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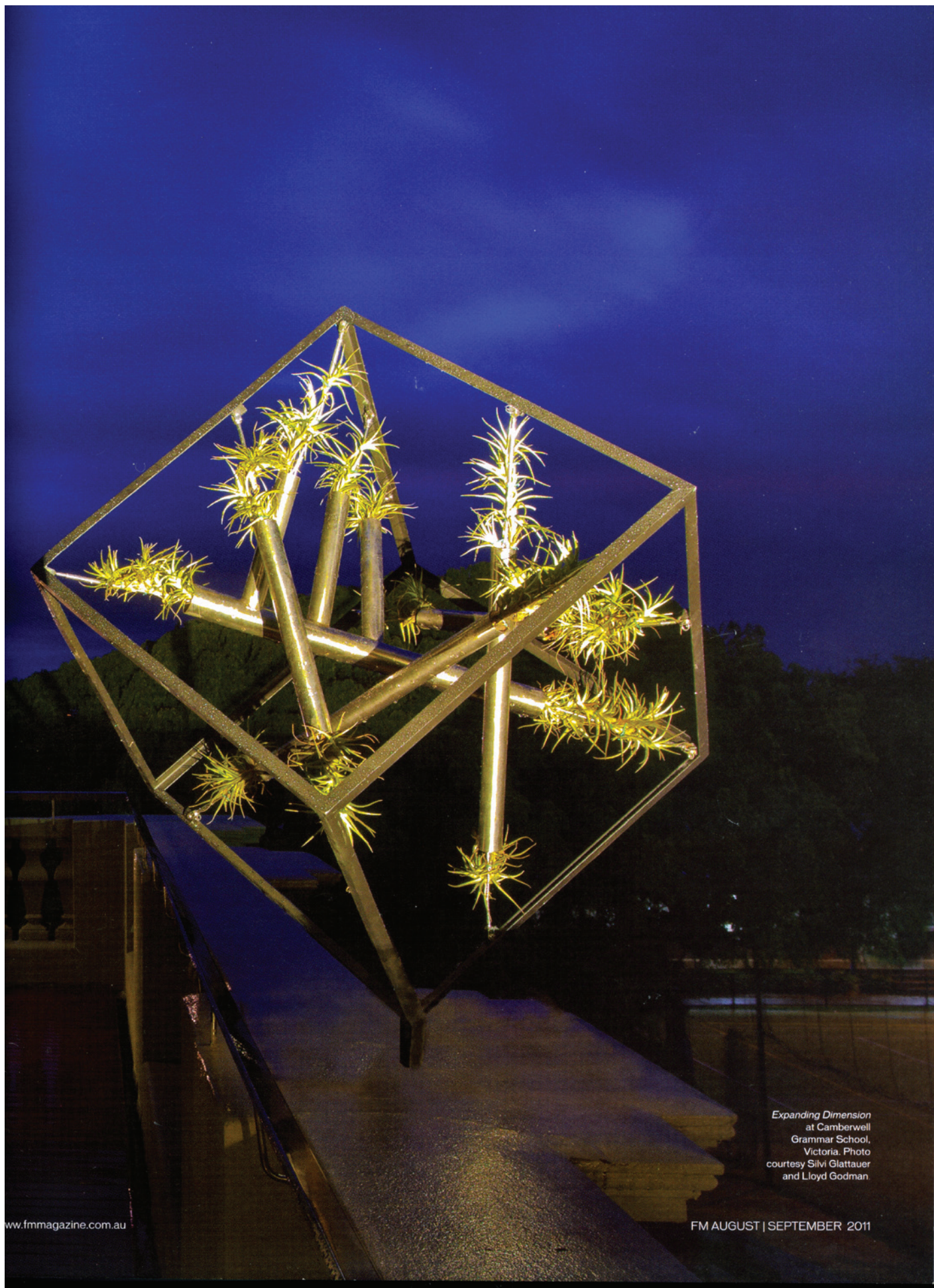
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HOW ART IS CHANGING GREEN BUILDING

Environmental artist Lloyd Godman is using 'air plants' – specially propagated plants that can be suspended in mid-air – to create living artworks based on themes of sustainability. As JOHN POWER reports, these installations not only challenge our concept of the built environment, but they also herald a new era of plant-based shade, awning and screening technologies.



