st class lounge

One of the projects we are involved with currently. **Qantas 1st Class Lounge**. There are 12 greenwalls here covering almost 400m² + using about 200 sp of plants. This was done in collaboration with French botanist Patrick Blanc.

Qantas Sydney Spa



Qantas First Class Lounge Melbourne Entrance



Aechmea, Pitcairnia, Begonia, Nolina, Peperomias, Caleocasia, Billbergia
Columnea, Platycerium, Philodendron, Anthurium + Medinilla Sydney.

Work in process ...



John Packer Bristol UK main street sculptures



An area of our 3000 m2 growing space where most of these specialized plants are grown from seed. A continuing series of experiments into cultivation/ diversity/nutrition and technology.



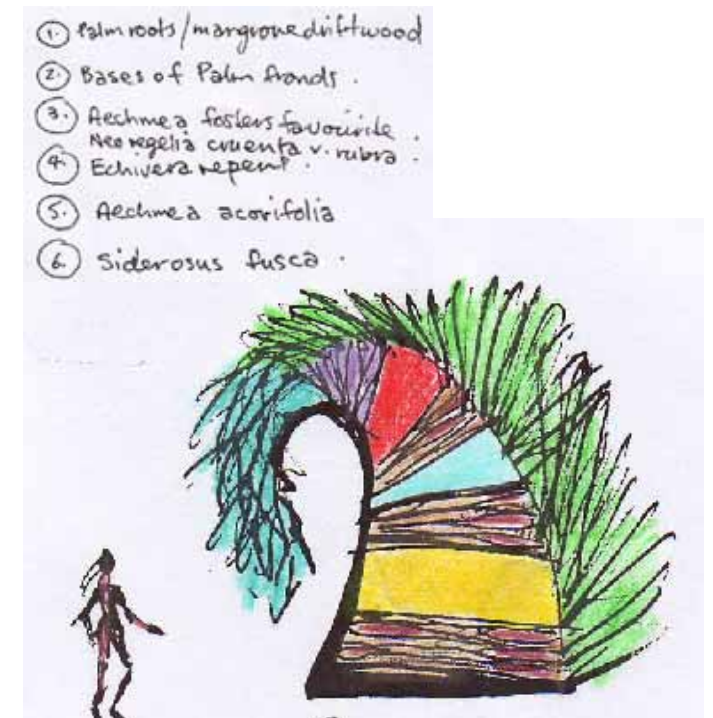
Alcantarea greenroof, Sydney. Watered only by seasonal rain. Plants in impoverished mixes to strip all sediments and nutrients before going to water storage + 1.5m of thermal insulation.



Botanical Gardens project in Rio, Brazil



Vertical wetland gabions Sydney project. Greywater nutrient stripping.



3D artwork and Greenwall installation in collaboration with botanist Bruno Rezende Silva (Rio, Brazil)

9. In short. Advantages of the system developed by The Greenwall Company

- Can be installed **indoors or outdoors** without limitations of dimensions and luminosity (custom built selection of plant material to suit the conditions of each project)
- Countless **creative possibilities**: no two installations look the same. Guaranteed aesthetic impact!
- **Biodiversity**
- **Thermal isolation** of any surface, resulting in great energy savings
- Absorption of **pollutants and noise**, greatly improving acoustics
- Increase of **relative humidity and air oxygenation**
- Totally **separated from wall**, preventing moisture contact
- Carbon is withdrawn from the atmosphere, **reducing the greenhouse effect**
- Made from **reused and recycled** materials
- Total automatization supports the perfect functioning of the drip reticulation system, **minimizing maintenance and water consumption** (the water can also be recycled)

