

Sustainability issue:

How do Stirling shortlisters measure up?

Farm fresh: ACME's supermarket special

Anupama Kundoo's philosophy of building

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We've sustainable stories galore this issue – what has inspired or disappointed you? And what can you add? : letters.ribaj@riba.org



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The Forge, Upton Park, uses an innovative Blue40 Roof System that restricts and delays runoff from the site, equating to 60% of the equivalent green field flow rate.

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Woodland folk
— rural development
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07

1: Buildings

**STARTUP LIONS CAMPUS,
TURKANA, KENYA**
KÉRÉ ARCHITECTURE
Read the full story:
ribaj.com/startup-lions

In the arid region of Turkana in north-western Kenya, termite mounds are scattered over the sparsely populated landscape. Some are bulbous, some are tall and thin. They blend in with the rocky terrain, wind-swept trees and tinder-dry bushes, built by colonies of insects using local soil.

Designed by Kéré Architecture, the Startup Lions Campus takes inspiration from these termite mounds, in both its architectural form and methods. It is a new information and communications technology campus on the banks of the world's largest permanent desert lake, Lake Turkana. The initiative of German NGO Startup Lions, its brief was for 100 computer stations in classrooms and co-working spaces to provide education across various IT professions and give access to the tools to work remotely on the international job market.

The campus is built using local rock from the site; Kéré Architecture often uses what is abundant locally to make

the project of the place and ensure it is easier to build and repair. Its reduced transport need is also more sustainable.

This project celebrates the unusual morphology and natural beauty of its site. Cement and sand plaster render picks up the colour of the earth. It is built over two levels that cling to the natural slope, mixing inside and outside through a series of external staircases, walkways and terraces that envelope the building so occupiers can almost crawl over it. But the project doesn't just connect you to the earth; from the roof terraces there are sweeping views over Lake Turkana too.

The three geometrical towers are both aesthetic and purposeful; part of a passive ventilation system that avoids air conditioning in a building full of electrical equipment. 'In a project like this,' explains Kéré, 'solutions of this kind are imperative both for sustainability and to keep costs manageable and maintenance possible.' ● Isabelle Priest



Early learners

Sustainable credentials are an important part of the RIBA Stirling Prize now, so what can we learn from the six shortlisted buildings? Their architects reflect on the positives – and voice a few regrets

Words: Eleanor Young

Town House, Kingston University, London Grafton Architects for Kingston University

Shelley McNamara of Grafton sees the sustainability of the Town House, a university hub, as primarily a question creating the cultural and physical conditions for students to prosper. The plans create a porous building, the stacked colonnade, or loggia, on the outside avoids the smelly corridor, instead using external circulation. There is plenty of natural light and the large volumes help with natural ventilation. 'It is an inside out building,' she says.

'We have been very relaxed about using lots of concrete in the past,' says McNamara. 'Now we are careful about how it works.' Even on this building, before the significance of embodied carbon was widely recognised, the lean design with precast ribbed slabs reduced waste. Ground Granulated Blast furnace Slag (GGBS) was used as

a cement replacement, up to 50% in the slab foundations and 36% in the structural frame. The biggest concrete carbon saving was in avoiding having a basement, 'which put pressure on us as designers' says McNamara, describing how plant was tucked into the ground floor and put behind screens on the roof.

Exposed concrete slabs are integral to the heating and cooling of the building; a thermally active building system (TABS) uses the concrete's thermal mass by running hot and cold water through the pipes in it. This of course dictates that the concrete be left exposed, cutting out an extra layer of material, although there are timber acoustic screens. The deconstruction of the earlier prefabricated building (92% was recycled) gave the opportunity to rethink the street scape with more space, trees and some biodiversity while car parking space at the front was turned over to pedestrians and cyclists.

'Kingston University was an extraordinary client. Clients come with these fantastic visions of performance, but once these things are costed many of them are omitted,' says McNamara. 'We have a long way to go, legislation would help.' But happily with Kingston, the unique structure of keeping the client on the judging panel to critique, champion and advise on the architecture is demonstrated in the Stirling shortlisted result.

Embodied carbon: 372kg CO₂e/m²

Operational energy use (primary): 87.96kWh/m²/yr



Right Ney & Partners and William Matthews Associates.

Far left Reducing waste and bringing back green into the street: Town House by Grafton Architects.

Left Concrete interiors are largely self finished, bar timber acoustic screens.



Above How to land lightly on such a special and complex site?

Tintagel Castle footbridge, Cornwall Ney & Partners and William Matthews Associates for English Heritage

'Before carbon, the sustainability was driven by making the smallest impact on the site,' says William Matthews. 'We got there and wondered how on earth we could do it.'

With steep drops, no vehicular access, Sites of Special Scientific Interest at the bridge landing points, and a Scheduled Ancient Monument all around, the whole structure was built without scaffold or formwork as two independent 30m cantilevers (with a tiny – vertiginous – gap between). Materials were delivered across the site using a re-useable cable and pylon system, and minimum foundations (6m³ of concrete on each side) helped to protect the archaeology as much as reduce embodied carbon, though happily it did that too.

Competitor schemes looked at stone and concrete. Matthews and Ney and Partners chose 5t sections of virgin British steel and a local Plymouth-based fabricator rather than recycled steel shipped from the continent. The heavy weight slate that makes the deck so special comes from Delabole, just four miles away.

The client, charity English Heritage, considers itself a custodian of its site. Sustainability and EH's commitment to maintenance over the long term played into the decisions that make this bridge at King Arthur's legendary base a remarkable piece of future heritage.





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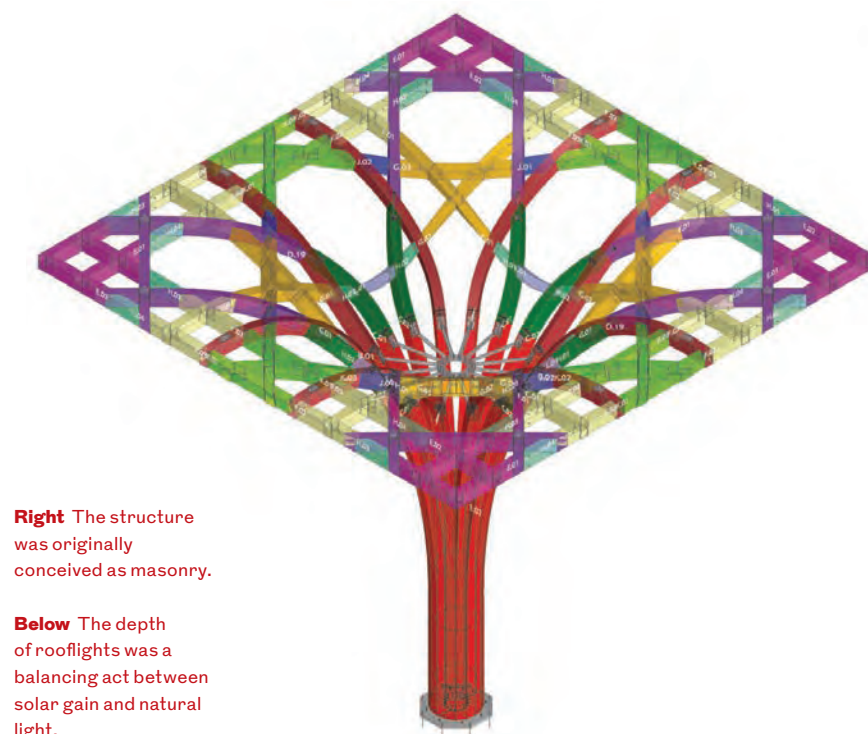
Buildings Stirling sustainability

Cambridge Central Mosque Marks Barfield Architects for Cambridge Mosque Trust

The dramatic timber vaulting of this mosque – the most visual symbol of a low embodied carbon approach – started out as masonry. 'But we couldn't make it properly structural, the structural engineers kept putting a column in the middle and we couldn't have that,' explains Julia Barfield. 'One of the things that has changed in the 10 years since we started on the design is the focus on embodied energy.'

What hasn't changed is the Mosque Trust's sense of humility and being a custodian, which fed into other moves, along with close work with the services engineers. Air, energy and water are areas where Marks Barfield knew it could make carbon savings. Most of the spaces, from atrium to ablutions area to prayer hall, are naturally ventilated, with air extracted through rooflights. Getting the precise depth and dimensions of these was important, both to ensure they were shaded enough not to overheat the space and to optimise air flow – both when the hall is empty and if the 1000 worshippers arrive from the courtyard wet from rain.

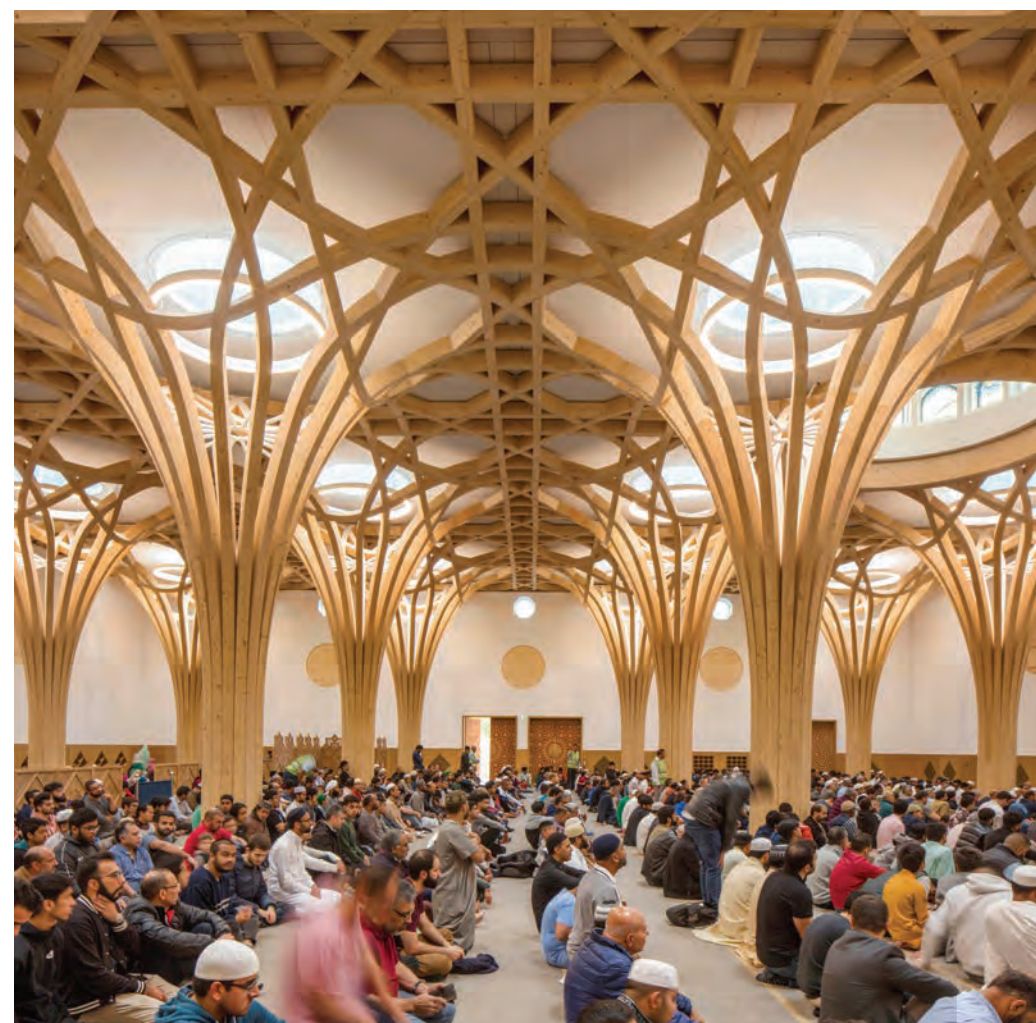
MORLEY VON STERNBERG



Right The structure was originally conceived as masonry.

Below The depth of rooflights was a balancing act between solar gain and natural light.

MARKS BARFIELD ARCHITECTS



Fans act as back up to draw out stale air when needed.

There is no fossil fuel on site. Photovoltaics on the roof (not of the prayer hall, that was a no-no) provide the energy to heat the water for worshippers' ablutions before they enter the prayer hall. They also supply 13% of the energy for heating the building. Air source heat pumps regulate the internal temperature. Collected rainwater is used to flush WCs and to irrigate the gardens that front the mosque.

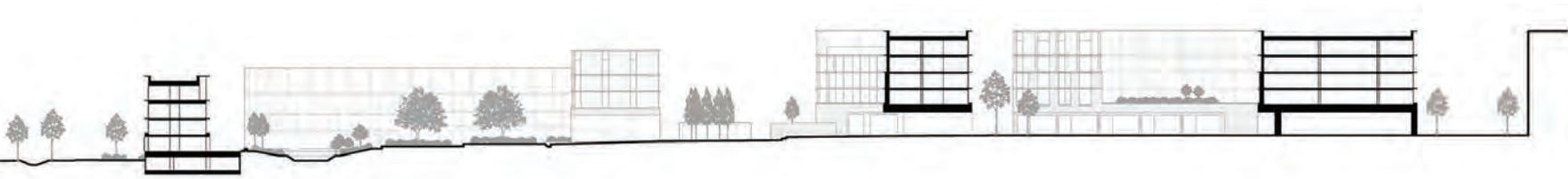
'We are trying to become carbon literate and so have done a carbon assessment of the building,' says Barfield. As well as what the practice learnt from that, it led to some tweaks over the first year. The fans came on too frequently, and the lights were regularly on during the day even though they were intended only to come on as natural light levels fell – both were adjusted.

Barfield's only sustainability regret is the extensive basement parking with all the concrete and embodied energy that entails. 'We wouldn't have got planning without it,' she says. 'But it would have been nice not to do such a big car park.'

Embodied carbon: 548kgCO₂e/m²

Net operational energy regulated + unregulated: 65 kWh/m²/year

Most of the spaces are naturally ventilated, with air extracted through rooflights



Above Courtyards have a sense of green and community.
Below Self supporting brick skins reduce the chances of cold bridging.



Key Worker Housing, Eddington, Cambridge
Stanton Williams for University of Cambridge, North West Cambridge Development

The sustainability ambitions of the University of Cambridge and its Eddington urban extension are set high. The homes were designed as Sustainable Homes Code level 5, there is a district heat and power system and it has the largest storm water recycling system in the UK. With ambitions and infrastructure like this, and working to Aecom’s masterplan, Stanton Williams focused on a fabric first approach; the concrete slab includes GGBS and columns have a self supporting brick skin that allowed 250 insulation and minimal cold bridging.

The human aspects of sustainability were very much part of the brief. Community and delight as well as sustainable transport are manifested in the cycle pavilions (‘never “sheds”,’ insists Stanton Williams’ Kaori Ohsugi). Extra spacious, with climbers and a bench inside and out, they are places as much to meet your neighbour as park your bike.

Blocks were laid out corner to corner to allow good daylighting (without overheating) and a sense of intimacy. Most of the flats are dual aspect, and those that are not had rigorous requirements for views and daylight.

The storm water system starts on the roofs, where PVs sit on crushed recycled bricks that make a micro habitat of brown roofs, with water storage beneath them. But then the water percolates to the courtyards with little rills, eventually running into an attenuation pond. Simple things like bird boxes and edible plants bring wildlife into the greener courts. ‘Seeing the birds coming out makes you so happy!’ says Ohsugi.

Despite working to a design life of 120 years, Stanton Williams did push for lime mortar to be used, to help ensure the bricks could be more easily recycled. But time and cost constraints precluded it. The Code for Sustainable Homes proved a good guide on materials (via the Green Guide) but it is clear just how much knowledge about sustainability, particularly around materials and embodied carbon, has increased in the last couple of years. That is what the practice is bringing to its projects now.

Embodied carbon: Not available
Net operational energy regulated + unregulated:
87.38kWh/m²/yr

JACK HOBHOUSE

DRAWING: STANTON WILLIAMS

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Stone proved cheaper in both carbon and cash on Clerkenwell Close.

Clerkenwell Close, London
Groupwork for 15CC

Clerkenwell Close began as an experiment with stone to understand whether it was structurally possible, financially viable, and whether there were any sustainability advantages, writes Amin Taha of Groupwork. The entire design team knew the answers to none of these questions, having only a few precedents which used post tensioned stone (notoriously so expensive per square metre that a facade of BMW 5 Series saloons would be cheaper).

Had we accepted the circular argument that no one uses it because it's expensive, and no it hasn't been tested because it's expensive, that would have been that.

Instead, we asked a French stonemason who we were already working with on a self-supporting helical stone stair. The answer was a bemused: 'Well of course, what do you think all those cathedrals and ancient buildings are made of?' WebbYates' calculations showed it was structurally possible, even if we oversized stone against progressive collapse, and cheaper than 'standard' – stone cladding on a steel or concrete frame with various layers of fireproofing, weathering, insulation, vapour barriers, stainless steel or galvanised clamps – even without including the prelim costs saved by being faster on site.

Stone had other benefits too. Our sustainability engineers reported a saving 92% in embodied CO₂ compared to a clad steel frame – because stone has no embodied CO₂. Energy was used only for cutting, transportation and lifting on site (if it was from Portland – which no longer has the skills - instead of Lyon we would have saved a further 5%). Additionally, the huge exo-skeleton acts as solar shading. Moving it out an extra 50mm on its south west face reduced solar gain enough to avoid specialist glazing treatments and mechanical cooling, with operable windows being sufficient. Lastly, for the fit-out we removed all first-fix aluminium and plaster board partitions and lining and only used stone and timber. This made the building's CO₂ sequestration negative, further reducing its embodied CO₂.

Further work on modelling towers suggests we could build to capture carbon. We don't need to invent machines to suck it out of the air and store it in the abyss of the deep sea. We just need to cut out, transport and lift up stones.

And a note on concrete: The lesson we learnt – after the concrete had been completed across the basement and upper floor slabs (on temporary props) over 12 months – is that we could have used CLT instead and cut around 8 months from the programme. Lower CO₂ and, of course, it would have been cheaper too.

Embodied carbon: 335kgCO₂e/m²
Operational energy: 66.22kWh/m²/yr



CARMODY GROARKE

Windermere Jetty Museum, Cumbria Carmody Groarke for Lakeland Arts

During its construction Windermere Jetty Museum suffered from two 1:200 year floods. Sitting on the edge of Lake Windemere, the realities of flooding – and particularly extreme weather events from climate change – defined the project. The massing gave the museum a conservation gallery at normal lake level for boat access, with enhanced flood resilience and easily replacable cladding, but site waste was used to build up the rest of the buildings so galleries and public would stay above flood level. ‘That topography helped embed the building in the landscape context,’ says project architect Rowan Seaford.

The theme of water drove many sustainability moves. A swale across the site and reed beds ensure that waste water can be cleaned and filtered on site before being discharged into the lake – through the boathouse, helping keep the water moving and clear, lapping beautifully at the edge of the boats. Perhaps the most forward-looking thing for the time, says Seaford, is that the building was all electric, thanks to a water source heat pump suspended under one of the new jetties.

Sustainability was also built into the design process. The team set up a series of benchmarks to assess the project on sustainability. A significant improvement on Buildings Regulations was enshrined in the brief and it has a 20% improvement on Part L with natural ventilation through most of the museum and high levels of insulation. The process also provided a chance to work towards an extended design life of 50 to 70 years and involved the architect in a request to Windemere

The building is all electric, thanks to a water source heat pump suspended under one of the new jetties

Above The flood risk helped generate the forms that bed happily into the landscape.

Below A water source heat pump is hidden under one of the jetties, allowing the museum to avoid directly using fossil fuels.

Lake Cruises to add a museum stop to their programme to boost sustainable travel options.

While the forms themselves are informed by passive measures including shading from the cantilevered roofs (also perfect for shelter in the changeable weather of the lakes) the practice is aware that the overall form of the building is not the most efficient. The different volumes mean more envelope and more structure. But as the first contemporary building on the lake in many years, in this most precious of National Parks, breaking up the form and scale took priority. And the flexibility of long spans, minimal internal structure and building services built into the landscaping has certainly paid off as the museum has adapted to Covid-19 realities. ●

Embodied carbon: 572kgCO₂e/m²

Operational energy: 144kWh/m²/yr

What has the Stirling Prize done for us? – p117



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Life and soul in the Sussex woods

Learning, living, leisure and work harmoniously co-exist at Flimwell Park, a sustainable scheme that sets a benchmark for rural development

Words: Soraya Khan Photographs: Roland de Villiers



- 1 Cycle hub
- 2 Accommodation block
- 3 Workspace
- 4 Focal Building
- 5 Restaurant
- 6 Project cottages
- 7 Private homes

IN NUMBERS

2.5ha
built and landscaped site

630m²
net internal area,
workspace

220m²
net internal
area, overnight
accommodation units

Left Detached workspace units and subterranean overnight accommodation block viewed from the south-east.

Right View of the Focal Building and restaurant from the south-west.



Eight timber towers peering over the main road from Flimwell to Hawkhurst signal an unusual sustainable mixed-use development deep in the East Sussex countryside. Touring the scheme with its designer, Steven Johnson of the Architecture Ensemble, there is so much to Flimwell Park that it's hard to know where to begin. There is the story of its creation – a combination of good fortune and good judgement – of which more later. There is the backdrop of a 22ha ancient woodland, interwoven with trails and ponds that link it to nearby beauty spots like Bedgebury Pinetum. And there is a mix of uses – work, educational, residential and amenities – that offer a lead in sustainable rural development.

From the main road, an entrance ramp

descends several metres to a 'SuDS-tastic' central car park, flanked on its south side by the eight towers raised on spindly legs, which contain lettable workspace. To the north, a low-lying accommodation block is tucked into a bank aligning the road. At the west end is the Focal Building – a large double-height workshop reminiscent of an Amish barn – and its skittish sibling, an angular two-storey restaurant. Two affordable houses also lie at this end. To the east are a cycle hub beside the entrance ramp and three further private houses, yet to be completed.

The idea for a new type of rural eco-community was sparked by the O'Callaghan family's decision to acquire the former bird sanctuary in 2001, when banks were still



supportive of new development ideas. The O’Callaghans are developers with an interest in design, who engaged Steven Johnson after seeing a variety of workshops work he has built at the nearby Woodland Enterprise Centre. Johnson has an expertise in timber architecture dating back to his time as project architect of Edward Cullinan Architects’ Downland Gridshell, completed in 2002. His role as associate professor at the Bartlett brought an additional dimension to the project: together with professor Bob Shiel he saw that Flimwell Park could make a base from which UCL students in many disciplines could undertake timber-based creative work.

The planning process was inevitably challenging, as the site lies within the High Weald Area of Outstanding Natural Beauty, and outside Flimwell’s development boundary. The case officer was initially reserved, not wanting to set a precedent for the development of sensitive sites, but the planners did want to support a boundary-pushing scheme that would generate local employment and draw people into the area. When new planning laws came in, allowing local people a say on development, support from parish councillors and community groups following public consultations was pivotal to its success.

Creating a mix of uses has been the cornerstone of the concept; workspace and education were the key drivers, with the three private houses added for diversity and to balance the books. The only Section 106 requirement was to build those houses last, and fortunately the bank remained supportive.

In the surrounding Sussex woodland, an open meadow, newly cleared, reveals itself as a biodiversity sink where a nearly extinct flower – the Heath Lobelia – was discovered and immediately tracked by botanists from Kew. ‘There is biodiversity in the soil which springs into life as soon as some trees are

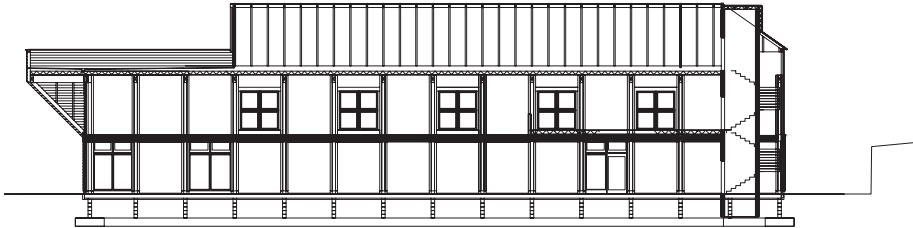


Left and right The Focal Building provides workshop and studio space for UCL students.