Expanding Dimension
at Camberwell
Grammar School,
Victoria. Photo
courtesy Silvi Glattauer
and Lloyd Godman.



above: Artist Lloyd Godman's Rotation Plant Wheel demonstrates the evocative power of kinetic plant installations.

Lloyd Godman, an artist based at The Baldessin Studio, a 13-acre artists studio set in bushland north-east of Melbourne, has achieved what few artists manage to accomplish: the development of original artworks using personally developed new materials. In Godman's case, his 'new materials' are privately grown, slow-growing plants and hybrids (propagated on-site) that thrive without soil-anchored root systems. These fist-sized, deracinated plants, liberated from the confines of pots or garden beds, are perfectly suited to the creation of living, free-floating plant sculptures or installations.

When affixed in clusters to lightweight metal or wire mesh frames, these extraordinary organisms shatter our common conceptions of live plants as spatially fixed and immobile objects. Rather, as the horticultural equivalent of fish out of water, these symbolically powerful and evocative plants vastly broaden the range of design and display options available to the artist.

Godman's installations are the result of a unique blend of botanical science, environmental awareness and artistic expression. All three elements are intrinsic to the practical realisation of his polymathic vision.

UNUSUAL BIOLOGY

"The plants I work are very hardy and grow slowly," Godman says. "The chief species I'm dealing with are *tillandsia*, *acchinea* and *billbergia*, all relatives of the broader family of bromeliads." These plants bear a resemblance to succulents

and cacti and are predominantly South American in origin. They gain their nutrients through the leaves, which have cells called trichomes that absorb water and airborne particles like a sponge. In combination with energy from the sun, the plants produce an acid that is released at night and converted into nutrients." The growth cycle, Godman has found, is quite slow, taking approximately seven years on average to grow a full-size plant from seed. ("Some varieties can take up to 25 years," he notes.) Using a spacious glasshouse equipped with incubators, as well as sizeable growing walls, Godman has been able to customise and refine his growing techniques to a point where he can breed new hybrids with their own characteristics: different rates of growth, size and colour.

Most importantly, from a maintenance perspective the plants require little watering – as little as 10–15 seconds of mist spraying per day. "I've gone away for three weeks at a time without the plants being watered and there haven't been any problems," Godman says.

"Hanging gardens of one kind or another have been around since the Hanging Gardens of Babylon. People certainly do respond to plants; the classic example is fruit and flowers in hospitals."

More recently vertical and rooftop gardens have gained design prominence thanks to the works of landscape designers like Patrick Blanc from France. However, none of Blanc's installations boasts the free-floating, non-rooted characteristics of Godman's plants.



NEW GREEN WALL IN ADELAIDE

The Property Council of Australia (PCA) has applauded the South Australian Government and developer Aspen Group on the launch in May of a green wall project destined for Tower 8, currently under construction in the City Central Precinct.

The trial green wall - currently attached to the Telephone Exchange Building adjacent to Post Office Place - is a project part funded by the State Government's Building Innovation Fund, itself a joint initiative of the Property Council and the State Government.

"This is the first capital works outcome from the hugely successful Building Innovation Fund," says Nathan Paine, executive director of the Property Council of Australia's SA Division.

"It's the result of extensive collaboration between Aspen, its private sector partners and the South Australian Government.

"The capital works project follows a detailed feasibility study which demonstrated that green walls could be effective in reducing heat loads in Adelaide buildings while also bolstering public amenity.

