



## A Blueprint for Sustainable Design

### PART 3

Nature-based design and organic materials – from biophilic building patterns to biomimetic construction imitating biological systems – are helping create healthier spaces, says **Juliet Kinsman**.

It is humankind's departure from natural systems and conversion from wilderness to urban environments that many scientists and sustainability experts lament as the cause of much of the world's ill health. We're living in an Anthropocene era – a term coined in 2000 by biologist Eugene Storer and chemist Paul Crutzen to describe this time in which man is the dominant influencer on the planet: Anthro being Greek for 'man' and cene meaning 'new'. Subscribe to this, and you may feel optimistic that as much as we cause the problems facing our planet, we can innovate through technology to solve them too. But surely we're better to look to nature?

Biophilic design is that which is inspired by natural surroundings and all living things, channelling biological forms in architecture and interiors and replicating nature's idiosyncratic patterns and systems. When it comes to building exceptional hospitality establishments, it's about finding balance. We're returning to age-old traditions and organic materials as well as implementing forward-thinking methods and application, incorporating what we love about the natural world along the way – daylight, fresh air through natural ventilation and verdant greenery.

Louis Thompson of Nomadic Resorts is an award-winning biophilic designer credited with

replicating the shapes and systems of living organisms. In his designs, such as the treetop dining pod at Soneva Kiri in Thailand, he was inspired by the natural growth of saprophytic fungi and the Seedpod tent. He believes the rooms at Nay Palad Bird Nest Hotel in Kenya to be one of the most elegant examples of biomimicry and biophilic design. It's not just the aesthetic act, Thompson recognises that for constructions to really be tuned into nature, the entire hotel development process needed to be reviewed, so that it not only looks more organic, but its way of being function channels biological processes, working efficiently in a circular way, as nature does. "The earlier in the design process that we consider passive design, orientation, insulation, airflow, material selection, natural light, renewable energy, water re-use strategies, regenerative landscaping and engineering, the higher the chance of success in achieving an integrated, holistic environment," explains Thompson.

Camp Glenorchy Eco Retreat in New Zealand is an exemplar of the Living Building Challenge accreditation. "The processes they are adopting in terms of construction methodology are holistic – incorporating a sense of place, health and happiness, equity, land regeneration and beauty into the design process, as well as addressing the traditional technical aspects of

green building such as thermal comfort, energy and water use," Thompson notes. He makes the distinction between green building certifications such as LEED and BREEAM being more relevant to assessing the hardware of office blocks and apartment buildings as opposed to biophilic projects, which work on a more spiritual level in terms of genius loci. "We are working to combine traditional green building, biophilic design and large-scale rewilding, expecting remarkable results."

Judging by the hotel landscape, it appears easier for tropical locations to lick this formula, free to plot up in the soil and start building up with materials such as bamboo, unfettered by the constraints of urban contexts. Cempedak, a private island resort in Indonesia and Bambu Indah in Bali are poster hotels for open-air bamboo-architecture magnificence. "Islands by their nature are their own ecosystems and there is a whole subject around their biodiversity under the label Island Biogeography," explains Andrew Dixon, creator of Cempedak and sister venture Nikoi. "The strongest learnings come from permaculture theories and putting that into practice. I have come to learn that it is so much more efficient to work with nature than to try and fight it." Dixon considers these two islands their own ecosystems, the ultimate goal being to make them 100% self-sufficient. They

are self-sufficient, zero waste and the solar photovoltaic system allows them to turn off the generator bar a few hours a day. Their farm on the mainland also supplies fruit and vegetables, so they don't have to cut down trees to clear land for growing.

Biophilia is a buzzword in city styling too, but it's important for concepts to stretch beyond a superficial façade. 1 Hotels swiftly established themselves as the first nature-inspired urban retreats with all-singing all-photosynthesising living walls and interiors crafted with tactile upcycled woods and farm-to-fork menus jiving on the organic theme. Meanwhile, houseplants transformed three of Lemman Locke's suites into pop-up jungles when biophilic designer and architect Oliver Heath brought in Boston ferns, peace lilies and snake plants – which is sometimes the best urban escape. Thompson agrees this is an efficient quick-win for city hotels: "Good quality interior vegetation in public areas is the easiest solution – masses of beautiful terracotta pots exploding with nephrolepis ferns can be as powerful as a fancy living wall – and a lot easier to maintain."

Adapting to this socially-distanced world, Locke Hotels use planters and terrariums in Manchester, London, Edinburgh, Dublin and soon, Munich, also known to help soften the effects of anxiety. "The industrial-style

## Sustainability Speak

### BIOPHILIC DESIGN

A connection with the natural environment through direct and an evoked contact with nature by way of architecture and interior design.