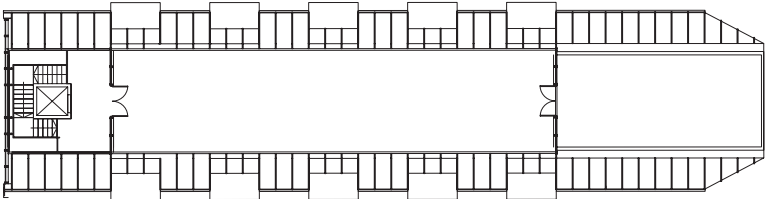


Above Ten subterranean ‘chalets’ can be booked as overnight accommodation for visitors.

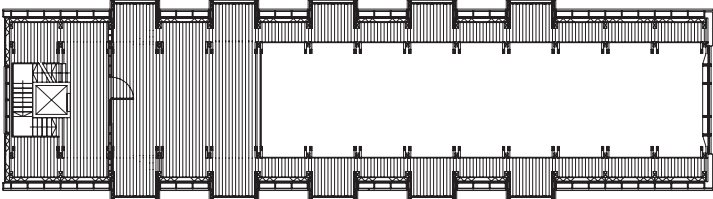
Focal Building: section



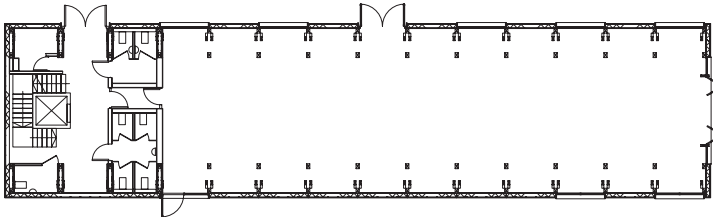
Greenhouse floor plan



Mezzanine floor plan



Ground floor plan



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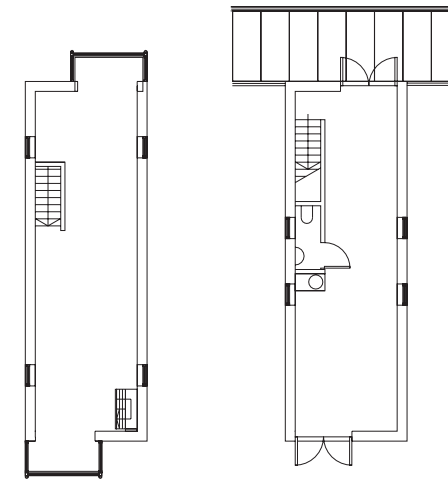
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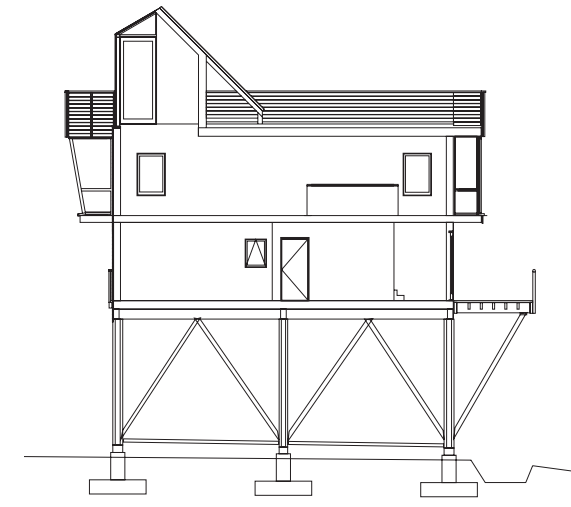
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Buildings Rural development

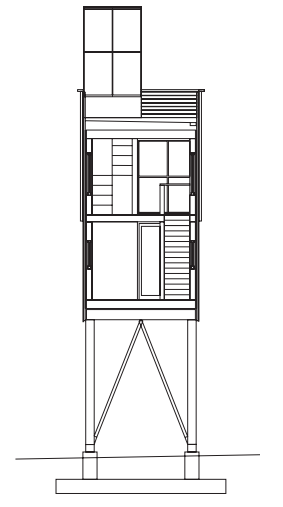


Upper level floor plan

Lower level floor plan



Long section



Short section

cleared and light gets through', said Johnson.

The woodland will soon be explored, researched, and built in by UCL students. The construction of an anagama kiln will kick-start a programme of diverse projects including a sewage pump devised by engineering students and sculptures set around the ponds, created by art students in collaboration with hydrologists. There are some parallels with the AA's woodland facility at Hooke Park in Dorset, but at Flimwell Park the presence of businesses, residents and the restaurant will lend a different, more public character.

Designed on principles of sustainability, the scheme developed organically through the construction phase. Functional input from the client, and site construction manager Matt Blackwell, produced a new lightweight SIPs construction system, Combipanel.

The predominantly timber construction uses local materials but doesn't reference local styles so one wouldn't call it vernacular. Given its celebration of function, material, and construction it could perhaps be called 'sustainable constructivism' – a style arising from sustainability and functionality with its own aesthetic and formal language.

The eight distinctive workspace units,



Above and below
The eight 84m² two-storey workplace units include private and shared offices and co-working space.

Credits
Architect The Architecture Ensemble
Client Regalmain
Structural engineer Timberwright, Echo Pit Workshop
Main contractor Combi Construction
Quantity surveyor Blade Construction
Planning consultant Stephanie O'Callaghan
Ecologists David Kavannagh-Spall, Ralph Hobbs
Woodland management planning Christine Meadows

whose style has had puzzled locals guessing at their function, were originally conceived as one block to maximise energy efficiency. Planners wanted to preserve the 'green' view from the road to the woodland, however, and insisted that it was broken up. The 84m² units arranged over two levels are set 6m apart to prevent spread of flame (fire retardant would render the panels unbiodegradable). Although fully accessible at ground floor via a metal gantry that floats over a 5m change in level, first-floor levels are not fully accessible which may yet have to be addressed. Full-height bay windows at first floor encourage communication so people don't feel isolated. Tenants already include a potter, a sustainable fashion designer and a data security firm.





The workhorse Focal Building provides a workshop for UCL and uses heavy timber bracing and engineered timber panels to take higher loads and make long spans. High-level studios around the main space are reached by lift, and will shortly be crowned with a roof-level greenhouse for growing food.

Next door, the timber-clad restaurant was being fitted out when I visited. Rumour has it that punters won't be disappointed. The building provides far-reaching views from its balcony and roof terrace, but it will need the planned bridge link to the Focal Building and its lift to enable everyone to enjoy them.

Wash off the main road all flows towards the site, and the 10-bedroom accommodation block had to be heavily tanked to withstand this and protect the ancient woodland. Intended for both students and tourists, the single-storey block offers well-fitted suites, and a veranda forming shared outdoor social space. An ingenious roof made of solar panels and minimal framing meets most of the energy demand, which is supplemented by air-source heating. All buildings on the site have solar panels and energy use is constantly monitored. Allowance has been made for the

Above Like all buildings at Flimwell Park, the restaurant is fitted with rooftop photovoltaics which produce more energy than is consumed on site.

Below Restaurant Birchwood, run by chef Will Devlin, will offer dishes using ingredients foraged from the woodland.



High-level studios around the main space will be crowned with a greenhouse for food

easy installation of additional on-site energy generation, rainwater capture, sewage and food waste treatment and biogas systems.

Further enlivening the site, the cycle hub adjacent to the entrance ramp will be a base for a bike hire company. The five houses designed in the same sustainable constructivist style will add to the scheme's 24-hour use and have garnered huge positive interest from locals previously used to the offerings of volume housebuilders.

If the promise at Flimwell Park is fully realised, the team will have created an exemplar rural development that is both sustainable and enhances the local area. The key is its multi-use: the people who work there provide vibrancy and creativity; the people who live and holiday there contribute to security, spread energy demand over time and add life in the evenings and at weekends; people who come to learn are essential for research, innovation and the transmission of ideas between the country and the city. Benefitting from the luxury of its slow gestation, Flimwell Park is the product of bold thinking, intelligent design and a big-hearted vision. ●

Soraya Khan is a director at Theis & Khan Architects



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IMAGINE WHAT'S NEXT



By Hydro

Capital idea

Mæ's Passivhaus block for the redeveloped Agar Grove estate is setting the tone for a new London vernacular

Words: Laura Mark Photographs: Jim Stephenson

Many of the housing estates built by Camden council in the 1960s and 1970s are still highly regarded – schemes commissioned by borough architect Sydney Cook and designed by figures such as Neave Brown, Benson & Forsyth and Peter Tabori. Not the Agar Grove estate, completed in 1966 to a design that predated Cook's tenure. Organised in a series of H-shaped blocks and a tower, its apartments were small, substandard and often overcrowded. Its redevelopment, to a masterplan designed by Hawkins\Brown and Mæ with landscape architect Grant Associates, is one of Camden council's largest community investment projects and will replace dilapidated stock with almost 500 homes.

Residents voted in favour of redevelopment over refurbishment, and the project is being carried out in phases, with residents of each existing block rehoused within a phase of the new development. The first phase, designed by Hawkins\Brown, completed in 2018. Mæ's second phase comprises three blocks around a long, narrow courtyard on

Below Model of Agar Grove with Mæ's three blocks in the foreground.



Below Homes for social rent facing Hazelbury Way.



Right Private sale block facing Agar Place.
Credit: Tim Crocker.

the north-west corner of the site. Its first residents have just moved in. The tallest block, facing Agar Place, provides 23 homes for market sale. Two longer, lower blocks facing Agar Grove and Hazelbury Way contain 34 homes for social rent.

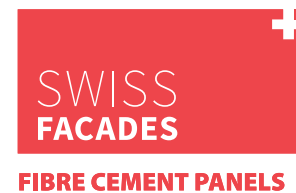
Further phases will result in more social housing and homes for private rent, and an existing tower stripped back to its concrete frame and refurbished. Of the eventual total of 493 new homes, 345 will be built to the Passivhaus standard (which reduces heat loss through super-insulation, high levels of airtightness and mechanical ventilation with heat recovery systems) making this the UK's largest Passivhaus scheme.

In 2019, Camden council declared a climate emergency and committed to becoming carbon neutral by 2030. But the commitment to Passivhaus at Agar Grove came long before this pledge. For the council, it wasn't necessarily about saving the planet but about its residents, for whom the biggest challenge is fuel poverty. Camden had already done Passivhaus before, at a 53-home scheme in Highgate by Rick Mather Architects. According to the local authority, the approach has already reduced the bills for residents in the first phase of Agar Grove significantly, with some reporting that they haven't needed to turn on their heating, even in winter.

There was a pressure from the Greater London Authority (GLA) to install district heating at Agar Grove, but consultant Max Fordham established that due to the heat loss associated with a site-wide CHP network, a block-by-block approach combined with efficient building fabric offered a better carbon performance. Mæ's founding director, Alex Ely, regards this as a breakthrough in the debate around district heating in London, at a time when the GLA is moving toward re-



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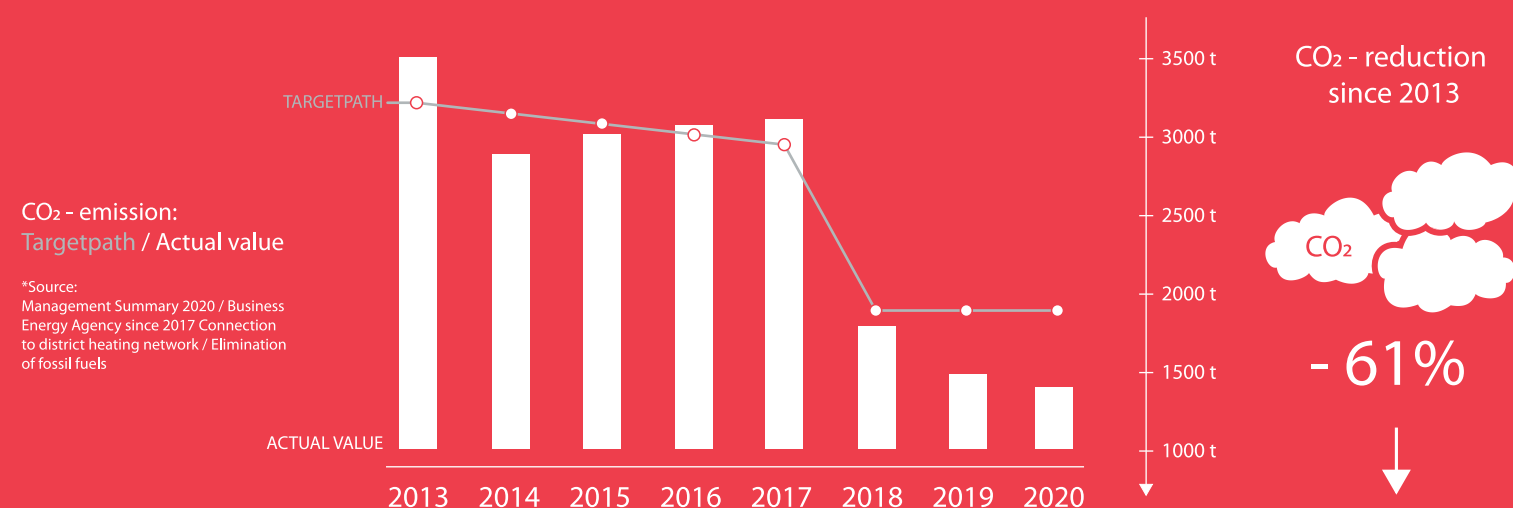


Swisspearl fibre cement panels are used worldwide and are recognised for their high quality and unrivalled design and finishes. The product is not new to the UK market and has been in circulation since the 1990s, and since 2010 has been promoted through their distributor Swiss Facades.

A major goal of the manufacturers of Swisspearl is to reach total elimination of fossil fuels.

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Below Homes for social rent facing Agar Grove.

Bottom right Homes for private sale facing Agar Place.

quiring London's boroughs to install heating networks in new housing.

Given the fabric-first approach, material specification was an important consideration. The lower blocks were originally intended to have structures made from cross-laminated timber (CLT), with its low embodied carbon. However, the contractor was reluctant to use CLT, so a concrete frame was chosen with brick and block fill, and a parge coat on the cavity side. This works well for airtightness, Ely notes. For example, residents wishing to put up pictures on walls can do so without compromising airtightness.

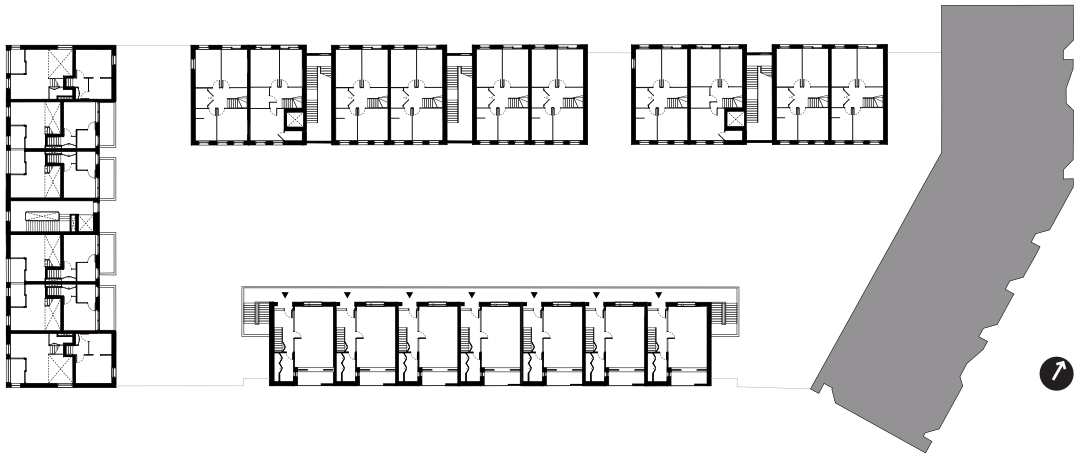
Inside, the homes are spacious, and each is dual- or even triple-aspect. Split levels are the most interesting part of the layout. They provide separation between generous, loft-like living spaces while still allowing for views and daylight, and consciously recall earlier Camden projects like Neave Brown's Fleet Road. Ground-floor maisonettes along Agar Grove are slightly set back from the street, so that you look out into lush planting rather than the busyness of the road.

The consideration of outdoor space ensures the scheme is a success. Residents previously had no private outdoor space. Now they either have a garden, a balcony or a terrace. Access decks are wide enough to add chairs, creating a space to socialise. These are well used, as are the communal play spaces and vegetable growing areas.

Many who choose to build a Passivhaus are keen to live more sustainably, and are involved in the approach. Here, the residents



Credits
Client Camden council
Architect Mæ
Project manager and QS EC Harris
Structural engineer Stantec
Sustainability and MEP Max Fordham
Landscape architect Grant Associates
Passivhaus advisor Warm Associates
Contractor Hill
Contractor's architect Architype
Collaborating architect Hawkins\Brown



Right Ground and typical upper floor plans.
Below Site plan showing buildings by Mæ and Hawkins\Brown.



have not necessarily made that choice, and the council has been careful to produce packs explaining how to manage the homes in both winter and summer. Feedback has been sought alongside quantitative data as part of the post-occupancy monitoring of Hawkins /Brown's first phase. It would be useful to see this extend to the way the spaces – like the split levels and outdoor areas – are used and the impact on health and wellbeing.

Achieving the Passivhaus standard in a large, dense development such as Agar Grove is difficult: creating a simple form factor, the correct solar aspect and minimal overshadowing is complicated by the tight urban grain of London streets. Additional challenges were created by the mix of unit sizes required to house the existing residents of the estate. But there wasn't a pressure to max out the development, which might have come from a commercial developer. Instead, the layout was optimised to allow for street space and landscaped areas, and heights are kept to around five storeys.

When asked what changes Mæ would make in future Passivhaus projects, Alex Ely



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suggests that the practice would avoid inset balconies, which were incorporated in the design before the Passivhaus approach was adopted at RIBA Stage 2. While they create valuable outdoor rooms and lend a feeling of substance to the architecture, they require complicated detailing. Designing to the Passivhaus standard brought other complications too, and Architype – which has extensive experience in that field – has acted as delivery and Passivhaus architect across the whole development to date. Ely says the experience has given Mæ the confidence to go it alone on future Passivhaus projects.

Camden council says it will aim to follow Passivhaus principles on other schemes, rather than seeking formal certification. I'm left wondering if that will see corners being cut: the need to pass strict airtightness



Above Split sections allow for good daylight and views.

Below Mae's blocks frame a narrow courtyard.

tests in order to get the Passivhaus badge of approval focuses all parties, and ensures details are built as drawn. The local authority should be aiming to build on what has already been achieved.

Though Agar Grove missed out on the quality of building happening in late 1960s Camden, it may yet have its chance to become an exemplar housing estate. The architects of its redevelopment were conscious of Sydney Cook's legacy, and wanted to deliver something which would live up to his high ideals but in a new, changed world. Today, it is care for residents and the city coupled with pursuit of a truly low-carbon architecture that drives the development of a new London vernacular. ●

Laura Mark is an architect, critic and keeper of Walmer Yard



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Keeping afloat

An office on Rotterdam's Maas river offers a blueprint for the future of working in a changing climate

Words: Kirsten Hannema

Uncontrollable forest fires in the Mediterranean, devastating flooding caused by freak summer rainfall in Germany and China and deadly Category 4 hurricanes in Central and North America. The series of natural disasters witnessed across the world in recent months shows that global climate change is not a theory or something of the future, but is happening now and requires action, including from architecture. But what should we do? A possible answer floats in the former industrial harbour, Rijnhaven, on the south of the Maas river in Rotterdam. It's a wooden building, three storeys high with balconies all around that, protrude ever so slightly upwards like a pagoda. As if it were the first animal stepping on Noah's Ark, a bright red rhinoceros – an artwork by Joep van Lieshout – sits at the end of the terrace that wraps around the building.

This is the Floating Office Rotterdam, designed by Powerhouse Company as the headquarters for the new Global Center on Adaptation (GCA), an international organisation that describes itself as 'a solutions broker to accelerate action and support for adaptation solutions'. Just complete, excluding cruise ships, it is the largest floating office in the world and is the epitome of how the organisation aims to adapt the world to the accelerating climate change situation. If sea levels rise, the building will move with it; if the power fails (temporarily), the building can provide for its own energy consumption. Solar panels on the roof supply the building's electricity, the water from the harbour is used for the cooling system. It goes without saying that the 3,500m² building is made using sustainable materials, according to the principles of circular economy construction and it has been awarded BREEAM Outstanding certification.

IN NUMBERS

3,500m²
GIA

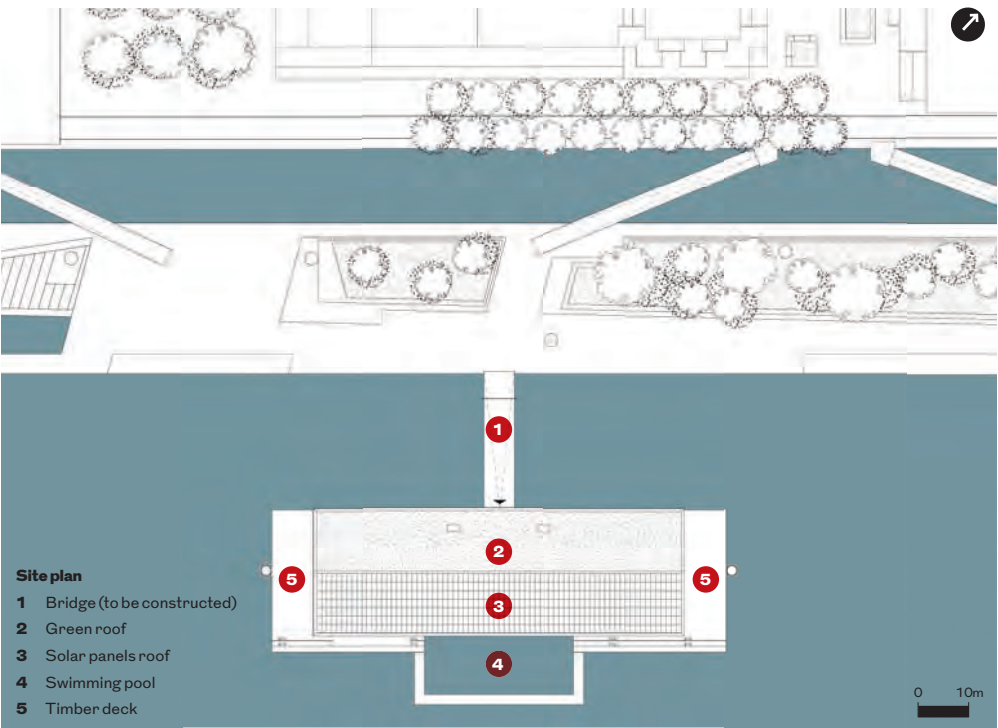
90m x 24m
Floating deck dimensions

80km
Distance travelled
by floating deck from
Zaandam

Above A model for the future: a timber office floats in the harbour in Rotterdam. On the south side is an enclosed area off the deck for freshwater swimming in the Maas.

The building has been getting other acclaim too. It was opened on 6 September by the king, Willem-Alexander of the Netherlands, alongside chairman of the board of the GCA, Ban Ki-moon, and the CEO, Patrick Verkooijen. Nicknamed FOR, the Floating Office started as an initiative of the Municipality of Rotterdam in response to the call by then UN Secretary-General, Ban Ki-moon, for a climate centre following the Paris summit in 2015. During that conference, three goals were formulated: reduce CO₂ emissions, invest in climate policy, and adapt cities and different living environments to the consequences of temperature rises. In line with the latter goal, Ban Ki-moon and other world leaders founded the GCA in 2017.

Among them was the Dutch prime minister Mark Rutte, who proposed accommodating the new GCA in what he called the ‘climate adaptation country’, the Netherlands. With much of the country lying below sea level, the Dutch have never done any-



The northern entrance elevation awaits a new bridge to the shore.



thing other than adapt to climate. The GCA’s research building is in the north east of the country in Groningen, while Rotterdam managed to acquire the head office on the promise of a sustainable, floating building in the Rijnhaven, which is simultaneously being redeveloped into a new mixed-use urban area. The building was scheduled to finish in time for the hosting of the Climate Adaptation Summit in the Netherlands in January 2021, although that ultimately took place online due to the coronavirus pandemic.