Aspen Group www.aspengroup.com.au
PCA www.propertyoz.com.au

MESSAGE OF SUSTAINABILITY

Godman's living green sculptures, as noted, challenge our customary impressions of plants. One piece (Rotation Plant Wheel), comprising numerous plants attached to an aluminium bicycle wheel, resembles a swirling planispheric galaxy. Hanging from a cable attached to the centre of the wheel, the installation rotates laterally in the slightest breeze. Another work (Entropy Spiral) is mounted on a horizontal, tapering network of gauze wire tubes, with plants winding around the structure like a giant corkscrew. Both pendant pieces, particularly when viewed against an expansive sky, suggest conflicting messages of the resilience of nature, the delicacy and vulnerability of life, as well as the isolation of earthly life within deathly deep space. Such sculptures inevitably remind us that all living things exist on a small host planet.

The other formidable features of Godman's sculptures are their shadows, which can be created on the ground and walls by strategic placement. The effects are most striking with dynamic works like Rotation Plant Wheel. Indeed, light and shadow are the conceptual driving forces behind much of Godman's work. Since the 1990s, he has experimented with different media, including photography, to explore both the fleeting and prolonged effects of light. His mid-1990s photographic series Photosynthesis, for example, involved the partial, prolonged covering of bromeliad leaves, with only a few geometrically patterned areas exposed to the light. The result: images on the leaves resembling solar tattoos, which were subsequently photographed to form the finished artworks. The

above left: The Rotation Plant Wheel reveals a spinning universe of light and shadow.

above right: Different kinds of 'air plants' interact to create a lush, suspended installation.



above: Godman's artwork *Entropy Spiral* shows that anything is possible when plants do not require a soil substrate.

ability of humans to leave their imprint on the natural world remains one of Godman's preoccupations.

"When we put a building in the landscape, if we look at it in terms of the sensor in a camera, we are creating a dead pixel," he says [begging pardon from all architects!], "and the more dead pixels we put in the more we die. That's why it's important to put in 'living' pixels; one of the more interesting things about architecture is that just as we can clear foliage from a site, so we can just as easily replace it with plant life on and around the building."

In other words, a building – like a wire mesh frame – can also serve as a framework for manmade green habitats.

SYMBOLS & MODELS

In this context, Godman says his air plant installations present artistic conceptual models for the following sustainability imperatives:

- water conservation – the plants have evolved to require small quantities of water
- energy efficiency – the plants use an extremely efficient method of storing photosynthetic energy as an acid and releasing it at night
- coexistence – as epiphytes, the plants grow on other objects without destroying or parasitising the host
- super-sustainability – the plants sport new growth and are therefore self-replicating.

Of course, there are additional features of symbolic relevance: slow growth rates, easy adaptability to different climates and conditions, natural rhythmic movement, interaction with natural forces, extraction from 'normal' habitat, self-sufficiency, etc, all of which underscore Godman's principal concerns with matters of sustainability.

ARCHITECTURAL APPLICATIONS

Melbourne architect Peter Crone, from Peter Crone Architects, has been collaborating with Godman to design an air plant installation for Camberwell Grammar School as part of a new Crone-designed building development within the senior school grounds.

The three-level building will be a large complex incorporating a science laboratory and arts facility, with space allocated for a Godman artwork that will achieve multiple artistic and practical functions.

The building project will take approximately a year to complete, but in the meantime Crone and Godman have erected a test installation (see the photo on pages 24–25) at the school in order to assess and optimise plant orientation.

Crone says he was instantly struck by the architectural potential of Godman's plants.

One of the more interesting things about architecture is that just as we can clear foliage from a site, so we can just as easily replace it with plant life on and around the building.

"I had no idea what bromeliads were," Crone says, recalling his first visit to Godman's studio, "but at the end of the day I thought there was a place for them in our architecture."

The proposed Camberwell Grammar installation will be a south-facing artwork looking back into a courtyard and placed near a series of balconies outside a staff area. "We wanted a screen to get some tranquillity and immediately thought of the plants," Crone says. The Middle School nearby already features a dynamic sculpture that might form a partner piece.

Crone says major attractions of Godman's plants include their lightness of weight, longevity and low maintenance requirements compared to other options like soil-based vertical walls.