### CLOSED LOOP

Circularity means trackable, simplified supply chains and a closed loop in terms of operations and zero waste, rather than a linear approach in which goods are used then sent to landfill.

### GREEN ROOFS, GREEN WALLS

Gardens and ecological features enhance biodiversity and provide potential habitats for birds and insects. Plus, the right greenery oxygenates the air, sequesters carbon in cities and counters air pollution.

### NON-TOXIC

The natural world is of course free from manmade chemicals, and low-VOC (volatile organic compounds) spare us of the toxic chemicals in traditional emulsions. Herman K, in a converted transformer station in Copenhagen, is chemical-free thanks to surfaces treated with an invisible, scent-free, self-disinfecting titanium dioxide 'CleanCoat' – meaning they only need to be wiped down with electrolysed water.

### PASSIVE DESIGN

Coined in Germany as the Passivhaus system, these centuries-old building-science principles are also known as bioclimatic architecture – insulation throughout an airtight envelope, high-performance triple-glazed windows and doors where aspect optimises and minimises solar energy to ensure comfortable and consistent indoor temperatures during both the warmer and cooler seasons.

## Sustainability Speak

### PERMACULTURE

Designing an ecosystem so it mimics nature-based principles, from growing food to planning a garden that produces rich soil and naturally recycles.

### ZERO WASTE

In nature, there's no such thing as waste: picture all organisms processing nutrients in a closed loop, where even their excretions become matter that is useful to another phase in the system. In the context of construction, it's when a circular economy is observed and supply chains are resourceful, ethical and transparent, meaning any waste is repurposed rather than being sent to landfill.

spaces having elements of biophilia creates a nice tension – we've evolved to be urban creatures but we're yearning for proximity to the natural world," notes Matt Grzywinski of Grzywinski+Pons, the designer behind a number of the Locke properties.

Designing great function is as critical as considering form – which is nature's MO. "Circularity is all about waste and a new hotel design should minimise the waste of water, energy and solid waste at the design stage," explains Asia-based Sustainability Coach, Piet van Zyl. "The engineering designs should incorporate this as a principle – but engineers don't like designing stuff they are not familiar with." Every aspect of the design should look at where materials come from and where they will go at the end of life and asking what the long-term impact is on the environment regarding waste and water and electricity?

The Datai in Langkawi was recently lauded for its relaunch after an extensive redesign – which has permaculture at its heart. "Bring the organics and food waste back to feed the soil to produce healthy food through composting and worm farms," van Zyl explains. "Treat wastewater naturally to promote nutritious irrigation water. Keep the solid waste from polluting because otherwise it can wash out on the beach and be seen next to the roads. The Datai takes a holistic, long-term view and they are transforming tomorrow, today."

Van Zyl helped develop the waste-to-wealth application at Soneva Fushi. "The hotels with a positive impact on their environment have made a conscious decision to do so, and have committed to contribute resources to it, not just greenwashing with fluffy PR words," he notes. "A hotel that says it is serious about sustainability has a sustainability department with dedicated personnel managing waste and gardens and bees, keeping the hotel

environmentally honest. It cannot be part of someone's job. In the current situation, we need passionate, dedicated people managing a circular hotel business model."

Sarah Jenkinson from Centre for Alternative Technology, an eco-centre in Wales dedicated to demonstrating and teaching sustainable development, adds: "Architectural education that embraces the heartfelt needs of nature and all that we love about the natural world – light, fresh air, birdsong, water – is the responsible architecture of the future. At our Graduate School for the Environment in Mid Wales, trainee architects get hands-on experience with sustainable and traditional building materials such as rammed earth, cob and hemp, as well as lime, timber and straw bales. Environmentally sustainable materials offer creative opportunities to develop high quality, healthy, effective and long-lasting products that can enhance rather than damage natural ecosystems."

Let's delight in a bandwagon now heaving as the travel industry is appreciating that the way to wow tomorrow's clients is through nature – wherever they are. Hotels are also appreciating sustainability as more than a trend, and as a new way of being. As Luxury Frontiers' Graeme Labe puts it: "Humans spend 93% of their time indoors, but if nature can enhance even the most mundane activities, surely designers have a responsibility to pull the natural world into the built environment?" It's not just the window dressing you want to look green and natural, it should really function in this way too.



Juliet Kinsman is a sustainability editor and founder of Bouteco. Her new book, *The Green Edit: Travel (Easy Tips for the Eco-Friendly Traveller)*, published by Ebury, is out now.