When there was still no plan by January 2020, however, Rotterdam practice Powerhouse Company took the plunge and submitted an open proposal to the municipality: let us build that office. ‘We have been working on plans for the transformation of the factory site on the other side of the harbour since 2015,’ explains architect-director Nanne de Ru. ‘We knew the area and saw a challenge: to create an absolute showcase for GCA, Rotterdam and ourselves.’ What made his proposal even more attractive for the municipality was that de Ru offered to develop the project through his development company RED Company, which he founded in 2015, partly prompted by the construction impasse during the economic crisis.

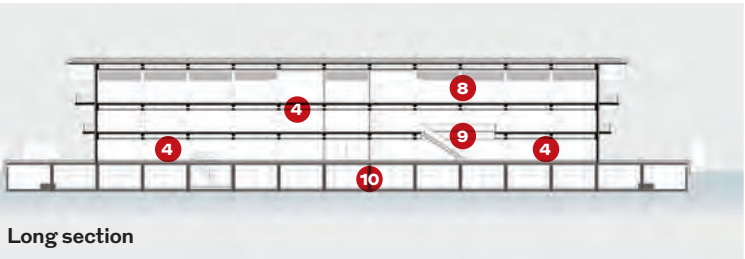
De Ru’s colleague Albert Richters thinks that the dual role as a developer-architect is a rewarding one. ‘It ensures that we, as ini-

Above The floating foundation travelled to Rotterdam by river from Zaandam, where it was made.

Below Looking out from a completed corner of the office.

If sea levels rise, the building will move with it; if the power fails, the building can provide for its own energy consumption via solar panels





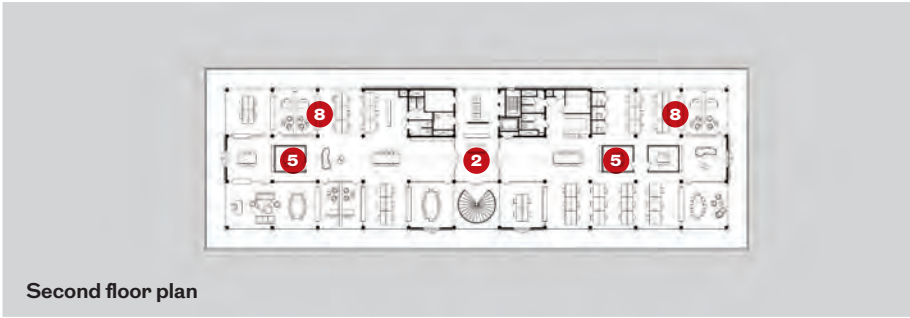
Long section



First floor plan



Ground floor plan



Second floor plan

tiators, can now shape these kinds of design assignments. And it results in a new way of developing in which ideas are explored early in the process that may not immediately seem realistic, but turn out to be possible.’ For example, an (almost) completely wooden, movable office that produces energy.

GCA’s brief was for a 1,000m² office, but to make the business case financially feasible, De Ru calculated that a building of 3,000m² was needed. ‘The floating foundation, which was made at three locations due to the required speed, and had to be supplied by water, entails additional costs,’ he says. So at that point Powerhouse Company decided to move into the building itself. GCA is located on the top floor, the architectural office and RED Company are on the first floor and the eastern side of the ground floor. On the west side, on the ground floor, there will be a restaurant that will operate a freshwater swimming pool constructed in the harbour.

The foundation of the building, consisting of fifteen concrete shells, each 25m x 6m, 4.5 m high, which are anchored to each other in the width direction, is probably the least environmentally friendly part. ‘We thought of steel or wooden shells,’ says de Ru, ‘but that is not possible because you have to take it out of the water every five to 10 years to put on a coating. Concrete can be in the water for at least 50 years. Furthermore, it offered the option of cooling the office.’ Within the floors of the concrete shells, a pipe system has been included that functions as a heat exchanger. Heating is done with the same system, via

- 1 Entrance
- 2 Lobby
- 3 Restaurant
- 4 Powerhouse Company
- 5 Meeting rooms
- 6 Freshwater pool
- 7 Timber deck
- 8 GCA office
- 9 Auditorium stair
- 10 Concrete floating platform foundation shells

Below A restaurant shares the ground floor with Powerhouse Company, while GCA has the second.



SEBASTIAN VAN DAMME

the ceilings in which the lighting and installation technology have been included. The ‘empty’ space in the concrete shells, which gives the building its buoyancy, has partly been used for the installations.

The building is constructed with Cross Laminated Timber (CLT), a sustainably produced, renewable material in which CO₂ is retained, but also an obvious choice for a floating building because it is light, says Richters. It can also be prefabricated and easily screwed together on site, which was essential as the building had to be built in six months. The project was also limited to three storeys because if it would ever need to be moved it would need to pass under the Rijnhaven Bridge. This allowed the practice to make the elevator cores with CLT too. ‘If you build higher with wood, the construction must be reinforced with concrete due to fire safety requirements,’ explains De Ru.

The CLT slabs rest on a frame of laminated beams and columns, placed within a 6m x 6m grid; the width of a float. There are unobstructed views of the water and the city from De Ru’s new office on the first floor through huge 6m x 3m three panel windows. ‘I notice that people are happy with the daylight, the generous entrance area and the terrace from which you can jump into the water after a day of work. With this building, we want to show that it is possible to design something with nature in mind that is good for the planet, but also pleasant to use, and elegant.’

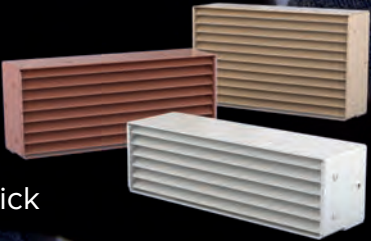
The office’s location on the water offers a special quality. If you walk from the Wil-

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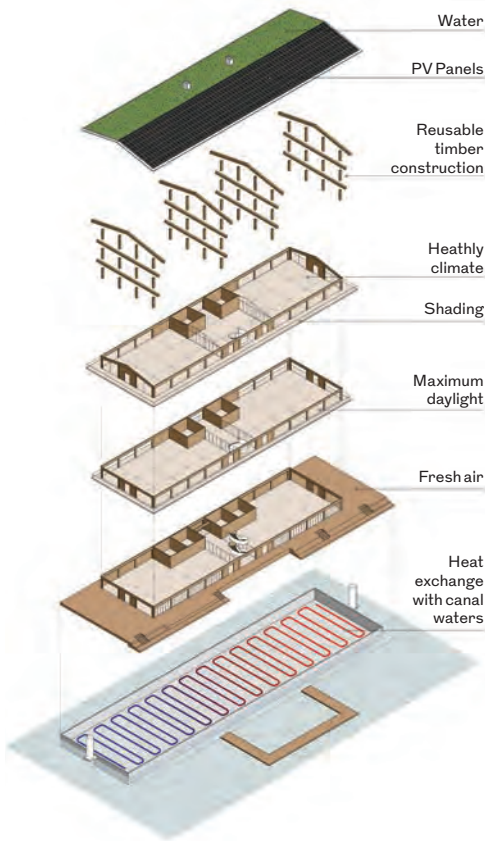
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Buildings Floating office

helminapier, with its skyscrapers, via the footbridge and the newly constructed floating park, and onto the terrace, you are suddenly in a different part of the city. Although the sounds of the harbour are audible, it exudes tranquility. The architectural firm has a large restaurant and meeting rooms on the ground floor, stylishly designed with Brazilian marble and pink quartz table tops. Vintage furniture gives a kick to the minimalist interior (which is not quite complete for photography). A wooden grandstand staircase that doubles as an auditorium leads to the workplaces and the office archive on the first floor. The GCA office on the second floor is furnished by the organisation itself.

Inside, the wooden skeleton determines the atmosphere; due to the grey coating applied to the wood, it almost looks like béton brut. The beams protrude through the facades to support the balconies. The cantilevers of the balconies and the roof minimise overheating from the direct sunlight. At



Credits
Architect IPowerhouse Company
Developer RED Company
Client Global Center on Adaptation, Municipality of Rotterdam
Financing ABN Amro
Project management DVP
Contractor for building VOF (consisting Bouwbedrijf Valleibouw and Bouwbedrijf Osnabrugge)
Contractor floating foundations Hercules FC
Structural engineer Bartels & Vedder

Above Exploded axonometric drawing of the floating structure.
Top right Powerhouse Company's auditorium stair under construction.
Left The CLT structure (ieced together like Meccano on site).
Below The interior layout follows the grid set out by the concrete deck.



the top, the beam structure bends upwards to form a saddleback roof, which is covered with sedum on the visible quay side, while the other side to the south is covered with 800m² of solar panels.

Due to the height limitation, the service installations like electrical cables and pipe-work had to be incorporated into the beams, running inside channels within them. This prompted an intense discussion with the municipality about how fire safe this solution would be. 'The transits have been tested, the sleeves of the pipes have been tested as well, but the combination has not,' says De Ru. In the end, the municipality told them to prove that it would be possible. 'Only a day before delivery did we receive permission to use the building. In that respect, we were "burdened" by building with wood, because regulations are often based on concrete. It conflicts with stimulating innovation.'

In addition to the short construction time, the innovative floating construction



and maintaining the circular principles, De Ru found the financing the project a challenge. Traditional investors were reluctant. The ABN-AMRO bank, which has a green fund, was willing, but then the coronavirus came along, which threw it in the air for a while, although they did ultimately agree to finance a loan. Nevertheless, RED Company and the owner of the Codrico-factory, invested a lot of money to get the project off the ground. They own the building and lease it to the GCA and Powerhouse Company.

Any lessons from hindsight? 'I would rather have solved the sewerage in the build-

Below The timber office is in an area that was formerly an industrial quay.



We wanted to design something that is good for the planet, but also elegant

ing, then it would have been more self-sufficient. Because of the short construction time, we did not do that; it is connected to the city sewer. A connection to the land is needed anyway, as you are not allowed to construct a building in the Netherlands without a connection to the electricity grid.'

Floating Office Rotterdam will remain in its place for the timebeing. From the office, De Ru and Richters can follow how their plans for the factory site and the city's plan to transform Rijnhaven into a hub for sustainable innovation, are becoming reality. Richters: 'It is exciting how the area will develop with the realization of more floating buildings and parks. We really have to make something of this, that responsibility is felt in the office.' ●

Kirsten Hannema is an architecture critic based in the Netherlands

Below Decks surround each floor, sheltered by the roof overhang.



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Marketplace of fresh ideas

All sorts of associations are conjured by the new REWE supermarket in Wiesbaden, from historic timber halls to Japanese temples. With a little imagination it might even resemble a grove of trees. From 48 trunk-like columns topped by woody crowns, stout timbers branch in all directions, knitting together in an intricate vault. Below, shoppers browse displays of fresh produce in sunlight that dapples through a glazed lantern. Above is a verdant 'canopy' – thousands of basil plants growing in a rooftop glasshouse. It's certainly an apt image for the greenest supermarket in Germany.

Designed by London- and Berlin-based ACME, the Wiesbaden store is a prototype. It is intended to become the standard for Germany's second-largest supermarket chain, which has 3700 outlets and builds 25 new ones every year. The 'Market of the Future' is the successor to the portal-framed 'Green Building', the retailer's standard store since 2007. After almost a decade, REWE decided to reassess by running a competition, inviting six architects with no previous experience of supermarket design.

Conventional supermarkets are energy-intensive – responsible for 3% of electricity consumption in the UK – but REWE had already cut that to a minimum. 'There was nothing left to say on energy optimisation: it is outstandingly good', says ACME director Friedrich Ludwig. 'They've insulated stores and sealed fridges so well that for the first time in 60 years they have cooling problems in the summer'. Looking at other potential

Food supplier and seller are moving closer again with ACME's super-sustainable prototype store for German supermarket REWE – a novel timber structure with a farm on the roof

Words: Chris Foges



This image Landscaping includes extensive unsealed areas to improve drainage.
Opposite A large lantern and glazed front and rear facades ensure good levels of daylight.

ACME

JEVA GRISKJANE

IN NUMBERS

13,214m²

site area (2598m² market; 2268m² farm; 885m² pharmacy)

20.8%

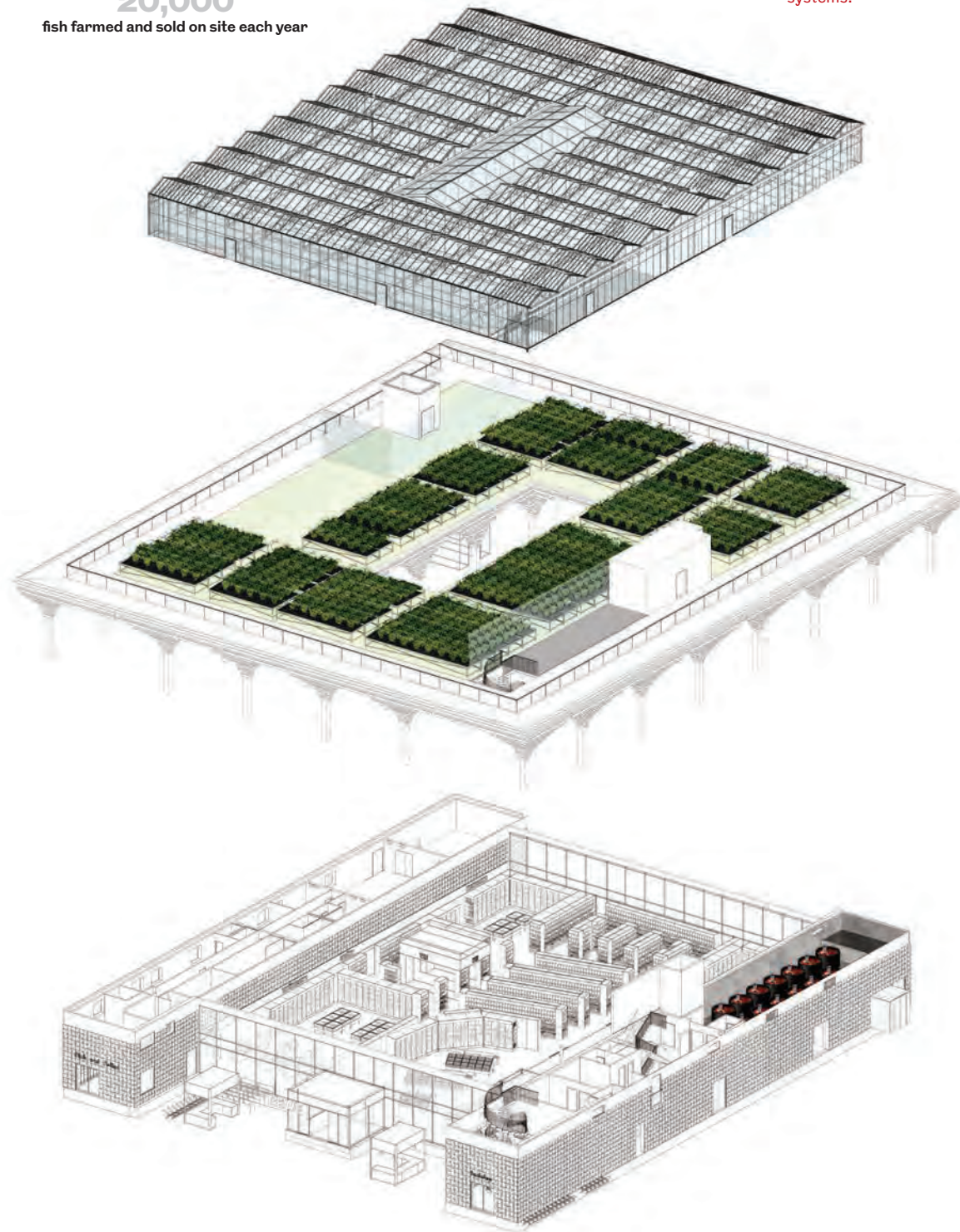
REWE's food retail market share

700 tonnes

carbon stored in the timber structure

20,000

fish farmed and sold on site each year



Below Fish tanks in a side wing of the market supply the hydroponic farm with water containing fish excrement which acts as fertilizer.

Far right Mature plants are placed in sunlight, but seedlings are stacked vertically and grow under LED light with automated watering systems.

JEVA GRISKJANE



improvements, ACME was concerned to make proposals that could be reproduced at scale. 'We needed to behave ourselves, and avoid what the Germans call a leuchtturmprojekt, or lighthouse project: something you do once and never again'. They opted for two major changes: reinventing the structure and introducing an urban farm, which competition entrants had been invited to consider in a general way.

Sceptics may roll their eyes at the thought, with some justification. The urban self-sufficiency envisaged by many speculative architectural projects is based on a delusion: we could never get close to feeding a city from within its confines. At worst those projects are a kind of greenwash, diverting attention from the agri-industrial systems on which cities rely. At best they are simply starting points for conversations about consumption, as in the pig-filled skyscrapers once posited by MVRDV as the only alternative to more vegetarianism. There are forms of urban agriculture that do make sense – high-value herbs and salads that perish more quickly when transported over large distances in chilled trucks – but most farms make poor businesses.

Here REWE is at an advantage, with a ready route to market. 'Most urban farms go bankrupt but the problem is not how to farm – that's well understood', says Ludewig, who visited projects in Europe and the



ACME

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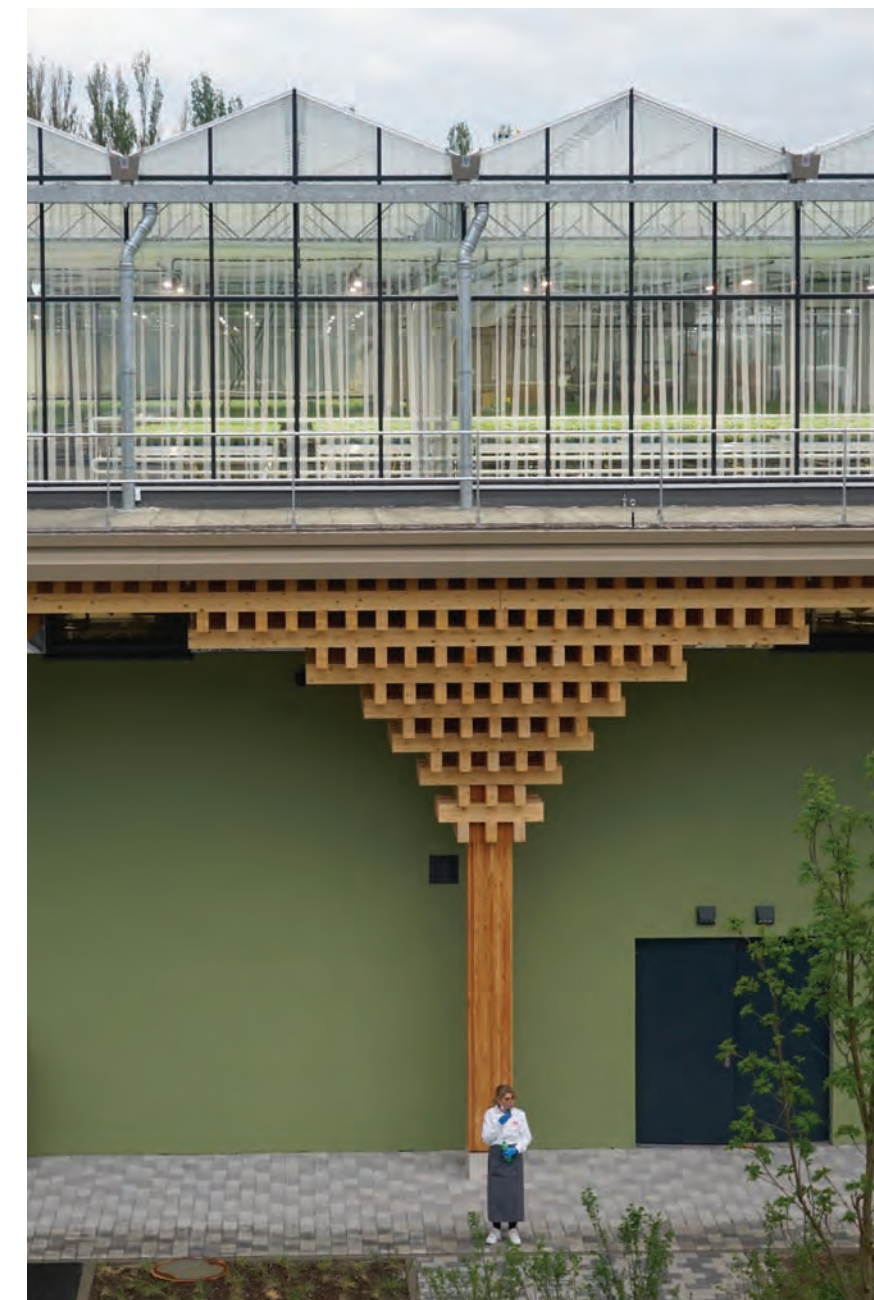
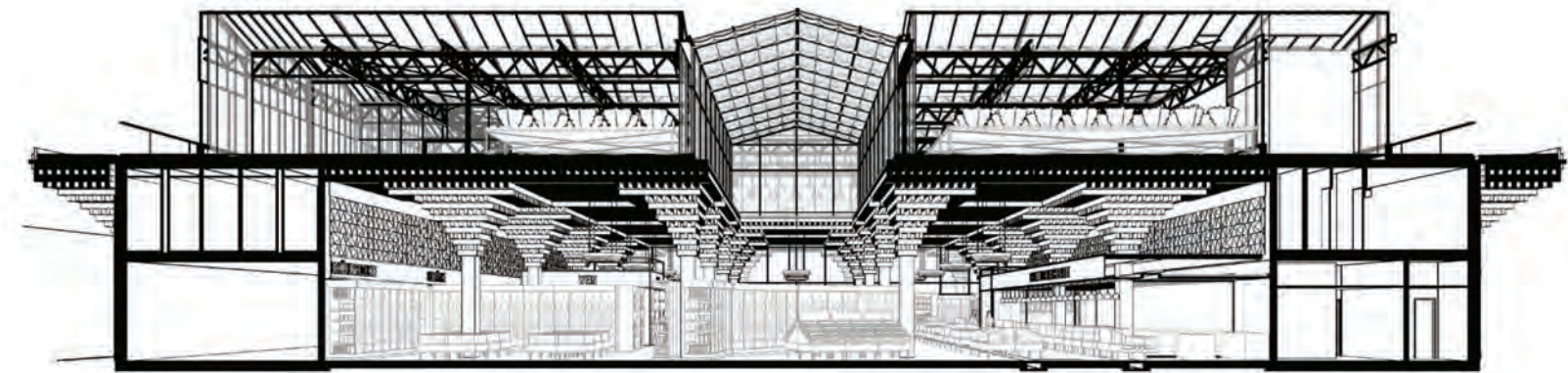
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WALL: MORNING ROOM 447 | WOODWORK: MUGA 445.

Critique Market of the Future, Wiesbaden

49

South/north perspective



ACME

ribaj.com

US for research. Plants here are grown in racks, in a mix of sun and LED light, fertilised by the excrement of fish kept in tanks on site, which are also reared for food. 'The exciting bit was that we've got a supermarket which is really good at selling; if we could teach them to farm this should be a winner'.

Another advantage is scale, and ACME's proposal was not just for rooftop farms, but for an 'Urban Farming Network' which piggy-backs on REWE's existing infrastructure. Greenhouses should ideally be dedicated to a single crop, with light, air flow and humidity tailored to suit, so different stores within a region might grow peppers, rocket or thyme. Produce is carried to REWE's distribution warehouses in otherwise empty trucks that return each day after restocking the store. From there it is distributed throughout the region with other deliveries. At Wiesbaden, operator ECF Farmsystems is producing 800,000 pots of basil annually, supplying 480 stores.

The relation of the farm to the store will vary. The 1600m², two-storey Wiesbaden prototype suits low-density suburban neighbourhoods. In rural areas the farm might sit next door to the store. And in dense city-centre locations with high land values, five storeys of flats might be sandwiched between the market and rooftop glasshouse. (It might not always be a glasshouse; in cooler climes it's better to grow in a windowless, insulated shed under artificial light).