GROWING ACCEPTANCE

Godman's air plant artworks are the result of a philosophical desire to examine our relationship with the built

environment. It is gratifying, therefore, to note that his work forms part of a growing and strengthening social push towards greener cities.

For instance, within Melbourne's CBD there are already a number of strategic programs in place to promote installations such as green roofs and vertical walls without compromising more traditional tree planting and replacement schedules.

According to Ralph Webster, senior architect at the City of Melbourne and former Victorian executive member of Green Roofs Australia, "we are seeing an increase in the application of green walls – the reasons are many and varied."

Webster says the City of Melbourne, generally speaking, endorses and encourages the use of plants for applications like green walls within the greater city environment, though common sense necessarily underpins the acceptability of specific installations with regard to size, application and function.

"I think there is an innate bond between people and living systems; however, it needs to be clear when using building integrated living systems just what the purpose is," Webster says. "One of the points I am often making is that living architecture or 'green infrastructure' is more than just an aesthetic or green paint trying to get a 'sustainable' buy-in. These are complex systems with a wide variety of potential benefits, including urban heat island mitigation, stormwater management, biodiversity, human health, passive and active recreation as well as being potentially very attractive."

While green roofs, walls or art installations are typically not included in Building Codes, mainly due to the highly variable nature of living organisms, and do not normally require planning permission¹, Webster advises property owners to do their homework before undertaking any project.

"Vertical green walls are probably the most technical types of installation you can do, particularly if you are using plants in an environment that are not well suited to the space. Most green walls need a lot more light than is naturally available."

Notwithstanding these operational parameters, Webster says "there could be more work done to take advantage of living organisms".

"The other aspect," he cautions, "when considering living greenery is maintenance. That's where Lloyd [Godman's] plants are good – they are slow growing and require little maintenance, and so are great for screens."

The City of Melbourne does not offer recommendations about preferred plant species or generic designs, but Webster says guidelines are being prepared to offer tips about best practice.

Furthermore, he notes that developers, who are required to allocate a percentage of their budget to an art installation, are welcome to submit a 'green' artwork as part of their application.

LIVING AWNINGS

The potential for Godman's plants to replace or supplement mainstream architectural fittings is another exciting

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above: This concept visualisation (Pain Air) suggests the use of *tillandsia* plants to fashion an airplane at the National Gallery of Victoria.

consequence of his art. Lightweight air plants might be used to create live plant awnings and screens at any level of a building. Owing to their small size, they could even be used as the main shade medium in louvres, shutters and sliding shade doors.

Moreover, Godman suggests, the symbolic prospect of fresh air being filtered through plants as it enters a building is instantly appealing. Similarly, light that is stippled through plant foliage – even in challenging high-rise applications – would be a welcome alternative to conventional static awnings.

As mentioned above, it is highly unusual for an artist to forge new aesthetic, philosophical and architectural directions through his work; Godman, however, has managed to use his diminutive plants to convey global concepts, and in the process participate in a new wave of appreciation for plants in the built environment. **FM**

Footnote

1. General gardening on private land such as planting and pruning does not require a planning permit within the City of Melbourne. However, a planning permit is commonly required to carry out works (including the building of structures like the ones in which green walls hold their substrate). A planning permit ensures works are legal, and prevents unreasonable negative impacts for neighbours. Failure to obtain a

planning permit or comply with its terms can result in fines or other penalties (including prosecution). When planning a green roof, always check whether a planning permit is required at the early design stages. A pre-application meeting can be arranged with Council to discuss site-specific issues and design feasibility. This will ensure the permit process runs as smoothly and quickly as possible.

All applicants for a planning permit are encouraged to arrange a meeting with a Council planning officer before lodging a planning application. Planning officers provide preliminary advice on the proposal and the type of information needed with the application. To find out if you need a planning permit and what the relevant requirements are, view the Melbourne Planning Scheme at Victoria's Planning Schemes online or contact Council.

More information

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Melbourne City Council

www.melbourne.vic.gov.au/Pages/default.aspx

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Victoria's Planning Schemes

<http://planningschemes.dpcd.vic.gov.au>