Most of these scenarios need a structure that can take significant loads. ACME and engineer Knippershelbig devised a low-tech modular system that could be built anywhere by local contractors using readily available materials. 'We didn't want to use 40m-long glulam beams imported from Austria, which have 18-week lead times and require road closures to bring to site', says Ludwig. 'It's more like timber from the local DIY store and a lot of screws. It's not the dumbest of dumb timber structures, but it's pretty straight-up'.

Left The greenhouse is single-glazed to ensure sufficient daylight transmission.

The RIBA Journal October 2021

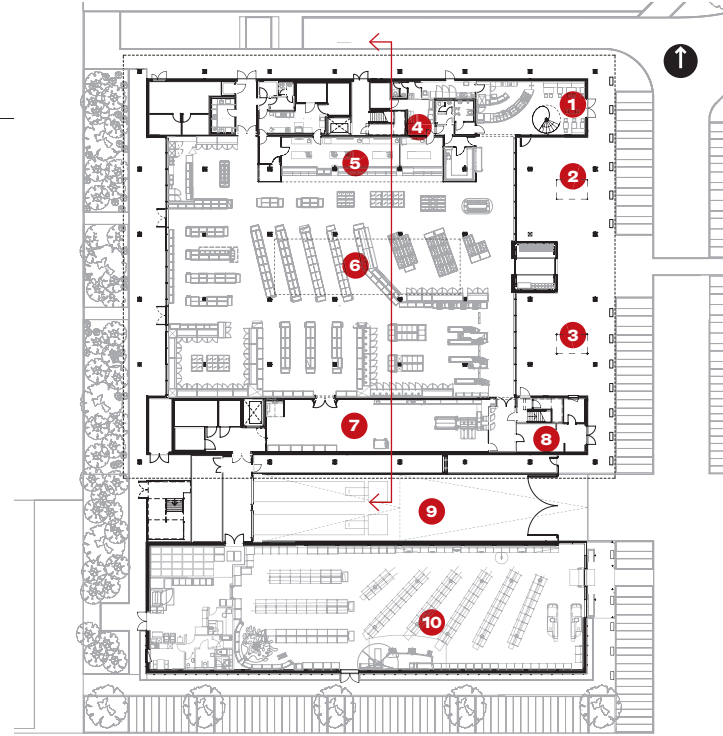


- 1 Bakery
- 2 Café
- 3 Market stall
- 4 Preparation area
- 5 Fresh food counter
- 6 Market hall
- 7 Storage
- 8 Click and collect
- 9 Deliveries
- 10 Pharmacy
- 11 Fish tanks
- 12 Offices
- 13 Viewing gallery
- 14 Basil farm

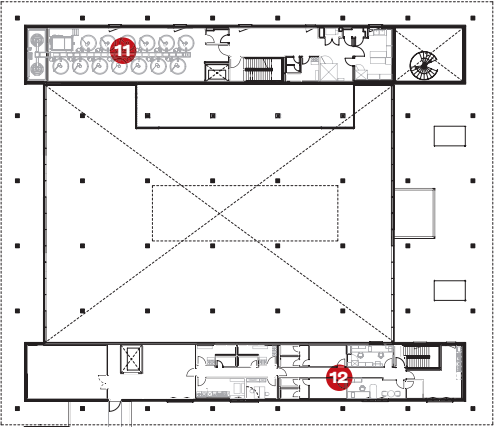
Above left Components of the timber frame are prefabricated and bear on a piled concrete slab. **Below** The 1100m³ timber structure was erected in eight weeks.

Glulam timber posts stand in a regular 8m by 8m grid, and support a ceiling constructed from stacked glulam timber beams topped by cross-laminated timber panels. Distinctive corbelled column heads inspired by traditional Japanese joinery are created by cross-stacking 12 layers of beams, screwed together at the crossing points and to the column. Another three layers tie the column head into the ceiling structure. The spreading capitals reduce the effective span between columns, creating the stiff deck required for activities above. Lateral bracing for the whole structure is provided by two concrete boxes containing back-of-house spaces. Some re-engineering might be required if more residential accommodation was added, but as things stand the structure is beefier than it needs to be. Redundancy provides flexibility in a building that the architects hope might last 100 years, and locks up some additional carbon. It's only a few tonnes, but every little helps, as other supermarkets like to say.

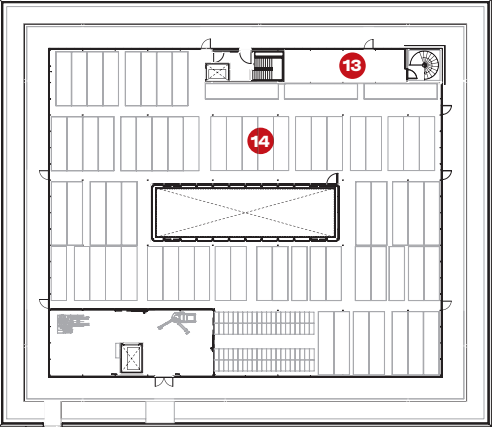
Development of the system was driven as much by spatial ambitions as structural ones. Introducing columns slightly reduces flexibility in store-planning



Ground floor plan



First floor plan



Greenhouse plan

JEVA GRISKJANE

0 10m



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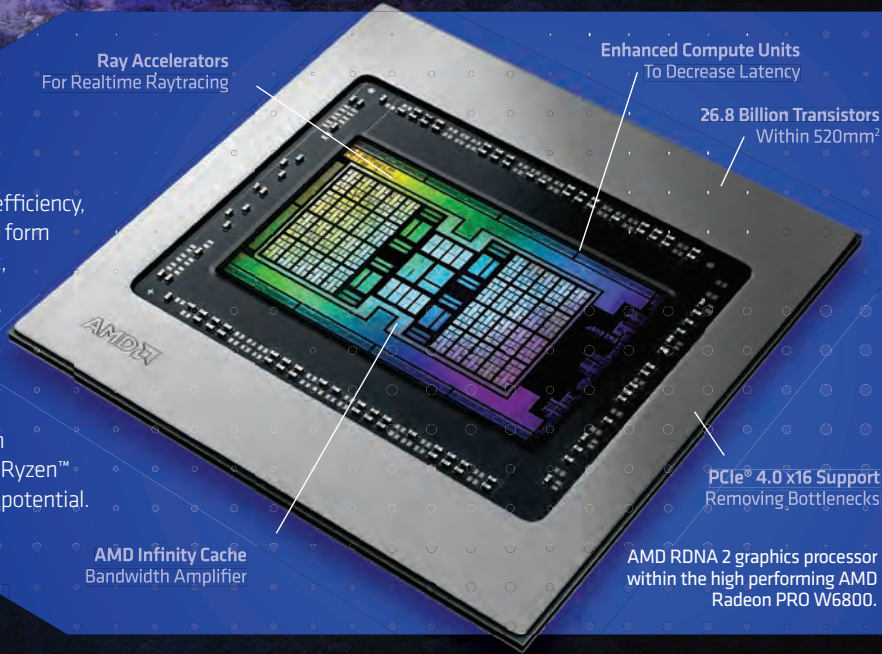
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Critique Market of the Future, Wiesbaden

but it creates a friendlier, more distinctive interior, helping to make a supermarket visit an enjoyable alternative to the convenience of online shopping. 'Our proposal was that the future of supermarkets is without the "super",' says Ludewig. 'One reason that nobody loves supermarkets is that they look like tennis halls – it's hard to love architecture that never comes to the ground'. The intimate scale chimes with a pronounced emphasis on locally produced food – another new initiative being trialled at Wiesbaden.

A sense of welcome is established from the off, as the roof oversails the concrete boxes that bookend the market hall, sheltering a strip of outdoor space where customers can queue for click-and-collect or charge e-bikes. The boxes – accommodating a bakery and storage as well as fish tanks – sport a gaudy overcoat of green render, with a pattern derived from ornamental concrete made by a factory that formerly occupied the site. While the chunky woodwork provides a consistent identity for all new markets, these patterns will be unique to each. 'To be local citizens, they should learn some of the local language', says Ludewig.

The glazed front facade is deeply recessed to make space for outdoor stalls, so the journey to the front door is a sensory delight. Inside, the bright, airy market hall has a distinctly upscale feel: rustic pendant lights dangle over a cornucopia of fresh food presented in wicker baskets and wooden trays. Photos of ruddy-faced farmers appear above displays of their produce,

Credits
Architect ACME
Client REWE
Structural engineer Knippershelig
Urban farming consultant ECF Farmsystems
M&E engineer House of Engineers
Energy consultant e2 energieberatung
Fire consultant Krebs & Kiefer
Timber construction Holzbau Amann
Greenhouses Rabensteiner

Below A deep threshold makes space for outdoor stalls and café tables served by the bakery.

along with their addresses. At the sides, cheese and fish counters sit alongside a sushi bar and a show kitchen where chefs prepare take-away meals. (Remember this is the German equivalent of Sainsbury's, not Whole Foods). The glazed roof lantern provides glimpses into the farm, but a first-floor viewing gallery gives more. Other green measures are less evident, from intelligent cooling and heating to the use of 100% green electricity and harvested rainwater to irrigate the farm and clean the market. Outside, the car park features a sustainable drainage system and insect-friendly planting.

There, surrounded by customers' cars, one might contemplate the issue of transportation in sustainable retail – currently the subject of much debate between bricks-and-mortar operators and the champions of online shopping. Equations continue to change as both customers and distributors switch to cleaner vehicles, but the future will likely involve both. For now, REWE is gathering data on customer responses to the Wiesbaden market, and ACME is looking for a site for an urban store, and writing a construction manual for franchisees. The financial case for the Market of the Future seems promising – the prototype cost 10% more than a standard building, which should come down, and Wiesbaden hit its three-year turnover target after just three weeks. The environmental case is proved: the store has a platinum rating from the Council for Sustainable Building. Signs are good that this won't be a lighthouse project, but it is a beacon. ●



Enter the MacEwen Award

It's time to celebrate architecture made for the common good



JIM STEPHENSON

It's time to enter MacEwen 2022!

Architecture is said to follow money. But MacEwen Award winners demonstrate that value comes in many forms. Architects' skills are never more precious than when applied to projects that will touch the lives of the most disadvantaged in our society. Often working for projects on a shoestring, architects develop briefs, source funding and bring together volunteers; they repurpose existing buildings and explore new typologies. Who could have conceived that a caretakers' house turned community food school even existed, let alone that it would win last year's MacEwen Award? Yet Surman Weston's School of Food in Hackney did just that. And what about the old terraced house that Assemble helped grow into a community hub in Granby?

The RIBA MacEwen Award is our way of getting to the heart of responsible archi-

tecture. We call it 'Architecture for the common good' because it celebrates those built projects which are of demonstrable and wide social benefit. It brings together the well known with the up-and-coming, the national with the local.

As with all the awards we run at RIBA, it is free to enter and aims to reach previously under-represented parts of the profession.

The MacEwen Award is named after Anni and Malcolm MacEwen, she first an urban planner who pioneered a conservation-based approach to regeneration in town and country, he a campaigning journalist and former editor of this magazine.

This year, as last, we are delighted to be supported by BDP, a hugely successful multi-discipline practice that has always been guided by a strong social ethos.

The deadline is 2pm on Monday 15 November. ●



Judges will be looking for a proactive, project-appropriate approach; architectural ingenuity and evidence of social, environmental and economic benefit to the wider community.

TO ENTER YOU WILL NEED

- Project details and credits
- Client statement
- Outline of the beneficial impact of the scheme
- Images and drawings

www.ribaj.com/macewen-awards

Left Last year's MacEwen winner, Hackney School of Food by Surman Weston.

Below Assemble's Granby Winter Garden by was commended by the last year's MacEwen Award judges.



ASSEMBLE



Photo: Carlo William Rossi + Fabio Mureddu — AD: ps+a

Ideal Standard

CONCA
design Ludovica+Roberto Palomba

A T E L I E R
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Wanderer’s Wonder

People have been exploring local areas more than ever. This competition seeks ideas for a playful structure to provide a place to rest and enhance a walk outdoors – with a chance to win £1,000

For our physical and mental wellbeing, daily walks have become synonymous with the pandemic and lockdowns. Many of us have ventured out to explore local environments beyond our front doors more than ever before. We’ve pounded the streets, parks, paths and fields, and gone on holiday closer to home. We’ve got to know familiar places better and found new ones along the way.

Wanderer’s Wonder is a new competition brought to you by RIBA Journal and the Galvanizers Association. It invites proposals for a fun, playful building or structure for rest and recuperation that would enhance a walk in the great outdoors – rural or urban, near to home or far, in which you could spend a few minutes or stay overnight.

Designs can include any imagined facilities. The structure must use galvanized steel, ideally both structurally and aesthetically. Judges will be looking for sustainability and reuse in line with the circular economy.

Is it a platform that enables a better vantage point? An information kiosk to guide you further? A reinvention of the Scottish bothy? Or a refuge of a different kind on the seashore? Anything goes so long as it’s wonderful, brings out the allure of its environment and is a thing of beauty. ●

THE BRIEF

In this ideas competition, we are asking entrants to design a building or structure for shelter, rest and recuperation. It can have any other additional function but should be modular, demountable, reusable and be designed to promote and draw out the beauty of a place. It does not need a specific location but should be intended conceptually for a location in the UK or Ireland with their climatic conditions. While the building will be made up of a palette of materials, we would like to see hot dip galvanized steel as an integral part of the overall material strategy, ideally both structurally and aesthetically, and the structure to be actively sustainable.

SUBMISSION

Entries must include the following and be laid out on no more than two A3 sheets, supplied electronically as pdfs:

- An explanation of no more than 500 words, describing the building design, stating where galvanized products have been used
- Plans and sections showing structure, build-up and material composition
- Axonometric or any other images

ELIGIBILITY

- Open to qualified Part 1, Part 2, Part 3 architectural students and architects
- Projects must be theoretically sited in the UK or Ireland

ENTER

ribaj.com/wandererswonder

DEADLINE

2pm UK time on Monday 15 November 2021

NOTES

- The judges’ decision is final
- The first prize is £1,000 and there are three commended prizes of £250. Shortlisted entries will be notified in writing, with winners announced in the RIBA Journal February 2022 print issue and on ribaj.com
- No correspondence will be entered into by the organisers or judges regarding entries and final decisions

Wanderer’s Wonder is produced in partnership with Galvanizers Association. For more on galvanizing and a guide to it and the circular economy, see galvanizing.org.uk

GALVANIZERS
ASSOCIATION

2: Intelligence



Patrick Verkooijen



Patrick Verkooijen, CEO of the Global Center on Adaptation in Rotterdam, explains what the UN organisation does to promote and assist the race to arrest global warming

What is GCA?

The Global Center on Adaptation was established after the climate summit in Paris in 2015. Three things were agreed there. One: the earth must not be allowed to warm more than 1.5°C. Two: every year 100 billion dollars is invested worldwide in climate. Three: we must adapt our living environment to climate change. GCA was established by the UN in 2017 to draw attention to this adaptation agenda. Our head office is in Rotterdam, the knowledge centre in Groningen, and we also have offices in Ivory Coast, China and Bangladesh. We now have 100 employees and are growing to 250.

How did you set up?

We are a solutions broker. We unlock knowledge, from innovative agricultural methods and evacuation strategies to designs for infrastructure and cities in the Rotterdam delta. The idea is that what works here may also be useful in Beijing or Sao Paulo. We work with local authorities, companies such as Unilever and lenders. The goal is system change: embedding climate adaptation in economic development.

How are you going about it?

The recent report of the Intergovernmental Panel on Climate Change (IPCC) states that the climate is in a state of emergency, while we are now ‘just’ at 1.1 C degrees warming. We are in a race against time, we must make drastic changes. Rotterdam is already working on this, with green roofs and water squares. As the host of the GCA headquarters, the city wants to take the adaptation agenda further. We built the largest floating building in the world in six months; GCA’s office embodies our goal to scale and accelerate sustainable solutions (see page 34).

What role do you see for architecture and urbanism?

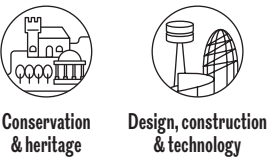
We have to build with nature instead of fighting against it and breaking it down. For example, in Bangladesh we anticipate cyclones – not only with the construction of shelters, but also with the recovery of the mangrove woods, which are important to take the heaviest blows from the storm. An inspiring example of building with nature is the Dutch government project Ruimte voor Rivieren (Space for Rivers), in which land has been ‘sacrificed’ to widen the rivers. The project links measures to combat flooding with the development of housing and urban nature.

ONLY ON RIBAJ.COM

Cement production is responsible for about 6.5% of global CO₂ emissions, so the potential benefit of using this carbon-reinforced concrete is huge
Manfred Curbach of Dresden University of Technology on the world’s first ‘carbon concrete’ building: ribaj.com/c3-building



Intelligence is officially approved RIBA CPD. Look out for icons throughout the section indicating core curriculum areas.



Electric avenues

The decarbonising revolution needs buildings for a future without fossil fuels. What do you need to know?

Below EDGE London Bridge balances demands of grid with occupants' needs.



Patrick Bellew

There is at last a sense of urgency that the climate crisis is upon us and we need to decarbonise our lives – and soon. This is not an issue that can be solved easily, but there is a broadly accepted global vision for a zero-carbon built environment that depends on two key strategies. Firstly, a big reduction in demand on the energy network through efficiency improvements and optimisation and a complete stop to the burning of fossil fuels. Next, a decarbonisation of the energy supply through an increase in the use of zero-carbon and renewable energy.

This methodology is known as the ‘Paris Proof’ and it demonstrates that a high-performance built environment is vital to achieving a net-zero carbon economy, while showing the need to drive fossil fuels out of the mix.

This all-electric ‘revolution’ has come about because of the dramatic reduction in the emissions from grid-supplied electricity.

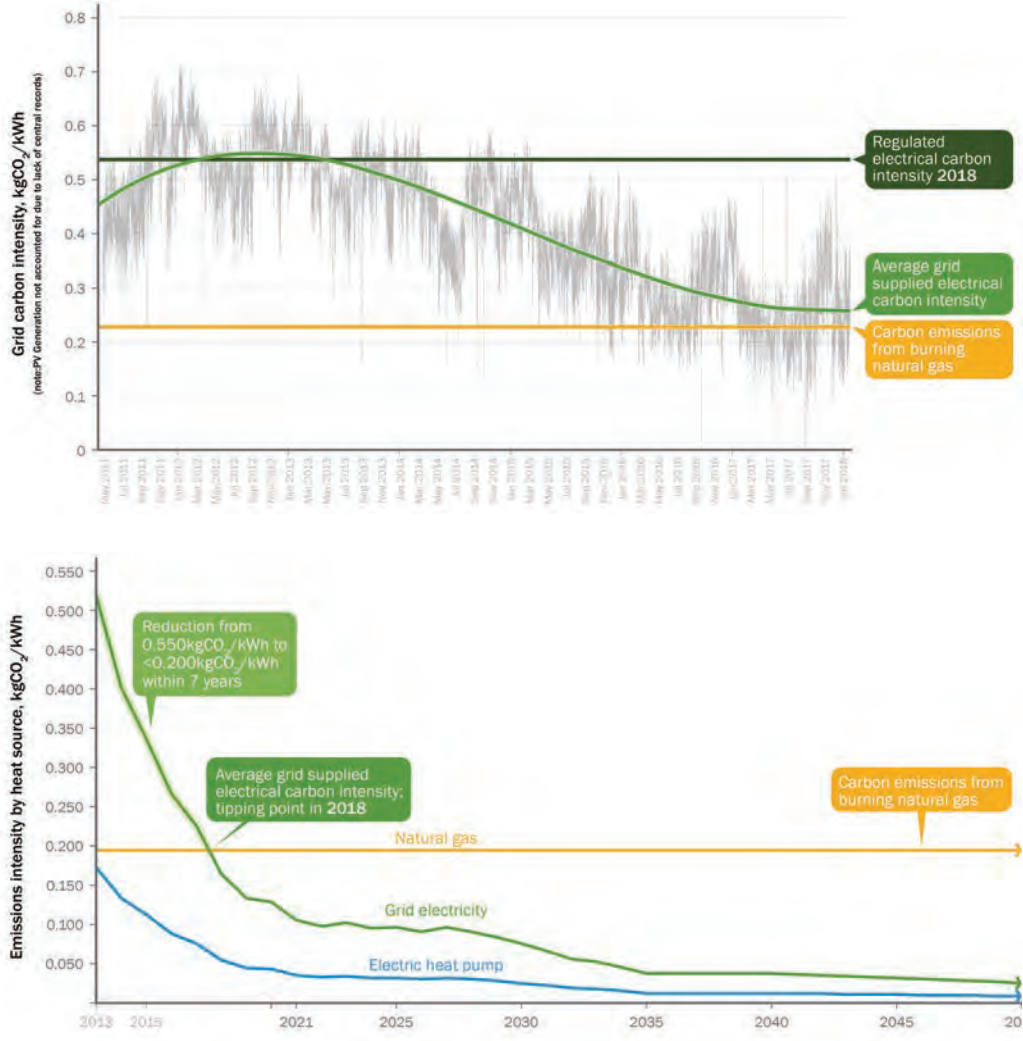
The graph below illustrates that, since 2018, UK grid power has, on average, been more carbon-effective than gas due to the significant reduction in the use of coal and the increase in large-scale photovoltaics (PV) and wind energy installations.

The new generation of all-electric buildings need to be designed to assist in the management of the supply, demand and storage equation in the future, essential because the main zero-carbon sources, wind and solar, are not always available and the demand on the grid is highly variable, as illustrated in the snapshots below. With the limitations on renewable capacity it is inevitable that the carbon intensity will be at its worst when the peak demand is highest, as this is when the coal power plants come online.

Designers have a significant role to play in minimising the peaks and troughs in demand by flattening the demand curve where we can through low-carbon design, load management and energy storage, both thermal and electric (see tips to the right).

It is inevitable that carbon intensity will be worst when peak demand is highest

Below The changing balance of the grid, 2011-2018 and going towards 2050. Credit: Carbon Intensity API, National Grid ESO in partnership with Environment Défense Fund Europe, University of Oxford Department of Computer Science and WWF.



NEED TO KNOW: DESIGN TIPS FOR ALL-ELECTRIC BUILDINGS

Challenge design briefs – oversizing of building systems is endemic in the industry. As well as being carbon intensive it leads to operational inefficiency for the life of the building.

Design more defensively to minimise the peak demands on building systems. Managing solar gain and heat loss are time-honoured ways of achieving this. External shades, blinds and shutters are still viewed as ‘exotic’ in the UK when they are widely used across Europe. They really help to drive down peak loads and resource use on many levels.

Use thermal mass storage in its many forms to flatten and shift the demand curve away from the peak. This could be in concrete, in the ground, in ice tanks or in buffer vessels.

Use heat pumps where possible and avoid using direct electric resistance heat as a primary thermal source for air or water. It is expensive and still ultimately wasteful of our limited resources. Prioritise the integration of PV power generation onto roofs and even vertical surfaces. When the sun shines we need to make the most of it.

Design the electrical systems to respond to external signals including real-time carbon emissions, cost or energy so that the load can be manipulated to suit the availability of renewable energy in the grid.

Consider the integration of domestic or commercial scale battery storage to further facilitate load shifting and reduce the need for additional generating capacity. In the United States, the renewable energy contribution has grown from 9% to 18% over the last 10 years and there has been a surge in building-level distributed energy systems, many incorporating an element of battery storage, and the Tesla Powerwall is showing a very rapid uptick in adoption after a slow start five years ago, with over 200,000 units sold.

External shades, blinds and shutters are still viewed as exotic in the UK

WHAT ABOUT ALL-ELECTRIC HOUSING?

The move away from the familiar gas boiler to electric heating either directly or by heat pump-based thermal energy systems is a very significant one for the design of residential projects.

Electricity has become lower in terms of carbon emissions, but it is still significantly more expensive than gas. Direct electric space and water heating is inexpensive as a first cost but will be increasingly expensive for home-owners to use.

A heat pump needs a source of heat (either air or water) to drive the process, and this has space and noise implications, particularly with the air-based systems that require an outdoor unit to operate.

Water-based heat pump systems offer an alternative that allows energy to be moved between multiple occupants and user types, and that can offer efficiencies as well as access to alternative energy sources or heat sinks, such as groundwater.

All-electric buildings provide an opportunity to create cleaner and healthier cities

NET-ZERO ALERT!

With the availability of green/renewable power purchase agreements, it is possible to label a building as “net-zero” when it is all-electric simply by the purchase of green power. Indeed, it is becoming the new norm to do so. We need to be careful not to allow poorly performing buildings to use this as a label to support unearned virtue.

Tracking and benchmarking the Energy Use Intensity (kWh/m2) of our designs and projects remains a vital indicator of the first of the Paris Proof objectives and this needs to be enforced through Building Regulations.

The design of the WWF Living Planet Centre in Woking, Surrey (with Hopkins Architects, 2012), shows how some of the strategies described can be implemented. The building design used significant external shading and mass in several forms to minimise the peak loads. Exposed concrete soffits and phase-change materials in the timber roof provide thermal mass. Earth ducts in the ventilation systems minimise fresh air loads. Energy piles beneath the building store energy inter-seasonally with electric water-to-water heat pumps providing heating and cooling. PV panels on the roof meet some 20% of the regulated requirements and the overall peak energy demand is some 40% lower than a conventional office.

For buildings we are designing at London Bridge (with Pilbrow & Partners) such as the EDGE, our approach has been to assess and design for the constantly varying relationship between the building (demand), distributed energy sources (on-site supply and storage) and utility grid (off-site supply) to create long-term low carbon impact.

All-electric buildings are here to stay. They bring new challenges, but also provide an opportunity to create cleaner and healthier cities and places while achieving the big objective – a net-zero world. ●

Patrick Bellew is founding director of environmental engineer Atelier Ten

Left Demonstrating strategies for energy management: WWF Living Planet Centre. Credit: Morley von Sternberg

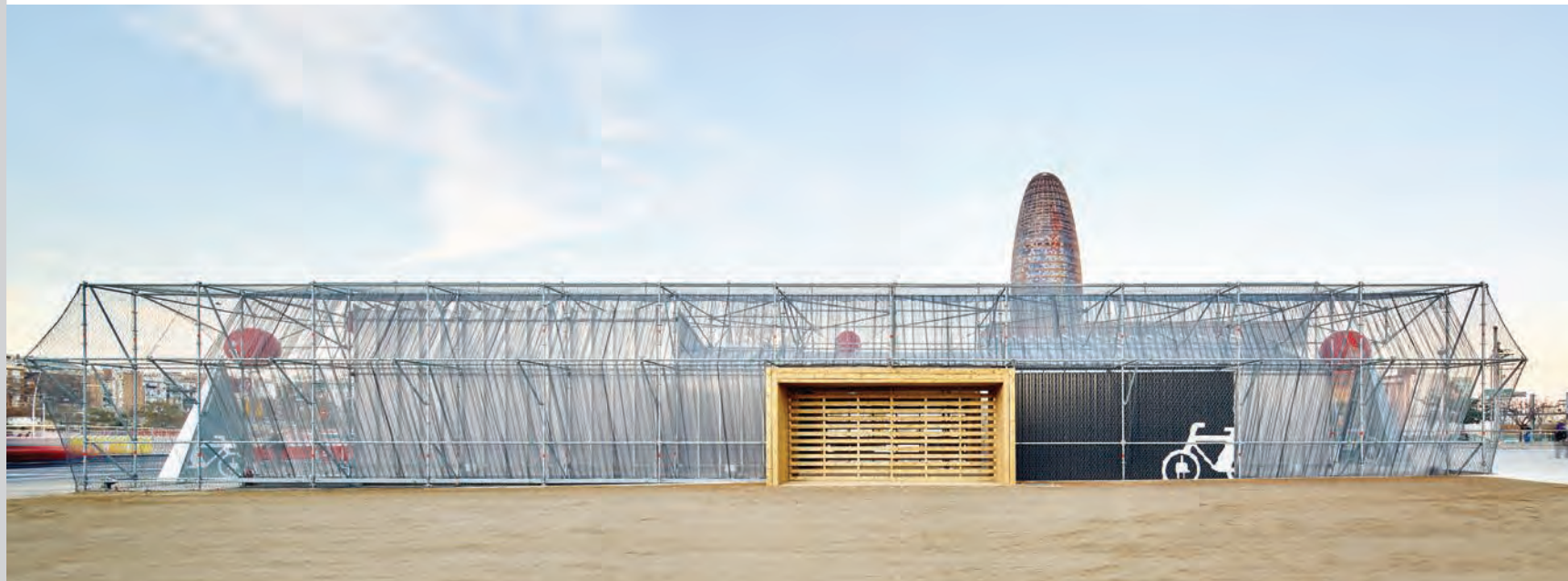
Light is what you make it.



Architect: Russian For Fish
Photographer: Peter Landers

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Is creative design the way to reduce carbon?

Circular economics offer a sustainable route to construction, and hot dip galvanized steel can play a key, and creative, role

The environmental cost of all aspects of the construction industry has never been under more scrutiny. As the UK forges ahead with ambitious infrastructure projects, architects and designers are under increasing pressure to find sustainable solutions. New circular construction practices offer the promise of carbon neutral architecture, road and rail projects, and as UK construction faces a watershed moment, it is clear that adaptable, intelligent design will be key. It is also clear that creative solutions will be found across a portfolio of materials, both old and new.

A move towards circular economics is set to reinvent construction. In an industry which has long understood the value of 'in use' or operational carbon efficiency, attention is now turning to carbon reduction across the entirety of new building projects. The uptake of whole life carbon assessment will be important, and a new emphasis on modular, adaptable buildings will put creative reuse and demountability at the forefront of design. The future is circular, prioritising reuse, remaking and recycling.

Above The Information Point at Les Glories is easily demountable and can be relocated and reused with minimal impact on the site.



PERIS+TORAL ARQUITECTES (2)

Below Galvanized steel was used to create a temporary structure to protect Les Glories during the regeneration of the area. The materials created transparency but could be readily deconstructed for a new life.

Not only will we need to use raw materials wisely and give preference to durable solutions, we will also have to choose materials that can be reused efficiently as well.

As a durable, robust material, hot dip galvanized steel is consistent with this circular approach. According to a recent European Research Report, Recommendations for Reuse of Steel Products in Single-Storey Buildings, 'galvanized steel solutions are preferable for structures with possible multiple assembling and dismantling cycles'. The report states that reusing a 480m² single storey, steel-framed building just once can save 98 tonnes of CO₂ and €24,000. Reuse can now be quantified in economic and environmental terms too.

Incorporating reuse at the design phase of any project can generate significant opportunities to reduce carbon footprint, according to a recent guide published by the UK and European galvanizing industry. Galvanized Steel and Sustainable Construction: Solutions for a Circular Economy outlines how hot dip galvanizing facilitates the circularity of steel structures and components and showcases innovative projects from across Europe. When Barcelona City Hall commissioned an information point to inform local residents about the regeneration of eastern parts of the city, local architect Peris + Toral designed Les Glories. It comprises a simple,

galvanized steel external frame, covered in a translucent polycarbonate skin, with prefabricated timber internal modules. After serving its function since 2015, the structure is now being repurposed by Peris + Toral as a youth centre in the city's St Martí neighbourhood. It is entirely possible for Les Glories to be adapted for further, numerous life cycles.

Projects like Les Glories show how galvanized steel can withstand multiple life cycles of reuse. Its durability and robustness mean it can be demounted, transported and re-erected without degradation, making it ideally suited to circular design. And not only are galvanized steel structures easily constructed, they can also be adapted for changing needs in capacity.

Garsington Opera Pavilion at Wormsley, an English pastoral estate, is a case in point. Conceived as a demountable, state of the art, contemporary performance venue, the 600 seat pavilion offers superb acoustics and a perfect setting in which to experience high quality opera performance. It was originally designed to be erected and disassembled annually with the opera season, and to leave no permanent trace when removed. Since then, parts of the structure have been left to overwinter, with the galvanized coating providing long-term protection and a maintenance free finish.

The Hill House Box in Helensburgh is another example of the limitless reusability of galvanized steel sections and offers a radical approach in active conservation. Created as a semi-permanent structure to



JOHAN DELHLIN, CARMODY GROARKE

STEPHEN WRIGHT PHOTOGRAPHY, ROBIN SNELL AND PARTNERS



Galvanized steel can withstand multiple life cycles of reuse

Above Prefabrication techniques at Garsington pavilion minimised waste, ensured a consistent workmanship and allowed the galvanized steel structure to be assembled/dissembled quickly and economically.

Below Constructed in 25 weeks, prefabricated galvanized building elements reduced the impact of construction to Hill House. Materials used can be recycled or reused once the building is removed.

protect Charles Rennie Mackintosh's Hill House, one of Scotland's most acclaimed buildings, it acts as a temporary museum to contain and protect the Grade A listed structure during restoration. A galvanized cross-braced steel frame was grounded with minimum impact on the terraced garden, providing the framework for a chainmail covered enclosure, which acts like a 'drying room' shelter for the original house. At the end of the 10-year project, The Hill House Box can be deconstructed easily and repurposed for new functions.

Each of these public projects is creative and adaptable and puts carbon reduction centre stage. They show that working towards a net zero future can deliver structures which maintain and even improve performance. As the UK embarks on the biggest road, rail and public building investment of a lifetime, they suggest that the quest for carbon reduction, while a huge challenge for the construction sector, is a significant creative opportunity too. ●

A downloadable copy of Galvanized Steel and Sustainable Construction: Solutions for a Circular Economy is available at www.galvanizing.org.uk/circular-economy

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***About 10% of the UK's carbon dioxide emissions
are directly associated with construction
(Green Building Council)***

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Sustainable
Architecture



Design, construction
& technology

Concrete and climate-compatible design

If the economics of your project make concrete irresistible, there are still ways to minimise its carbon impact

Below You can be ambitious with lean forms of concrete, as Felix Candela showed in Celestino Fernandez's warehouse, Colonia Vallejo, Mexico.



RIBA COLLECTIONS

ribaj.com

Steve Webb and Liam Bryant

So, you've pushed and pushed (as has the engineer, hopefully) to develop a low-carbon scheme, but the concrete frame industrial complex approach won and your timber and hempcrete has been cast aside in its favour.

Unfortunately, this is the story of too many projects, with logistics and cost uncertainty around 'green' construction creating barriers that only an experienced team and an ambitious client can overcome.

So, what happens next?

Too often the design spirals deeper into the mire, with climate aspirations sacrificed on the altar of economic efficiency, and we end up with uninspired designs that we've produced for decades, with high embodied carbon and limited innovation.

But don't lose hope, there's plenty we can do to salvage the design and perhaps find concrete a place in 'green' design.

Re-use

It is now widely accepted that re-using existing assets is the best thing an architect or engineer can do for the planet.

So when starting a scheme, we should look to re-use elements on site, from full retention of the existing building, re-use of foundations or simply recycling materials and finishes. This is predicated on specifying suitable surveys and testing, to understand the opportunities, then working with the existing fabric, rather than against it.

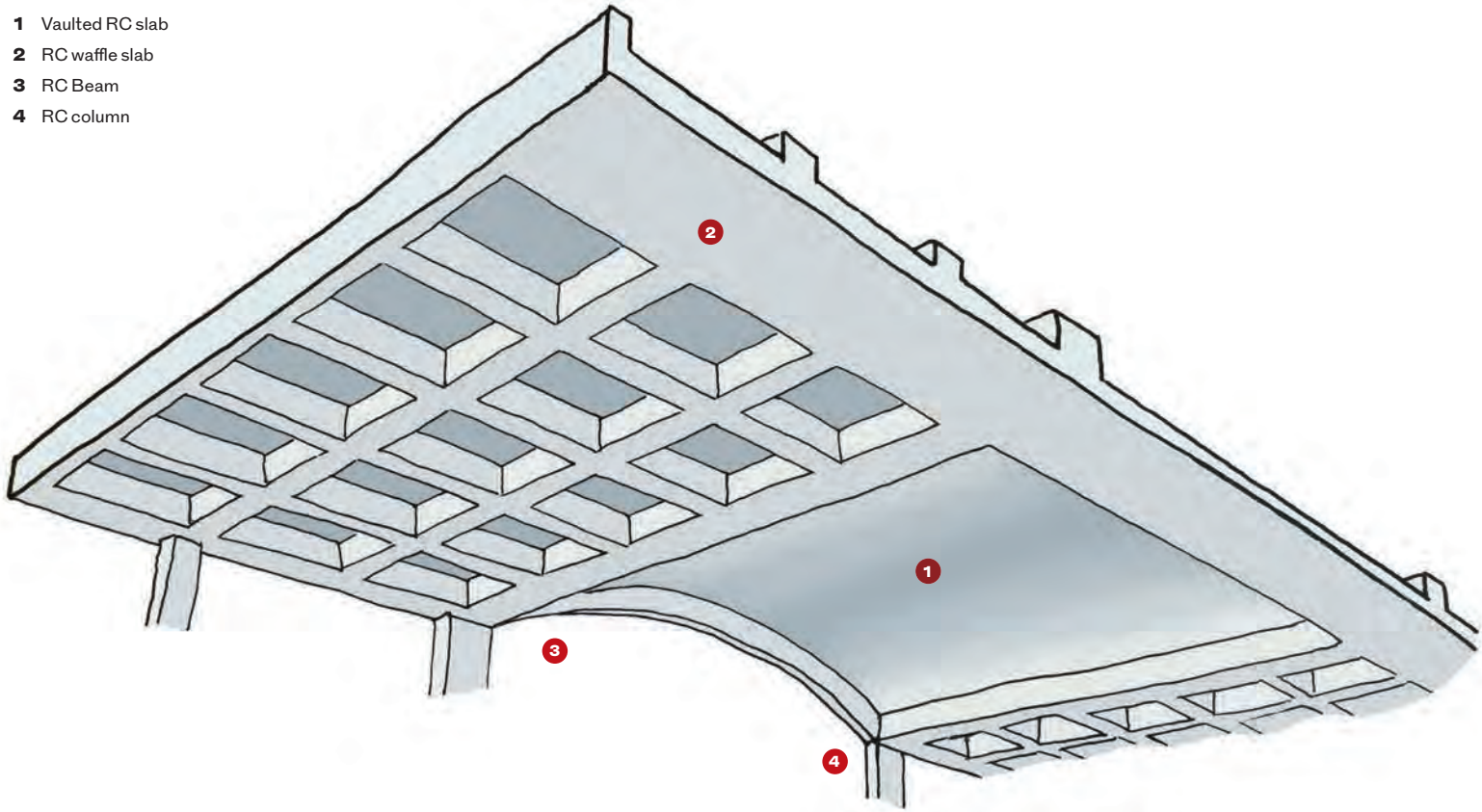
Often minor tweaks to the proposals, either in footprint or sequencing, can hugely simplify the works, reducing demolition and new structure by retaining key elements. This is when good communication is critical, as each discipline brings its own knowledge, and open discussion and challenging 'negative' decisions are essential.

Once you've decided what to demolish, try to find opportunities to re-use the 'waste' material. While re-use isn't carbon negative, it generates significantly less impact than using new materials. The engineer should be looking for record drawings and specifying testing early to ensure that this opportunity isn't missed.

Reduce

Once the scope is finalised, recover some of that initial lost ground through the design, with clever framing, and ensuring that the

- 1 Vaulted RC slab
- 2 RC waffle slab
- 3 RC Beam
- 4 RC column



architecture responds to the structure, rather than forcing the engineering to accommodate complex and inefficient demands.

At its simplest, moving from a 6m grid to an 8m grid will increase the slab thickness from around 225mm to 275-300mm, a 30% rise in concrete. Similar problems arise from setbacks and transfers.

These decisions cascade down the building, with columns, beams and foundations all working harder to support an overweight slab, further raising embodied carbon and cost.

This doesn't force us to sit in a bleak block, with a grid of columns marching into the distance. Designers should embrace the benefits of concrete; it can be cast in any shape and is great in compression. We only need to look to classical architecture to appreciate curves.

The industry is obsessed with flat slabs, mainly due to the high cost of skilled labour, but this must change if we are to 'solve' the climate crisis. One Webb Yates project has a 200mm thick vaulted slab spanning more than 10m, a low carbon and efficient way to span the space.

Mitigate
Finally, once design opportunities have been exhausted, we should be specifying low-carbon concrete mixes that have high

Above Vaulted roof slab (project under construction). It's a clever design, but it's not that ambitious compared to some of the great shell structures by Félix Candela, for example.

Moving from a 6m grid to an 8m grid will increase the slab thickness from ~225mm to 275-300mm, a 30% rise in concrete

proportions of cement replacement and recycled aggregates.

While a critical part of sustainable design, too often this 'greenwashes' a carbon intensive design, skipping the steps above.

Cement replacements (GGBC/PFA etc) aren't truly carbon neutral, if you're buying it, it's not 'waste', but they can significantly reduce the embodied carbon of structures. This can offer eCO₂ savings of ~40% compared to 'baseline' concrete, but realistically the saving compared to 'industry standard' is probably half that.

A froth of companies are pitching 'new' products as CEMfree or Carbicrete that promise low/negative embodied carbon, but these are typically based on the same GGBS framework. Unfortunately, this isn't a long-term fix as supply is limited, and the UK is already reliant on imports. Studies suggest that there is only enough GGBS/PFA to replace up to 20% of world cement demand and production of this 'waste' is dropping.

To address the climate crisis, we must embrace the opportunities of Reduce and Re-use, bringing creativity, innovation and good design to 'green' concrete, not jumping to the easy promise of 'carbon-negative concrete'. ●
Steve Webb and Liam Bryant are at Webb Yates Engineers

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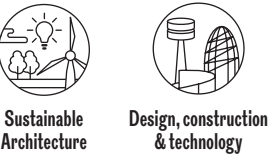
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Let there be delight

Re-using building elements as ‘spolia’ and maximising plant-based material use can take sustainable design past targets to desirability

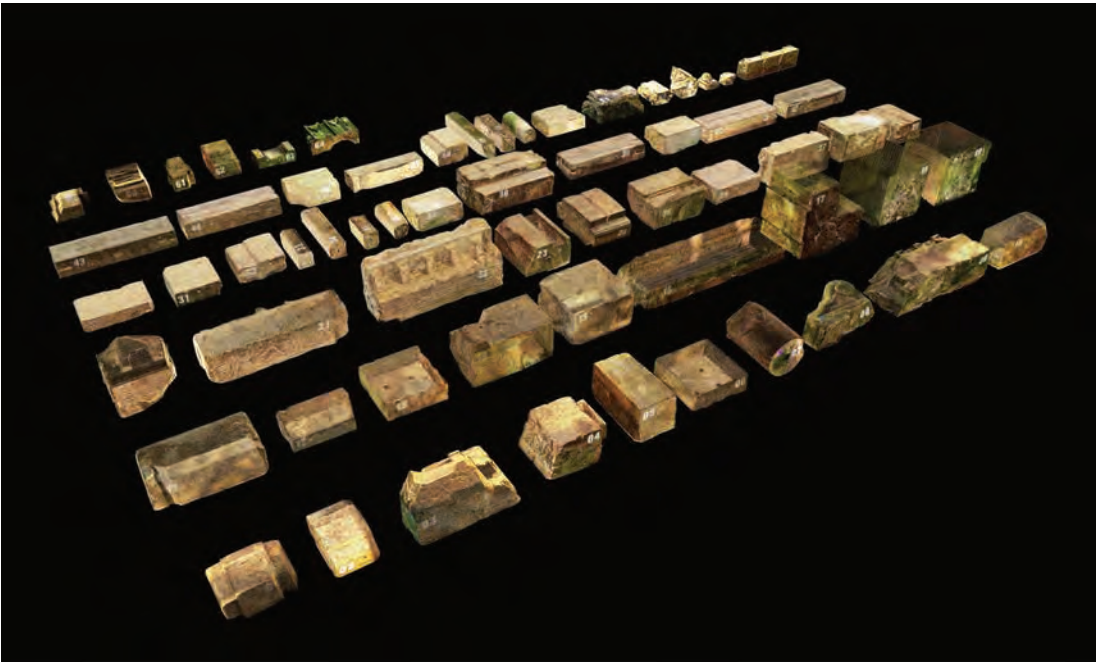
Matthew Barnett Howland

From COP26 to our practice on the high street, we are all having to contend with the collision between a model of limitless fossil-fuelled growth and the immutable limits of our planetary ecosystems. At every scale of human activity (governments, institutions, businesses and individuals) it is proving difficult to implement change. There are obvious political and economic reasons for this intransigence, and the persistent tendency to dissociate immediate action from future impact.

But can we learn anything from the way in which the process of change itself is conceived and implemented? And if we can, how might it relate to an approach to environmental sustainability within an architect’s office?

Setting quantitative targets that can be measured and tracked is of course a common way to try and improve performance and drive change; it is what COP26 is all about. Indeed, this is the kind of data-driven approach to delivering low impact buildings that design and engineering professions (including my practice) are implementing. It is certainly a useful tactic in the here and now, when we need to reduce impacts and minimise the risk of catastrophe by any means.

However, this kind of approach favours narrow forms of measurement, which can limit our understanding of what is actually a complex range of interdependent issues. With targets that are largely restrictive in



Above The ‘Digital Quarry’ – 64 building stones were extracted, cleaned, scanned and digitally processed to generate drawing files as the starting point for the design process for Phoenix House.

It is up to us to demonstrate that the architecture of limits will result in more compelling buildings

nature, there is also a risk of generating a negative and diminished vision of the future. So it is critical that both the goals and methods of change are framed in more holistic and qualitative terms.

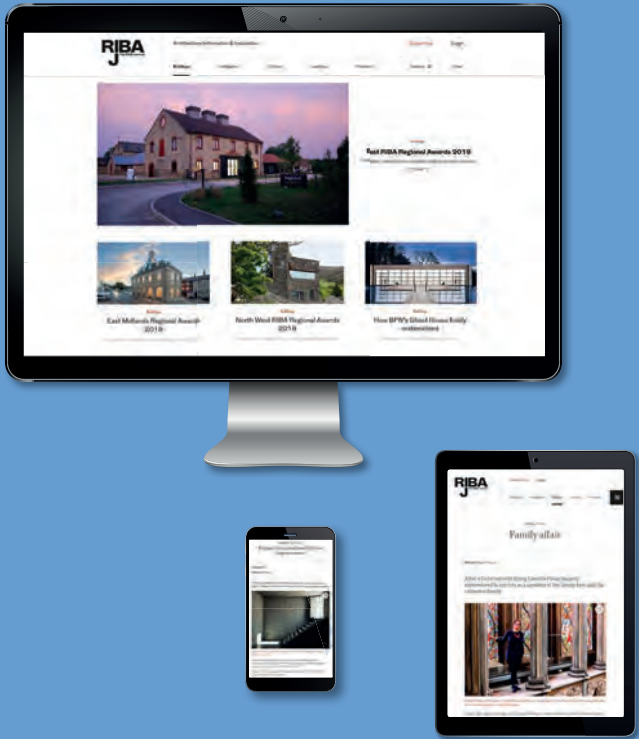
And this is where the dynamics of global change coincide with everyday architectural practice. Yes we have to meet quantitative targets in order to reduce environmental impact, but we are not going to win over all our clients and other stakeholders in the built environment without making a convincing case that a future of limits – and quite often simply less – is a desirable alternative to the present. So it is up to us to demonstrate that the architecture of limits is in fact a qualitative idea, and will result in more compelling buildings and more rewarding forms of inhabitation.

We need to develop methods of designing building life-cycles that respond to finite resource systems; and to evolve a visual and tectonic language based on re-use, repair and retrofit, fewer finishes, less construction overall, more recycled and plant-based materials, demountable design and so on. Architects are well placed to tackle this, because at its best architecture is always about more than just problem-solving, it is a discipline that is deeply familiar with the demand to reimagine the world and rethink how we live, work and build.

There are a few projects in the office at the moment where we are explicitly exploring

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Intelligence
Material reuse

various sizes and orientation. The assembly of ‘as-found’ elements creates a more intense experience, and will be used in selective locations to establish an architectural hierarchy – sort of a modern take on the ancient tradition of ‘spolia’.

We are also continuing to work with solid cork construction (developing from our Cork House) on a couple of projects, in collaboration with Oliver Wilton at UCL. The distinctive form and character of our Memorial to the Industrial Revolution, for the Seoul Biennale of Architecture and Urbanism 2021, is the direct result of an approach driven by an ‘economy of means’. So in addition to the environmental benefits of the original construction system used for Cork House, we have sought to reduce and simplify while maintaining an intense material and spatial experience. For example, we are working with the rough and ready character of untrimmed blocks straight from the manufacturing process; the rhythm of solid and void is the result of using a limited range of modules based on a minimum number of cuts to whole blocks so that there are no off-cuts at all; and the timber connection detail between blocks has been designed to reduce machining and material waste, and allow for easy reconfiguration and re-use.

Lastly, we have been approached by a medium-sized German developer to design a pilot project for a cork and timber light industrial unit – imagine a plant-based version of Slough Trading Estate. The existing model for this kind of building is inherently a highly efficient and stripped back form of construction, so it will be fascinating to work through the possibilities – and challenges – of bringing low carbon principles to what is currently a largely steel-and-concrete affair. At first glance this might look like a slightly improbable proposition, but maybe it’s exactly the kind of reimagining that we need. And that’s what architects are good at.

As Picasso observed: ‘Forcing yourself to use restricted means is the sort of restraint that liberates invention. It obliges you to make the kind of progress you can’t even imagine in advance.’ ●

Matthew Barnett Howland is director of research and development at CSK Architects

Right The Seoul designs will allow for reconfiguration and re-use.

Below Designs for Seoul Biennale of Architecture and Urbanism 2021 investigates cork blocks as they come, with a minimum number of cuts – here a diagram for assembly and disassembly.



OSK ARCHITECTS AND THE BARTLETT UCL WITH ARUP, SPONSORED BY AMORIM CORK INSULATION (2)



OSK ARCHITECTS AND UCL

Above A feasibility study for Phoenix House is a single portal designed to investigate both the workflow and the architectural language of re-use.

this idea of the architecture of limits. In collaboration with UCL we are close to completing a re-use feasibility study (related to a live building project, Phoenix House), to develop a methodology for making primary structure out of existing building stones found on site, including the use of digital scanning as an essential part of the process. We have investigated two kinds of re-use – a fairly straightforward ‘slice and dice’ approach for regular columns and beams, and a fruitier configuration using stones more as they are found. In both cases, there will be some quantitative evaluation – material efficiency, cost in money and in carbon etc – but we are particularly interested in the architectural qualities that can be extracted from the principle of deep re-use. The character of the regular elements is generated by the varying grain direction and uneven spacing of bed joints, both of which reflect the re-use of existing stones of



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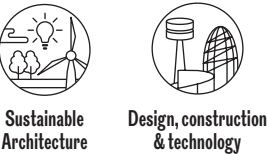
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Small green gains add up

Marginal gains in energy reduction can amount to a significant impact when combined in one project. Rab Bennetts recalls a 30-year-old example

Marginal gains is a term commonly used for sports like cycling but which also neatly describes one method of pursuing low carbon buildings. The RIBA Journal's August leader on batteries in buildings prompted me to think that if everyone used battery-powered computers in the office, they could charge them at a docking station overnight when supply from renewables exceeds demand; while the reduced heat gain in daytime would diminish the need for air-conditioning.

This brief technical diversion reminds me of Bennetts Associates' first large-scale low energy building – PowerGen's Coventry HQ – which we designed 30 years ago. Inspired by climate-responsive architecture and good engineering, we pursued all those marginal gains that supported the case for 'passive' architectural form, using rigorous objectivity to reject conventionally serviced solutions.

We began by using workplace surveys to challenge assumptions about heat from small power and computers, realising that a typical office brief over-estimated density and heat loads; we reduced lighting loads through good daylighting and by optimising light fitting performance; we removed hot-spots (like copiers) from the general office areas and placed them in pods beside open plan stairs; we questioned conventional assumptions about internal temperatures and proposed instead a fluctuating range based on the seasons. (This was accepted later by

the British Council for Offices specification.) Armed with well-documented conclusions about a new type of workplace we designed a building based on natural ventilation, which would not have been viable using the conventional wisdom of the time. Unobstructed, narrow floorplates enabled cross-ventilation, which was underpinned by an analysis of local weather conditions to defuse the problem of hot, still days. In that particular area, hot days always had a lot of air movement, ensuring airflow at the right times. The daylight narrow floors could also be achieved with clear spans for adaptability, access to a window, visual stimulus, easier communication and serendipity.

Forensic modelling

We kept heat gain down by shading the glass to avoid direct sun and designed manual opening windows in two tiers, so people could choose how to modify their own conditions. Each item was forensically modelled with emerging computer techniques, such as CFD analysis which was new at the time. Even the opening windows were modelled to ensure that air flowed through them as intended – the bizarre consequence of a construction contract that permitted no risks. It often seemed that we were reinventing lost skills like sizing traditional windows for ventilation or using thermal mass to keep cool.

A third opening vent at high level was used in hot conditions at night, to purge the building of warm air and cool the exposed concrete rib structure, so it would provide up to 4°C of passive cooling on the following day. (Flat slabs were half as effective.) The tapered concrete ribs optimised daylight penetration, acoustics and the surface area available for cooling but, most importantly, they opened up a world of expressive, well-made structures that defined the architectural space. Having consigned the suspended ceiling to the 'unwanted and unnecessary' pile, we went on to design a series of buildings with exposed structures that confirmed the link between local environmental conditions and a more interesting form of architecture.

None of these marginal gains on their own were game-changing, but together they tipped the balance decisively towards a sustainable alternative to the deep-plan, air-conditioned norm. For a newly-privatised energy company determined to avoid extravagance and keep an eye on its own product's



An exposed vaulted slab helped thermal cooling at the PowerGen HQ – one of the marginal gains that gave it the edge.

efficiency, every decision had to be backed up with robust data, so that conditions in the new workplace were not compromised. This led to parallel studies on spatial integration (with Space Syntax from the Bartlett) and what we would now call the 'Wellness' agenda, with objective measurement of comfort, absenteeism, productivity and culture change from the public to private sectors.

Although we were pressured into using a design and build contract for the first time, our initial resistance was superseded by a genuinely rewarding collaboration with the contractor, who revelled in our enthusiasm for pragmatic innovation in construction. The expressive but austere aesthetic seemed right for the recession-hit early '90s.

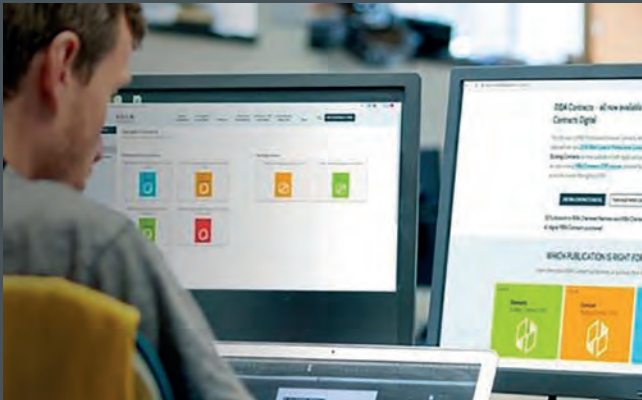
Looking back, I can think of no other examples where so many forward-looking ideas were explored in a single project, but the convergence between sustainability, functionality and architectural form subsequently embraced all kinds of building-types. The success of the PowerGen project was evident on a recent visit, when the client said it was still working exactly as intended. The accumulation of marginal gains established the credibility of low carbon buildings among major clients who might otherwise be sceptical and underpinned the rich architectural potential of passive design solutions. ●

Rab Bennetts is co-founder of Bennetts Associates

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Laurence Associates' experienced team of in-house chartered planners, architects, designers, and landscape architects work collaboratively to offer a fully integrated approach to development. They focus on delivering ambitious and achievable designs while adhering to clients' briefs and budgets.

Founded in 1993, Laurence Associates began as a practice of one town planner, but when design director Jason Pledger joined the team, he spearheaded the development of the design arm of the business. Pledger realised the value of offering clients a more efficient approach by providing both the design and planning of their projects from the same practice.

They then needed a business and project management software system to support their multifaceted design firm. This is how Total Synergy software, made with and for architects, meets each of their challenges.

Challenge:

- Inability to create varying rates for fee-earners on specific projects/stages/clients' work meant no clarity over project or stage budgets (or expectations)

- Disparate, unconnected systems for project management, timesheets, and budgets meant fee-earners had no clarity on project progress
- Unlinked systems for project management and financials meant unclear, un-itemised invoices and increased client confusion.

Above Laurence Associates' Sand Dunes at Cubert, Cornwall.

Below Laurence Associates' Manleigh at Trevone, Cornwall.



Synergy benefits:

- Ample flexibility to apply appropriate rate amounts for fee-earners across different projects/stages/clients/etc means they can accurately see how much resource they've used on their current budget (in-budget notes means they're aware of expectations as well)
- An integrated, industry-specific software system means fee-earners can more easily keep track of the progress of their projects through budget and time
- A complete, industry-specific software platform for business and project management, links all fee-proposals, project budgets, timesheets and invoices – which means less manual data entry and more clarity across the board
- A cloud-based platform means remote collaboration and management are easy, and that means 'new-normal' readiness.

Easy resource-tracking

Rate groups allow fee-earners to apply different fees to different phases and stages of a project, and accurately see how much resource they've used on their budgets. Before Synergy, Laurence and Associates' business and project management comprised disparate spreadsheets, a separate project management software system, and a stand-alone timesheet software.

With Synergy's cloud platform they can allocate different rates to each fee-earner within the one project or stage, or even assign different rates to the same fee-earner



Laurence Associates' The Beach House at Carbis Bay, Cornwall.

for different types of work within a stage.

Additionally, linked fee-proposals, project budgets, timesheets, and invoices reduce manual entry and add clarity.

Like most architecture practices, Laurence Associates bases fee proposals on its estimate of the time it will take to complete a project, but sometimes it takes on a project knowing it will take longer than proposed. This is a common practice in the industry, for example when a firm is developing its portfolio.

With Synergy, Laurence Associates is able put notes on the system so that project managers are aware of this sort of budgetary expectation. This sort of clarity means that if it has decided a project has priorities

over and above profit, the team can remain clear where, when and by how much those margins can be sacrificed.

Remote collaboration

Remote collaboration and management are easy, meaning 'new-normal' readiness.

For Laurence Associates, the value of the Synergy software platform only increased in the face of the Covid pandemic and associated lockdowns. From a management perspective the firm could continue directing and administering the business remotely, as a team.

Synergy's reporting functions and live dashboards allowed it to assess its pipeline at a granular level, while the software's custom fields let Laurence Associates assign different statuses and tags to client projects. This gave it a clear, 360° view of both its business and project status, which was critical to their ability to make informed and fast decision.



Laurence Associates' Gwel-An-Treth, Sennen, Cornwall.



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Laurence Associates’
Cedar Cottage, Port
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Total Synergy makes Synergy software with a single focus — to help you through every stage of your architecture business and project management. We serve more than 500 firms and over 7000 built environment professionals globally.

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If you look at the amount of time saved with Synergy, I’d say it’s probably ten per cent, overall, per billable staff member

Liam Massey, HBL Associates



The client’s view

In conversation, Laurence Associates’ business manager, Katherine Shannon, told Total Synergy how its software gives the firm ‘clarity – for management, fee earners and, most importantly, for clients’, which gives it more time for design.

‘We’re all obviously using Synergy’s cloud software platform,’ she says. ‘We’re all using one project and practice management system, and it makes everyone’s lives so much easier.’

How does Synergy benefit your project management?

‘Previously, we had different rates of fee-earners doing different things, on different phases and different stages of various projects. So we ended up with multiple projects on our legacy system to help the fee-earners have some clarity about what their budgets were – it just wasn’t clear enough for them to work out how much time they had for different stages.

‘Synergy solves the issues associated with project performance tracking for our staff, because you can allocate all the budgets and the time within the different phases and stages. It’s clear. Our staff are all highly qualified and giving them the actual ownership of their projects – the ability to run with them and take more control – gives them more autonomy and ability to do their best work.’

During lockdown, we could contact all our clients and prospective clients straight away and allocate them different statuses



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How do Synergy’s linked fee-proposals, project budgets, timesheets, and invoices enable clarity?

‘In our industry there are always going to be occasions where you can see a potential long-term relationship with a new client and take a bespoke approach to how you put together fee proposals and set up different projects.

‘Sometimes we know it’s going to take longer than the budget, but we want to do the job for other reasons. With Synergy, we can put notes on the system so that project owners are aware of that as well. Again, it takes the pressure off the individual fee-earner because they can see what is expected of them, or what’s not expected.’

How does Synergy make remote collaboration and management easy?

‘It’s been really good from a management perspective particularly. Fee-earners use the timesheets and look at the project budgets and so on, but from a management and administration perspective, it’s meant that we can continue to manage the practice remotely as a group.

‘The reporting functions mean that we can really do a deep dive into our sales pipeline from wherever we are. During the lockdowns, we could contact all of our clients and prospective clients straight away and we could use all the custom fields to allocate them different statuses or tags – so we knew what was on hold because of Covid, what wasn’t on hold, what was done etc. As a result, we got this clear, realistic pipeline, which is really important when you’re looking at staffing levels in a crisis like that.’ ●





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3: Culture



Apparently, the only sound one hears in the night in the remote town of Ilulissat (population 4670) in western Greenland is the baying of huskies – who outnumber residents by two to one – and the distant, uncanny crack of giant slabs of ice as they calve off the enormous retreating Sermeq Kujalleq glacier to float free into the Ilulissat Icefjord and out to sea.

While towns might be small 350km north of the Arctic Circle, the landscape is big – really big. One of the most active glaciers in the world, annually calving over 35 km³ of ice, it is also one of the oldest, a remnant of the continental ice sheet from the Quaternary Ice Age and over a quarter of a million years old.

Danish photographer Adam Mørk, sent out by Dorte Mandrup Arkitekter to photograph its recently completed visitor centre looking out to the icefjord, experienced the polarities of both familiarity – Danish is universally understood here – and utter alienness. It's only when you sail silently between the glaciers on the still waters of the fjord that you comprehend how massive they are, he says.

But even looking landward, 'there are no trees, so you're missing the elements you might use to gain a sense of distance or perspective; there is a strange scalelessness to the landscape.'

Perhaps to redress this, Mørk turned his camera away from the icy distance to concentrate on the building and its immediate context. The view made him think that the structure was growing out of the rock; and as he stood there to take the shot, a husky puppy walked into frame and stood there a while before sloping away. At that moment, he recalls, 'In their brownness, it felt like they all belonged together; the dog, the landscape and the building.'

Jan-Carlos Kucharek

Adam Mørk
'Belonging', Ilulissat
Icefjord, Greenland
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*If it was enshrined in legislation
sustainability research wouldn't rest
solely on the shoulders of practice*



Climate action is an industry issue

To make COP26 meaningful, construction needs the strength of legislation instead of relying on individual initiatives, says Eleanor Young

It is sobering to enumerate the chances for action to reduce construction's carbon that we have missed in just recent years, Retrofit for the Future initiatives never followed through, Net Zero almost defined but never mandated, Code for Sustainable Homes ditched, feeble Part L changes put on the table.

Where political will could have shifted a whole industry heading closer to being comfortably Paris-proof, instead we must rely on individual conviction. As we have seen from the pandemic, this libertine notion leaves us free to go our own way; 10, or even two, personal choices not to wear a mask on the 8.07 departure put 50 people in the carriage at higher risk.

However, under this self driven approach, led by Stirling Prize winners in the form of Architects Declare and the RIBA through the 2030 Climate Challenge and – importantly – by the grass roots initiatives of LETI and ACAN, that conviction has turned into action. The last two and a half years have seen a groundswell of research, learning and events and putting this shared knowledge into practice on projects.

On the upside, this can be more conviction-led, with individuals driven to seek out knowledge and urging it on projects beyond the tickbox of regulations. Mastering technical aspects of carbon reduction has broadened the profession's base and monitoring, and performance studies of past projects are being more widely accepted as a tool for learning, even when the client isn't funding it.

One small practice, HAT Projects, has decided to research recycling/re-use/safe disposal information for every material and product specified and include it in Stage 4 reports as standard, whether clients ask for it or not. It is a great initiative, but if it was enshrined in legislation the research wouldn't rest solely on the shoulders of practice. The market would scale it up with quickly accessible information for

products. Without that, the demand remains far smaller. Without rules, business decisions affecting funding for architects, clients and contractors are harder. For this issue we searched for the sustainable exemplars of our time. We were disappointed to find no pool of ground breaking projects and better performing buildings to choose from, and 22 years on from Chetwood's pioneering green Sainsbury's at Greenwich it is in Germany with REWE supermarket chain that we found our cover inspiration today.

It is unlikely the government's long-awaited Heat and Buildings Strategy will shift this in a meaningful way, despite its promising title, and the Future Homes Standard's changes to parts L and F is too little too late. If the government is serious about leading the world on tackling the climate emergency ahead of COP26 in Glasgow it needs to make sustainability more than something you volunteer to sign up to. ●

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The inertia since 2018's IPCC Report has been deafening. The 'unprecedented societal transformation' it called for is simply not taking place fast enough

Scott McAulay on moving beyond net zero: ribaj.com/regenerative-design

Jumping through hoops: carbon-efficient construction would be easier to achieve with legislation.



STEPHANIE WUNDERLICH



Skaters do a 360 on public space

Charlie Edmonds applauds a grassroots challenge to the privatisation of urban space

What kind of person is most engaged with their city? Not architects, or even planners – it's skateboarders.

The first 'sidewalk surfers' emerged in California in the 1950s. Perceived as dangerous, and forbidden from large swathes of urban space, they quickly learned to skate curbs, ramps and rails, appropriating urban fragments from within prohibitive cities. Even today, skaters provide an excellent lens through which we can interrogate the commodification of our cities and better understand what is truly public space.

In 2017, an investigation by Guardian Cities identified the rise of privately owned public space, or POPS, in London. Superficially identical to public space, its ownership is opaque and restrictions on public behaviour are rarely communicated. This infringement on public land was echoed by a 2015 government plan to privatise the Land Registry itself. Although abandoned, the proposal revealed how public land ownership is being eroded – not only by market influences, but also by public policy.

The material condition that emerges in London is one of rampant spatial inequality; our ability to participate in the urban realm depends increasingly on personal wealth. Public space becomes yet another environment for consumption – a city-wide cover charge. This inequality disproportionately affects the young: within the lifespan of a 23-year-old, median house prices have risen 259% while median wages have risen just 68%. Under-50s own just 18% of the UK's land wealth, compounded by the huge portions of wages lost to rent.

From squats to raves, London's youth are devising ways to reclaim private land; typically illegal methods that the authorities define as trespass and criminal damage. They are an inevitable reaction to hostile urban conditions, namely a lack of social housing and public amenities. One group based in south London has made this critique an explicit component of its extra-legal occupation – The Grove.

In summer 2019, I visited The Grove DIY skatepark. The spot had been recently created by a local collective of skaters who, after their local skateparks had been closed, decided to build their own in the car park of a disused pub, The Grove – a space used only for fly-tipping.

Since the skaters occupied the site, The Grove

has been filled with a wealth of skateable objects: ramps, rails, ledges, and even a mini volcano were all fabricated from found objects and in-situ concrete. Architecturally, it is rudimentary, but it provides a home for a thriving urban community.

Eventually the landowner informed the skaters that the site was to be developed and their work demolished; some skaters felt this was like the child that becomes interested in a toy only when another begins to enjoy it. In response, the group organised a jam (a kind of skating festival and competition) as part of its 'Save The Grove' campaign. Support from neighbours, skate shops, and even international foundations resulted in political pressure that allowed the group to resist eviction, and the quasi-activists have since operated as effective leaseholders and stewards of the site.

Now there is more than just skating here: children learn to ride bikes, friends meet for barbecues, and a cross section of south London citizens come along. The Grove is testament to the comfort and joy that can be found by simply existing in shared space. With loose bricks and hand-mixed cement, skaters are fighting the creeping commodification of public space, an urban resistance that should inspire all architects. ●

Charlie Edmonds is co-founder of Future Architects Front and a designer at Civic Square

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Anupama Kundoo at her new Berlin office with returned exhibits from her recent Louisiana Museum of Art show. The seven employees here double size of the practice to 14, split between Berlin and India.

Culture Profile

Anupama Kundoo's philosophy starts by questioning the basic constraints of how we build. Jan-Carlos Kucharek tries to find out how she alchemises time and resources into new forms of architecture

Portrait: Thomas Meyer

Beyond the iron triangle

'Architecture of consciousness? Yes, I think I you've got it there,' she reassures me. After an hour and a half speaking online to Anupama Kundoo at her home in Berlin, I'm getting my head around the fact that, for someone who is so clearly a woman in the world, underlying her work is a mind-boggling level of internal philosophising – even spirituality – about the discipline of architecture; a force that runs like currents beneath the waves of her output. It's been a challenging interview, because, in the way that small vibrations can conspiratorially build to catastrophic resonant frequencies, Kundoo flits conceptually from a handrail detail to a global issue without registering any change in magnitude. It's difficult to keep up.

Perhaps it's this multivalent, constantly sparking way of thinking that earned her this year's RIBA Charles Jencks Award, made 'to an individual or practice who has simultaneously made a major contribution to both the theory and practice of architecture.' Her built work and research practice has developed over 30 years as she travelled from India, where she was born, studied and built, notably in the Tamil Nadu community of Auroville – to academic research roles in Australia, Europe and the US; her body of work recognised in a recent retrospective, 'Anupama Kundoo: Taking Time' at Denmark's

Louisiana Museum of Modern Art. Her life has been a long-term research project into sustainable building technologies, looking at novel ways to reuse, reprise and innovate with materials and techniques, to challenge how we build and the very way we exist in the world.

But to get an idea of where Kundoo wants us all to go, it's necessary to know where she came from and the drivers that led to her way of interrogating the big architectural issues of our time. The ease with which she slips from one continent to another seems to come from an almost-inherited itinerancy. Her Bengali parents were both casualties of the Indian partition, relocated from Dhaka to Bombay. Her mother, from an affluent family, had to start from scratch – 'can you use the term "nouveau poor"?' – while her father 'was allied with the political struggle to free themselves from British rule'. All this had formative effects on the young Kundoo. 'We lived, without roots, in Bombay. I was freed from a sense of nostalgia for the place. My family, being uprooted, was forced to be proactive... in a way it led to an inherent optimism in my being; to not be fearless, to feel okay about being vulnerable.'

They were progressive too; Kundoo studied and went to Mumbai's Sir JJ College of Architecture and rather than being subsumed in the 'isms' of the late eighties, found herself instead obsessed by the liberal arts experimentalists of North Carolina's Black Mountain College (1933-57) – Josef and Annie Albers, Gropius, Rauschenberg, Twombly, John Cage and Buckminster Fuller – a roll-call of persons 'so influential, radical and courageous that we are still feeling their influence today'. But there were other inspirations; the architecture and writings of Charles Correa of course, but the great modernist engineers too – Frei Otto, Pier Luigi Nervi and the Uruguayan Eladio Dieste. 'They were looking at a synthesis of architecture and structure; looking at materials

Below Kundoo's Wall House (2000) in Auroville challenged accepted techniques to create novel roof forms that generated a micro-economy for local potters.





Left Kundoo at the 1933 'Bull Fountain' in Berlin's Arnswalder Platz, near her office. Kundoo earned her doctorate at TU Berlin and the city is home to her and her family.

holistically,' says Kundoo. 'I was always drawn to those who were experimenting and notably achieving in them.' But even at the age of 22, Kundoo had a real sense of living in a modern India that was part of a globalised, corporatised world, and was thinking of how, as an architect, she might respond to that. 'I was always aware of a spiritual dimension. I felt that if mind, body and spirit were brought together, then I could achieve the holism I was seeking.'

Perhaps it was kismet then, that after her travels around India in 1989, Kundoo settled in Auroville, Tamil Nadu, the experimental community created in 1968 by founder of the Sri Aurobindo ashram, French national Mirra Alfassa – 'The Mother'. Founded on 20km² of barren land and comprising industrial, residential, cultural and international zones radiating from the golden globe of its central 'Matrimandir', and bordered by a green belt for food production, it was all designed by architect Roger Anger. She set up her own practice in the city, and while she never worked directly for him, they collaborated regularly on its buildings and masterplan. Kundoo would have a profound 'relationship of mutual collaboration and respect' with him, until his death in 2008 – not least as author of his biography, documenting the 150 buildings that he designed both at Auroville and his native France. During the interview Kundoo intones Anger's name with care, '... social housing of an

amazing level of beauty...an incredible architect... ahead of his time.' He certainly seems it if his home, Château de Crestet in Vaucluse, is anything to go by.

It is Auroville that forms the petri dish of Kundoo's research work, most of her work being built here; what she terms the 'fertile ground' for her investigations into human habitation. But it was not the idea of a rarefied commune that fascinated her. 'Auroville's spiritual dimension is a given,' explains Kundoo but, she emphasises, she must contend with the same issues of human nature. 'I've read Animal Farm. What attracted me was that it had an aspiration of collective life that would create a prototype city. Not a commune but a working city...a physical site for spiritual and material holistic research to organise new forms for life.' This is aided mainly by the core fact that land is owned in common, so precludes speculation, and that it's car-free and pedestrian-centric. She adds: 'It's not about creating an ideal world but being a base for testing ideas – a biological wastewater treatment plant or attempts at common money ownership – all ideas that have a wider relevance for the world. Auroville was conceived as the city the earth needs.'

This earth-bound utopia became the site of a dozen projects, carried out over 15 years, that interrogated ideas of the domestic home, new forms of communal living and learning, civic life, material research and sustainability. And what are Kundoo's ideas on this last, burning, theme? It turns out that she has remarkably pluralistic views on the subject. For her it is more about a balance of human ingenuity and material suitability than hard and fast rules on what can or can't be employed in construction, a Venn diagram of geographical context, material use and engineering need. 'It's about resources and human resourcefulness, not mud versus concrete. I gave up worrying long ago about whether it was made of this or that material,' she says. It's a view born of hard reality. 'Population pressures in Bombay made me decide that to work in the commodified world of architecture today, we'd need to engage practically with material sciences, economics and broader questions.'



Right The Volontariat Homes for homeless children in Pondicherry (2008) used kiln techniques to allow people to 'bake their own homes'.

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These begin as micro interventions but have the potential for bigger outcomes, as her recent award of the August Perret Prize for Technology proved. Take her Volontariat hostel for homeless children in nearby Pondicherry. The homes were built of unfired bricks using a mud paste mortar and then set fire internally to make the house itself act as its own kiln. In that way a whole level of carbon generation (heat absorbed by the walls of an industrial kiln) is removed from the equation. This simple questioning of basic mass production assumptions is what Kundoo sees as a technological innovation, ‘and cheaper for humans and the environment’. In a sense, part of her sustainability drive is to shift the balance from economic givens of mass-production back to cottage industry scale. She has said: ‘I’ve always thought it foolish to ignore the building occupant and craftsman and instead design for the component manufacturer and building inspector.’ More to the point, in the Indian context in which she works, she feels both manufacturer and inspector would agree with her.

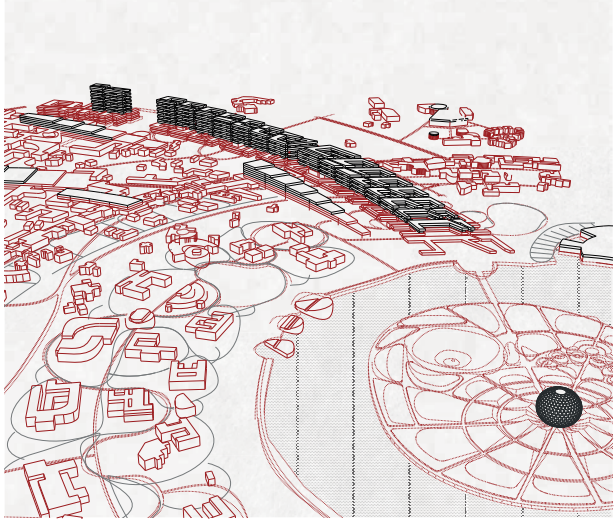
Likewise, with her ‘Full Fill Homes’, Kundoo has examined the idea of mass housing with a lower environmental impact using engineered, more sustainable pre-fabricated ferrocement components. The modular homes were assembled within a week, including foundations, with folded and box-shaped components doubling as storage, saving on furniture and freeing-up more living space. Windows, doors and other elements are also made in ferrocement. The homes turn out to be 50% cheaper than conventionally produced housing with similar amenities.

Her own Auroville Wall House is an exploration too, employing local craftspeople to pursue material innovations to generate the roof forms, ‘because due to the need to span, a roof is where high embodied energy materials get concentrated’. Kundoo used three to find out which worked better; in one, local potters

Right Auroville's Line of Goodwill posits a high density community stretching 800m to the city's central lake and Matrimandir. It descends from 18 storeys high, in stepped terraces, and is socially, environmentally and economically sustainable.

Below The Full Fill Homes mass housing proposition (2015) uses more sustainable ferrocement components, with storage – and colours – ‘cast in’ to the mix.

Anupama Kundoo is giving the 2021 RIBA Charles Jencks Award Lecture on 2nd November, for tickets see architecture.com



ANUPAMA KUNDOO ARCHITECTS

made bespoke interlocking terracotta pots to help her generate a low, barrel vault over the main space- which is achieved beautifully. And it helped develop new skills and a new market for them. ‘I diverted the potters’ capacities from pots they couldn’t sell to architectural elements they could,’ she says. ‘It’s an innovation on traditional crafts creating a local economy. It might look Roman but it’s actually high tech. Anyway, does it really matter if the Romans used it or if we use it now? It’s about what endures.’

Time, and its perception, is a key aspect of Kundoo’s philosophy. Referencing past tragedy, even the future of Bombay – a name that, through the interview, has been owned by her as if unladen by its weight of colonial history – is bound into her esotericism. For Kundoo, time is a plastic thing that can be moulded. ‘In the Bombay context, when big questions are asked, I feel people are saying there’s no time to address the issues – that everything is reactive: ‘Then there was a tsunami. Now there’s pollution. Soon there will be climate change’, she tells me. ‘We live, illuded that time is passing, but it is we that are passing through time.’ The distinction that time is a constant and not a variable in the classic ‘time-cost-quality’ triangle, frees her from all the strictures of conventional, modern construction theory, allowing her to change the way she thinks about architecture.

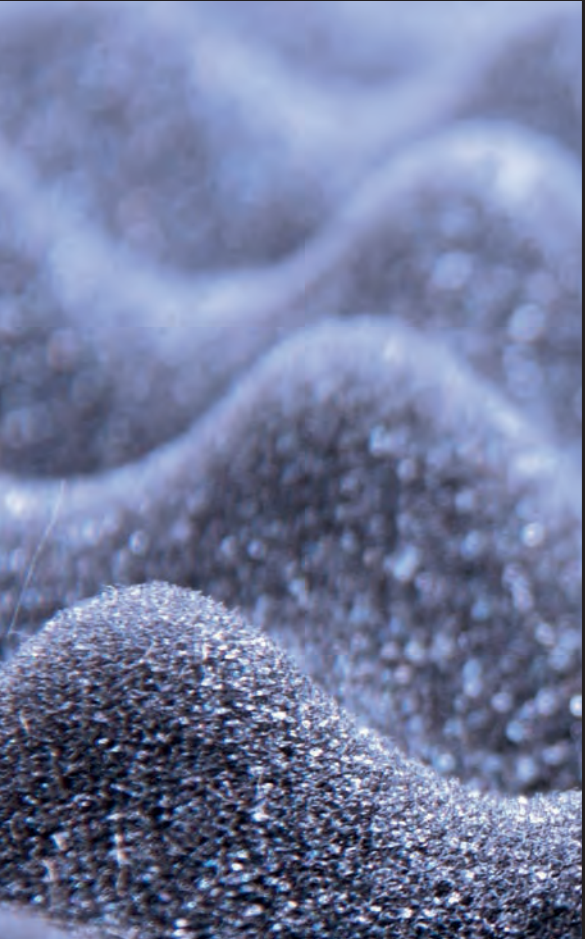
And the ideas continue. The ‘Line of Goodwill’ in Auroville is a current, high-rise mixed-use project for 8000 people, originally envisioned by Roger Anger. Rethinking the urban tower, the gently descending cluster of housing stretches over 800m, resembling a hill that starts at the entrance to the city, rising and falling again at the edge of the lake facing Anger’s Matrimandir. The project will boast integrated water and wastewater systems, renewable energy, in-structure urban farming, and smart mobility.

‘When I began, people kept asking why I was so obsessed with answering the big questions when they thought it was pointless dedicating the time to answering them,’ Kundoo concludes. ‘They’d say I’m being idealistic; but I don’t think I am. I’m just being practical and trying to make my imagination real – and why not? We’re all mortal and if today was the last day of your life, what would you be doing – and why aren’t you doing it already? ●

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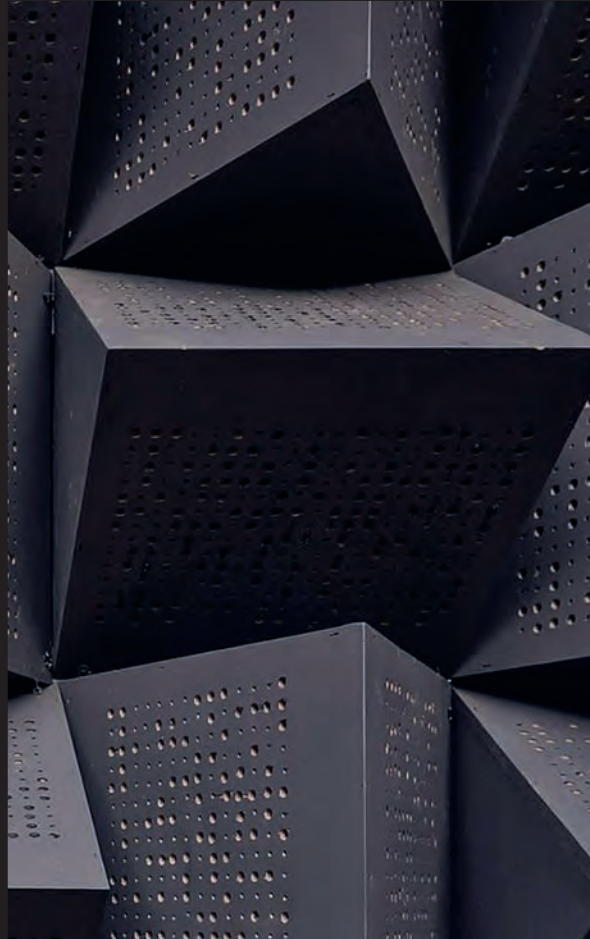


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Lewerentz sparkles in the limelight

Kieran Long and Max Ahrent reveal the thrill of detective work that contributed to Sweden's first comprehensive exhibition of a great, but under-exposed, architect

Sigurd Lewerentz (1885-1975) was one of the greatest architects in modern history, and one of the greatest artists of any kind that Sweden has ever produced. Until now, however, there has never been a comprehensive exhibition about his work. ArkDes, the National Museum of Architecture and Design in Stockholm, has held his entire archive since the late 1970s, and on 1 October will open the doors to the largest exhibition of a single architect's work ever in Sweden, and one which, we hope, will bring Lewerentz's work into view in its full breadth. Accompanying the exhibition, we have released a 700-page book which includes a comprehensive selection of his works, and a new story of his life and work researched from the original archival sources.



Above Perspective of a grocery store; watercolour, gouache and pencil on cardboard, 1932.

Left Interior perspective of rental apartment No. 2 for the Stockholm Exhibition of 1930; watercolour and pencil on cardboard.

Although Lewerentz never travelled to Britain, his work has been a touchstone for many architects here. Beginning with Alison and Peter Smithson and Colin St John Wilson (who published a book about Lewerentz in 1988), Lewerentz has been a key reference for generations, with many making the pilgrimage to two cemeteries (the Eastern Cemetery in Malmö and the Woodland Cemetery in Stockholm) and his two late churches (St Mark's, Stockholm, 1960 and St Peter's, Klippan, 1966), the four works that have done most to form his reputation. Everyone finds their own reason to love Lewerentz's work, and to admire him has been, somehow, like an article of faith in architecture, its artistry, its capacity to embody the most profound aspects of human life.

Despite this, Lewerentz has remained a figure outside the mainstream history of modern architecture. Although his great works are recognised (the Woodland Cemetery, which he designed with

Gunnar Asplund from 1915 onwards, is now a World Heritage Site), he was not a prolific writer or teacher, and did very little travelling later in his life, declining invitations to lecture and exhibit his work in Britain and the US. He is seen as an exceptional character, perhaps even a little idiosyncratic, and not easy to categorise within normal historical and stylistic frameworks.

Our exhibition and book, Sigurd Lewerentz, Architect of Death and Life, are intended to show a broader picture of Lewerentz than we have known before. Our research has focussed on the 1920s and 1930s, when he was a busy commercial architect, designing shops, hotels, restaurants and department stores, working as a graphic designer and furniture designer, and bringing to Stockholm the influences of his travels to Paris, Berlin and Rome. In short, the exhibition and book present a picture of an architect at the heart of an emerging modern, urban culture, engaged with the lives of modern citizens.



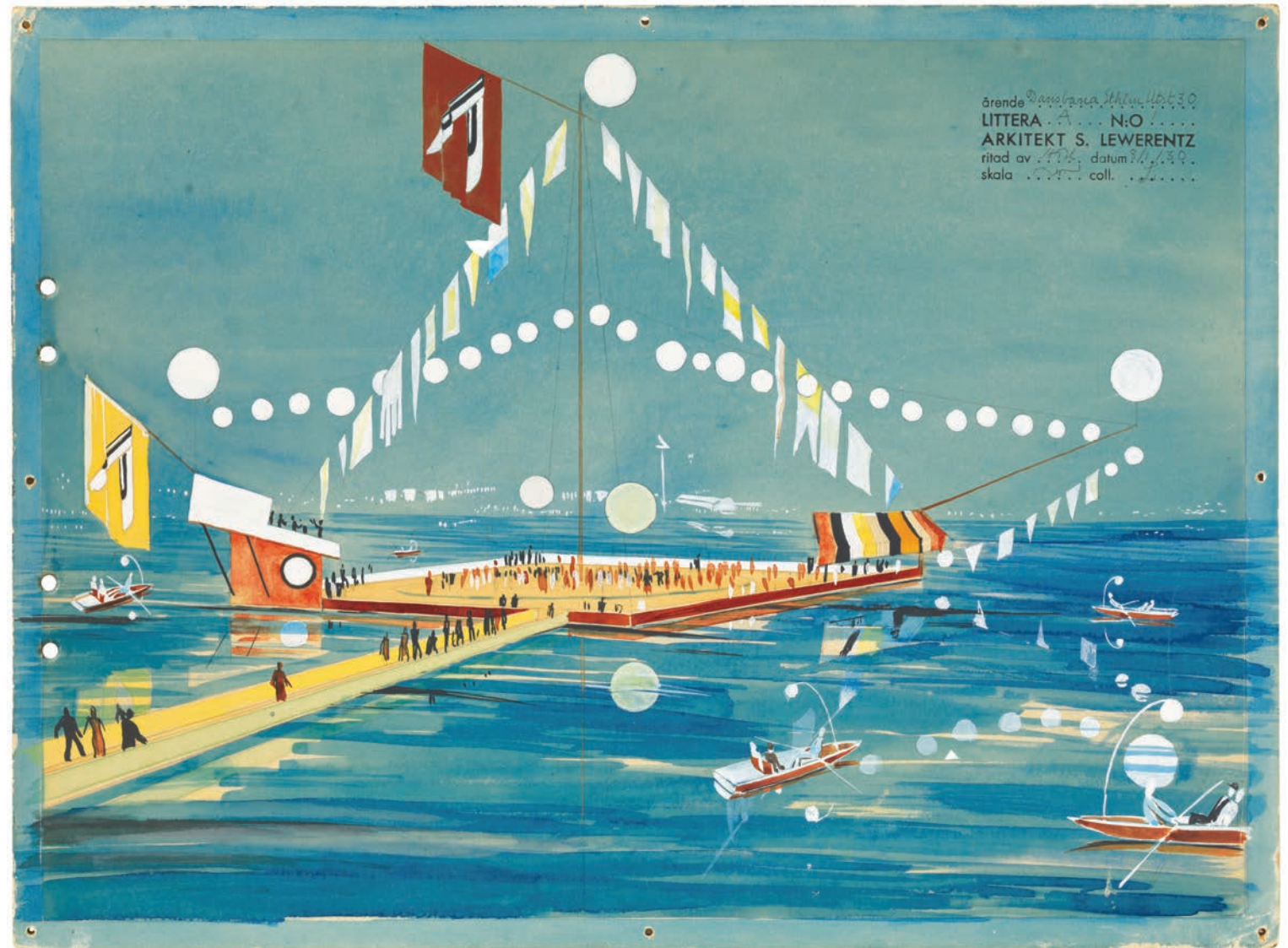
Above Exhibition poster for the 1930 Stockholm Exhibition.

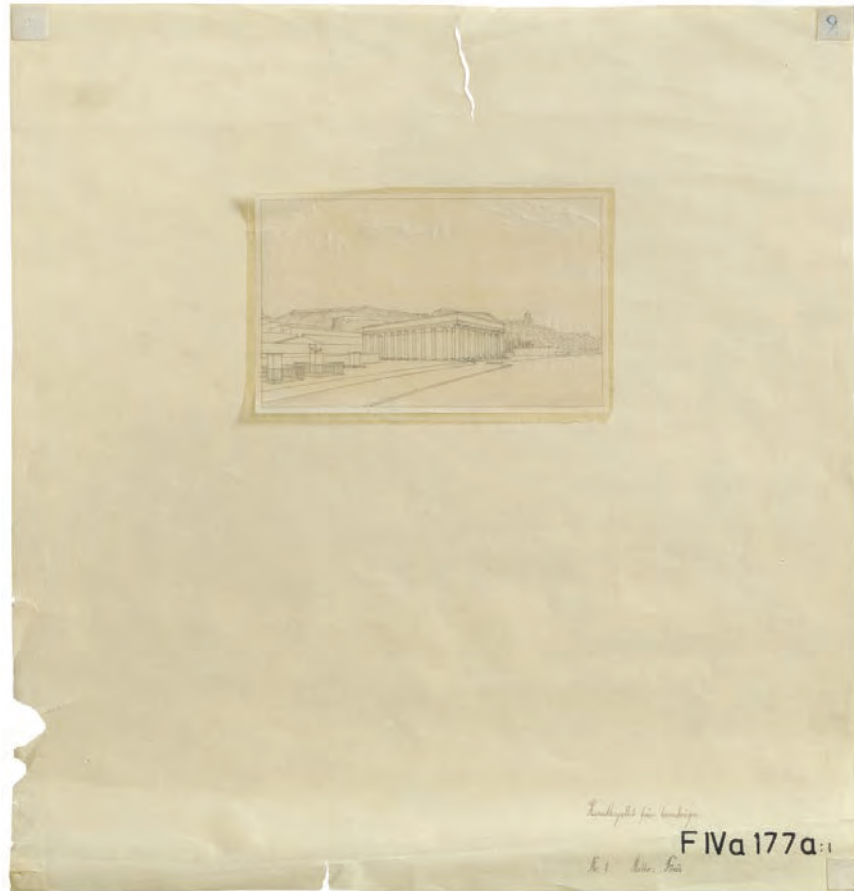
Below Perspective of a floating dance floor for the 1930 Stockholm Exhibition; watercolour, gouache and pencil on cardboard.

It is fascinating to see his profound work on the cemeteries, the settings of sorrow and remembrance, as he simultaneously designed for the more trivial pleasures of the early 20th century commercial city.

The research for the exhibition was something of a detective story. We consulted a wide range of archives and donors to see what narratives could be found beyond ArkDes' own, very large Lewerentz archive. We travelled across the country looking for traces of the architect; one such trip was to a regional archive in Gothenburg, which we had heard might hold material related to competitions that Lewerentz entered but did not win.

After a train journey of several hours we arrived at the archive, high up in an office building in the city centre. There were just a few desks and chairs in the small, top-lit room, and a series of folders from the competition entry that we had come to see. We put on the white gloves that had been carefully laid out for us, and opened the delicate papers.





As we leafed through the illustrations, we saw that it is the motif that Lewerentz's work focusses on. The suite of pictures is ordered as a walk through the new cemetery, with views captured as if they were 'plein air' sketches. As so often in his work, his competition entries concentrate on atmosphere and experience, rather than a completely clear vision.

After we had photographed and measured the material, it was packed away again, before transportation to ArkDes in Stockholm for the exhibition. The value of the material is immeasurable. It is easy, when working on archives in a museum, to imagine our own collection to be a comprehensive picture of the architect, but these projects, particularly unbuilt ones that never progressed beyond the conceptual stage, show us so much about Lewerentz's imagination and working methods. ●

Kieran Long is director and Max Ahrent is assistant curator at ArkDes

Left Kviberg Cemetery competition drawing; ink, pencil and watercolour on tracing paper, 1927.

Below Perspective of a display stand for AB Byggnadsvaror; watercolour, gouache and pencil, 1930.

Sigurd Lewerentz: Architect of Death and Life ArkDes, Stockholm
1 October 2021 – 28 August 2022
<https://arkdes.se/>

Sigurd Lewerentz: Architect of Death and Life Eds Kieran Long, Johan Örn, Mikael Andersson, Park Books, 712pp, £74

We put on the white gloves that had been carefully laid out for us, and opened the delicate papers

The material was from 1927, an unsuccessful competition entry for the Kviberg cemetery in Gothenburg that had never been published before. At the time, it was a hugely important competition that was to be one of Europe's largest cemeteries, Sweden's second city's answer to the Woodland Cemetery in Stockholm. Lewerentz's collaborator on the Woodland Cemetery, Gunnar Asplund, eventually won the job at Kviberg. Through a sequence of delicate, ink and watercolour perspectives, Lewerentz leads us into a landscape where the strict order of the gravestones contrasts with open fields, a play of density and openness. A severe classical temple (comparable with his earliest ideas for the burial chapel at Malmö's Eastern Cemetery) emerges from the naturally rolling landscape. The whole sequence appeared somewhat desolate, an autumn landscape in which the architecture took a secondary role to the boundary walls of stone.



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Photography by Alex Upton Photography.

Lessons from history can help decarbonise buildings

Barnabas Calder's new book adds the weight of architectural history to the climate emergency debate. Catherine Croft welcomes its urgency, while Nick Newman seizes its call to arms

'As architects and technicians come to consider the great energy change that faces us all – decarbonising our built environment – architectural history needs to lead the discussion'

Architecture: From Prehistory to Climate Emergency is a highly readable world history of architecture, from the tusk and bone huts of mammoth hunters to 21st century mega structures, and to one highly crafted experimental house (Cork House, Eton, 2019). Its USP is that 'form follows energy', in other words 'the architecture of every era, from prehistory to the present day, has been determined by the amount of energy available to a society after basic survival needs have been met'. Calder looks at examples of buildings produced under the three 'energy systems' man has experienced so far: worlds determined by reliance sequentially on foraging, farming and fossil fuels. But it's far from just a history. Noting that today 'construction and operating buildings are responsible for 39% of all greenhouse gas emissions', the analysis leads to an urgent polemic for climate action in the built environment. It is this, which sits at the heart of the book A Future Fourth Age where renewable energy sources dominate, that is tantalisingly just out of reach: Calder wants to make sure we get there.

Calder first tempts cosy complicity by reminding us that 'fossil fuels make the world a much better place for humans', but immediately cautions readers that 'unless we can get away from our all-embracing dependence on fossil fuel by 2050, we will make the planet apoplectically horrible'. There is no space for complacency, and his final sentence is an explicit, grave warning: 'The consequences of failure [to immediately address climate change] would be

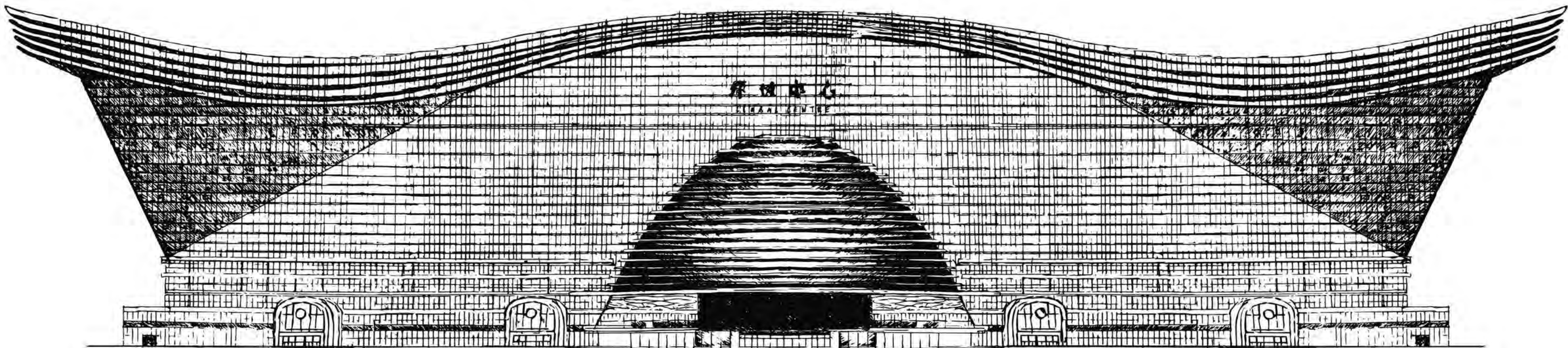
catastrophic'. This is not another encyclopaedic overview, it's a book with a mission.

Calder is an architectural historian (senior lecturer at the University of Liverpool and author in 2016 of *Raw Concrete: the Beauty of Brutalism*) and has a clearly expressed sense of personal and professional responsibility to help change the course of history. His reason for writing this refocused global survey is that 'as architects and technicians come to consider the great energy change that faces us all – decarbonising our built environment – architectural history needs to lead the discussion'. I am not sure that I buy that premise entirely – but even if its role is not to lead, then Calder ably demonstrates how architectural history can enrich and inform the debate, and make wider audiences aware of the impact of the built environment on climate change.

So what are the relevant lessons of architectural history? 'Human conservatism and inertia' are identified as barriers to necessary reformation today, and looking to the past we can see these are perennially present alongside the more celebrated innovation which is retrospectively easier to spot. Acknowledging this frees us from abdicating responsibility in the false expectation of a completely new built form and mindset swooping in to save us; it supports pragmatic action now. Direct examples, such as the Romans' use of locally quarried natural stone, are perhaps less useful than this broader message.

Calder also aims to lead by example, and to guilt

Below Drawings in the book give a sense of the relative scale of buildings - as they are also reproduced here. New Century Global Center, Chengdu is one of the biggest.



trip his readers. Although his narrative encompasses buildings all over the world (in Egypt, Mexico, Istanbul, Timbuktu and almost anywhere else), this is emphatically not a book designed to inspire any exploration which requires ‘the carbon burden of jet-fuelled travel’. Calder emphasises how he has ‘resisted the temptation to fly to many of the sites discussed’, and condemns in passing such flagrant examples of carbon squander as that ‘abhorrent innovation of recent years, outdoor hot tubs in sub-zero temperatures.’ Instead we are encouraged to stay put and ‘enjoy and understand’ the buildings around us afresh, by appreciating them as the product of their energy conditions. Less fun, more virtue.

It would be great to see a more accessible, shorter version of this book marketed to a much wider readership. Although Calder’s writing style is engaging, even gossipy at times, it is 450 pages long, with over 100 more of comprehensive footnotes and index. The illustrations are generally small black and white photos, and the drawings, although specially commissioned, really don’t improve the impact of the text. The conceit for the latter is that all the buildings are drawn to the same scale, so that the Lingotto factory on the outskirts of Turin (built 1916-23) and the New Century Global Center, Chengdu, China, are sliced up and run across the bottom of five concurrent pages, while a whole Georgian terrace is a minute splodge. A full colour populist synopsis with foldouts could make the comparisons of scale much more strongly, and infographics could reinforce some fantastically compelling statistics: for instance ‘a leaky UK house can use 30,000kWh of heating each year, the equivalent energy of 400,000 hours on manual labour’.

Would it also be over-optimistic to think that in a year or so’s time a new edition could include a wider range of inspirational new buildings? Calder is right to criticise the BREEAM assessment scheme, and the lack of weight given to the desirability of retaining the embodied energy in existing structures. Cork House, designed by Matthew Barnett Howland with Dido Milne and Oliver Wilton and with research conducted in collaboration with the Bartlett, the University of Bath and Arup (an attribution buried deep in footnotes) is a lonely example of a building that not only considers sustainability in its construction and day to day use, but also thinks ahead to ensure that its components can be reused at the end of its life. Calder notes that ‘the design team explicitly acknowledges that it is a one-off, not a scalable solution even for other houses, let alone office buildings, sports halls or factories’. We desperately need those scalable solutions, and this book will help to reinforce the crucial role of architecture in tackling the climate crisis. ●

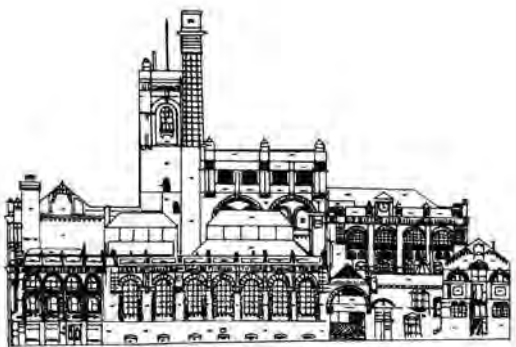
Catherine Croft is director of the Twentieth Century Society

Right Calder makes the most of staying put and understanding architecture with references from not only Egypt and Mexico but also those like Cains Brewery, in Liverpool, where he teaches.

Below Putting heating into the context of manual labour is sobering. A leaky UK house using 30,000kWh of heating each year uses equivalent energy of 400,000 hours of manual labour.



Architecture: From Prehistory to Climate Emergency by Barnabas Calder, Penguin Books, 2021, 576pp, hardback, £20



GINGERHEAD (2)

CLIMATE ACTION IS NOT A CHOICE: HISTORY PROVES THE IMPERATIVE

In this detailed and insightful volume, Barnabas Calder reopens the pages of our architectural heritage, and retells the story of our ancestors from the perspective of energy and climate. Many of the most notable human achievements – the Egyptian pyramids, the Chinese pagodas, the American skyscrapers and the English railways, are the functions of a stable climate and abundant supplies of energy.

The inverse is shown to be true, with energy-poor societies plundering the architectural energy stores of their ancestors. We learn that the term ‘Vandal’ comes from a tribe of the same name, who raided the collapsing Roman empire. We hear that the great Persian mosques used ‘spolia’ or stone stripped from their energy-wealthy predecessors.

Calder’s pragmatic yet unflinching analysis of our past also forces us to consider the environmental moral impacts of architectural expression.

How far should we follow the teachings of the Bauhaus, when we learn that the signature workshop block was so susceptible to cold that the spaces were abandoned and left empty?

How much can we applaud the beauty of Georgian architecture, when we learn that it was created by extracting the energy from enslaved global colonies, using foul and polluting coal powered machines?

This volume provides long awaited breadth and volume to our revetment-deep understanding of architectural history, and is no less than a harbinger of the appalling devastation and injustice that we are to suffer as a species if we do need heed the lessons of the past.

Just as empires have waxed and waned according to shifting global climates and resources, Calder reminds us that we too are we poised on the edge of a global catastrophe that threatens our very existence.

And so, if we are to survive the climate (and ecological) emergency, may we only hope that Calder has enough energy to document it.

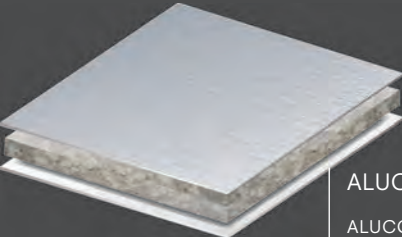
Nick Newman is a founding member of Studio Bark

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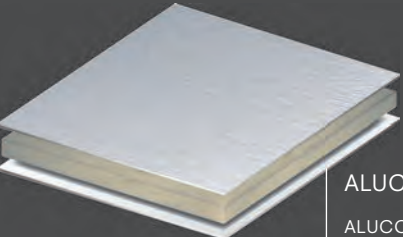
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RIBA rolls up its sleeves

Covid, climate change, Grenfell... a revitalised RIBA will be well placed to tackle today's issues, says new president Simon Allford

After a very strange year for all, I took up office as president last week. Aside from continuing at AHMM (for me an essential foil to being president), I have spent the last year touring the regions, national and global; meeting individual members; and engaging in discussions with Council, Board and RIBA staff. The upside of Covid is that I've not clocked up any carbon miles. The downside is that, although double-vaxed, I caught it; fingers crossed that's it for my two-year term!

Thankfully the world is creeping back to the 'new normal'. I have been able to attend in person (or should I say analogue?) meetings and there have been vital chance encounters. The future of work is no doubt hybrid, but I believe we can survive, but not thrive, in the virtual world of Teams and Zoom.

So what does all this mean for RIBA?

We can now build on the opportunities created by our new model constitution and governance. Collectively we have developed a biennial plan signed off by Council (strategic direction) and then Board (which will help the executive team make it happen). The RIBA is evolving, with the centre learning much from the nations and regions. What might our institute look like in two years and beyond?

The House of Architecture @RIBA will exist as an online facility, with lectures and the many other events that happen around the globe shared on a virtual platform. In the parallel real world, we will start the project to transform the magnificent but challenging 66 Portland Place into an accessible 21st century home, an exemplar of re-use. The virtual and physical worlds will have become one connected world. We will have become generous global hosts to exhibitions, debates, talks and architectural events, visited by members, collaborating professionals, clients, contractors, the public and government alike.

All of us will better understand the two key roles of the RIBA. One, focusing 'internally' on different models of practice, will help students and architects to develop the competence and confidence they need to excel. The other will focus 'externally', looking at and engaging with the bigger global context of the world in which we all work and learn.

The 'internal' focus will harness members' intelligence and share best practice. This is the

world of toolkits in employment, mentoring, career development, administration, PII, contracts and finance, with the institute helping architects build the confidence, competence and cashflow that will enable them to successfully take on the big challenges.

The external focus will be about engaging with the present, to help us creatively and collaboratively assist in redefining a better future. The RIBA will be a hub where members engage not just with each other but with the wider world. This will help to create a more accessible and collaborative profession – one which is able to thrive in a post- Grenfell, post-Covid, low-carbon future.

Then the RIBA will have become an 'Institute of Ideas', the home of the profession's creative thinkers, educators and doers (working at all scales). It will be an institute dedicated to furthering architecture's role in intelligently reinventing a better built environment. A generous and confident host that welcomes all; a place to learn and even have some fun!

Achieving all this will not be easy.

Covid has knocked the world sideways. Grenfell and the associated statutory changes will clarify our serious responsibilities. The carbon challenge is immediate and immense. By capturing and sharing best thinking, the RIBA can help us all to address these three challenges. And while doing this, we need to remove barriers and create more accessible pathways into what must rapidly become a much more representative, and therefore useful, profession.

Change generally happens when there is a disruptor – and there is more than one just now – and a financial context in which that change can take place. The sale of NBS is a once-in-a-generation opportunity, enabling the RIBA not just to re-think how it operates, but to put that re-think into effect. This should result in greater constructive engagement with our membership, potential members, those who care about architecture, the public and government.

We face great challenges. As your president, I will do all I can to assist our institute and its members face those challenges, overcoming them by dint of the knowledge and skills at our disposal, and by the collective commitment which is the hallmark of a vibrant profession. ●

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Meeting a poignant brief



Above 'Triple Zero' B10 Aktivhaus prototype for Stuttgart Institute of Sustainability, by Werner Sobek. Zero energy, zero emissions and zero waste.

As we approach the end of another year of the ever-popular Norbord SterlingOSB Zero/RIBA J competition, I'm delighted to say that the entries for 2021 have generated the most interesting discussions, due to the hot environmental topic, and so the most challenges in terms of shortlisting too!

As always, we thank all the participants for showing such support in these busy, complex times for all businesses – and people.

With the impending challenge to meet carbon targets and the ever-growing realisation that we need to change how we live our daily lives, this year's brief was never more poignant. How do we create a sustainable future for ourselves?

We received many brilliant entries and, as ever, the quality of each was of a very high standard. Happily for me and the other judges, the decision-making process was probably the most relaxed and fun of all of the years.

I'd like to thank all of the judges for giving up their spare time and for their vast knowledge of the thinking that goes into building a structure. A special thanks goes to Stephen Proctor who has been with us since the competition's inception.

Mostly I'd like to thank the individuals and practices that entered for taking time out of busy schedules, especially in this year when I know the demands on your work were higher. It's great that they all found the energy to enter a competition that we all have come to enjoy judging and hosting.

Thanks to everyone who entered and we hope to really 'see' you next year!
Stay safe.

David Connacher, marketing manager,
Norbord Europe



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Lattice x Live x Work
Jason Scoot / Scoot
Studio

Entries point the way to net zero architecture

In 2019, the RIBA launched the 2030 Climate Challenge, an exigent series of climate-conscious targets for achieving net zero.

Since the initiative's launch, the Covid-19 pandemic has demonstrated the devastating effect of an unsustainable relationship between humans and the environment and reiterated the urgent need for action.

Lockdowns and quarantines upended our home lives too, our houses forced to cater to functions they were not configured for. But where some see restrictions others see opportunities. In this year's SterlingOSB Zero competition, RIBA J challenged entrants to design a family home of no more than 200m² GIA that adheres to the RIBA's 2030 Climate Challenge principles. SterlingOSB Zero – a precision-engineered, structural grade OSB made with zero formaldehyde – must form the mainstay of the materials palette, and designs must consider its capabilities, limitations and intrinsic properties.

The home could accommodate either single or extended families in urban or rural contexts, but should – in the most creative way possible – attempt to meet the demands of the 2030 Climate Challenge, such as minimal operational energy use and water consumption, non-reliance on fossil fuels, limited waste, offset residual carbon emissions etc – an ambitious brief but one that prepares for a new version of reality set for the near future.

A morning's judging narrowed the entries down to eight, with the winner, Kevin Sulca's Ventanilla House – a modular solution to the unique challenges of living in Lima, Peru – only narrowly beating Rob Hilton of Hilton Barnfield Architects' Naturehaus to the top spot. Sulca's design was praised for its compactness, scalability, and polemical stance against the poor living

conditions of Ventanilla's inhabitants, given the district's humidity, precarious housing and lack of green space. David Connacher, marketing manager of Norbord Europe, praised the way that 'it fit the brief in terms of different generations comfortably living in the same house', while RIBA Journal deputy editor Jan-Carlos Kucharek described it as a 'simple but tangible, robust proposal'. In particular, its provision of housing to people across the social spectrum was commendable. 'Different levels of society could live in these houses,' applauded Kristofer Adelaide, architectural director of KA-A.

Close runner-up Naturehaus was universally described as 'beautiful' by the agonised judges. 'Naturehaus has a large footprint and we are trying to push compactness,' conceded Kucharek eventually, referring to the size of the plan. 'But this doesn't take away from the fact that it is a very strong concept and as a proposition it is really considered.' Recognising its inclusion of a huge range of sustainability measures, both in construction and operation, Adelaide aptly described Rob Hilton's proposal as 'a breath of fresh air'.

Entries had to try to meet the demands of the 2030 Climate Challenge, such as minimal operational energy use, non-reliance on fossil fuels and limited waste

The second commended entry, Jason Scoot's Lattice x Live x Work, was unusual among the entries as a retrofit, using a reconfigurable OSB grid to turn a derelict garage unit into off-grid urban flats. 'I was mesmerised by all the geometries,' said Stephen Proctor of Proctor & Matthews Architects. 'It is so complex, I feel I could get lost in it or retreat into it.' The design's commitment to avoiding demolition was praised, while Kucharek hailed its intricate mesh-like internal form as 'visionary'.

DarX's (Alper and Yegana Dilek) striking Self Sufficient Zero also made the commended list. The technology-driven 'build your own' concept consists of stackable net zero carbon modular living units. It was praised for its integration of technology, including a drone network (as Bethan Watson of Caroe Architecture put it: this one certainly 'had something a bit extra' to offer), for the consideration given to the spaces in between buildings, for contributing to an amenable wider neighbourhood and for its stunning visuals.

Making the longlist were Peter Dagger's Mitre House, comprising OSB units framing a central courtyard; Davide Roth's Raincatcher, a part-3D-printed house of uniquely curved form; the Matchbox Townhouse by Hon Yen Chong and Chen-Yong Tan, a terrace of OSB pods sharing an energy core; and Off Grid 2030 by Angus Eitel, Isabella Hicks, Josh Smith and Olivia Laughlin, a home that exploits fully the benefits of standardisation, using tessellating OSB modules.

The competition's intent was to explore the future shape of the family home in our changing climate, reimagining spaces for new patterns of living, while placing crucial emphasis on sustainability targets. Each of the winning entries demonstrated this with aplomb. ●

Judges



Kristofer Robert Adelaide.
Architectural director, KA-A Architects.



David Connacher.
Marketing manager, Norbord Europe Ltd.



Stephen Proctor.
Director, Proctor & Matthews Architects.



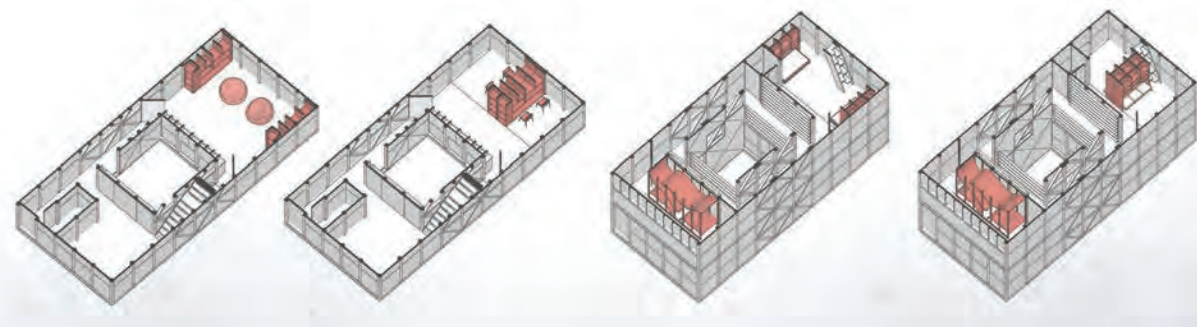
Bethan Watson.
Architect, Caroe Architecture. 2020 Norbord 'Second Skin' winner.



Jan-Carlos Kucharek.
Acting deputy editor, RIBA Journal. Chair.

Winner (£2,500) Ventanilla House

Kevin Sulca



Kevin Sulca's Ventanilla House – a multigenerational home responding to the unique climactic conditions and context constraints of Lima, Peru – emerged as winner in the face of stiff competition. In a sensitive and well-researched way, this proposal addressed issues affecting Lima's Ventanilla district (the area with the least green space in the city and where the precariousness of housing made for uncomfortable conditions during the pandemic), standing out as a simple but original and tangible response to the brief.

The proposal is a 6m x 13.5m OSB family home with central patio, divided by two staggered blocks: rear for family, front for visitors. In between is a hydroponic garden for growing vegetables for family consumption 'in order to reduce crowds in the markets ... building agricultural spaces at home is an effective way to reduce the ecological footprint of food production,' states Sulca.

Horizontally sliding library-style OSB shelves on wheels and rails offer flexible uses on each floor: separated they create a workspace, joined they form a table. This mobile shelving unit was praised for its ingenuity. 'Using furniture as wall, that's a great idea, you can move it but it still has purpose,' said Kristofer Adelaide.

Pertinently, the design incorporates a disinfection room accessed prior to entering the main house. Likewise there is an exclusive visitor area, to create a safely socially-distanced space away from the family. The house is also laid out with the intention of encouraging circulation and mobility, countering a sedentary lifestyle. As such, it deals with space in a novel and interesting way.

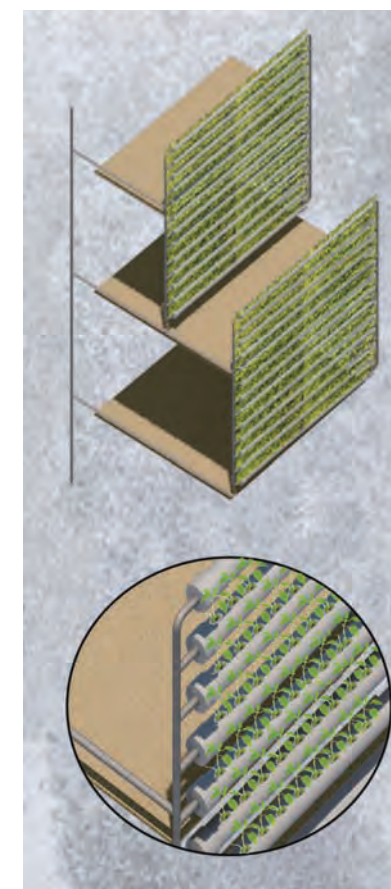
The entry was convincing, unusual in context, visually strong, political, cognisant of climatic conditions and an all-round robust response to the brief. 'It's not derivative in any way,' commented Stephen Proctor. 'It comes out of an exploration of a different way of living.'

Building agricultural spaces
at home is an effective way to
reduce the ecological footprint



Main image The central courtyard with hydroponic garden both cools the home and provides sustenance.
Axonometric Family and live/work or entertaining spaces are separated by the courtyard.

Top The model home makes a liveable suburb from one of the least green and challenging areas in Lima.
Above The home accommodates relaxation while encouraging movement between its spaces.
Right Hydroponics cool the interior space as well as generating food for the domestic unit.



Commended Naturehaus

Rob Hilton/Hilton Barnfield Architects



‘Innovation doesn’t have to be complex,’ states Rob Hilton, and indeed every aspect of Naturehaus is carefully considered to offer a simple and sustainable alternative within a traditional design.

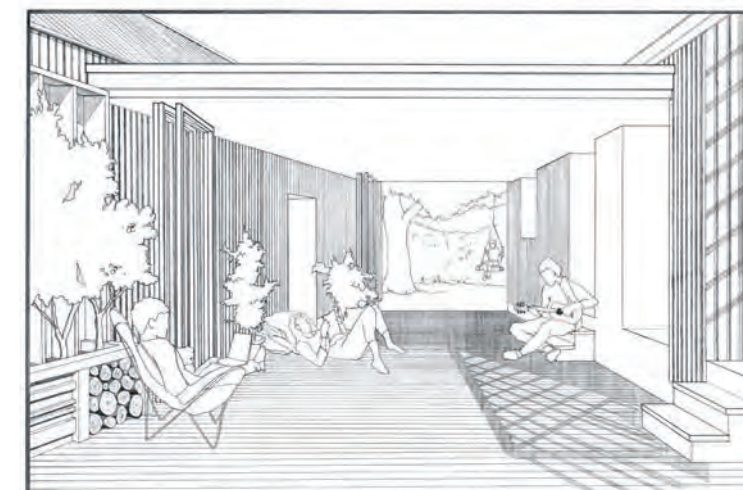
‘It tells you a story: from plan to visuals, everything links to how the house works,’ said Kristofer Adelaide. ‘It is easy to buy into what they are talking about.’

Constructed from standard-size OSB panels, the house is designed to be recycled at the end of its life. It includes compostable toilets, on-site renewables, rainwater harvesting, habitat creation, wildlife corridors and even the use of ground screws rather than conventional concrete foundations to minimise disruption to wildlife. With such details, the designers estimate that their proposals would lead to a 90 per cent reduction in embodied carbon compared to conventional construction.

All the judges described the presentation, drawings and models as ‘engaging, beautiful and well considered’. The deciding factor in not naming it overall winner eventually came down to size of the plan. ‘It has a large footprint and we are trying to push compactness,’ commented Jan-Carlos Kucharek. ‘But this doesn’t take away from the fact that it is a very strong concept and as a proposition it looks really considered.’



- 1 Sleeping
- 2 Living
- 3 Working
- 4 Bicycle transport
- 5 Kitchen garden
- 6 Orchard



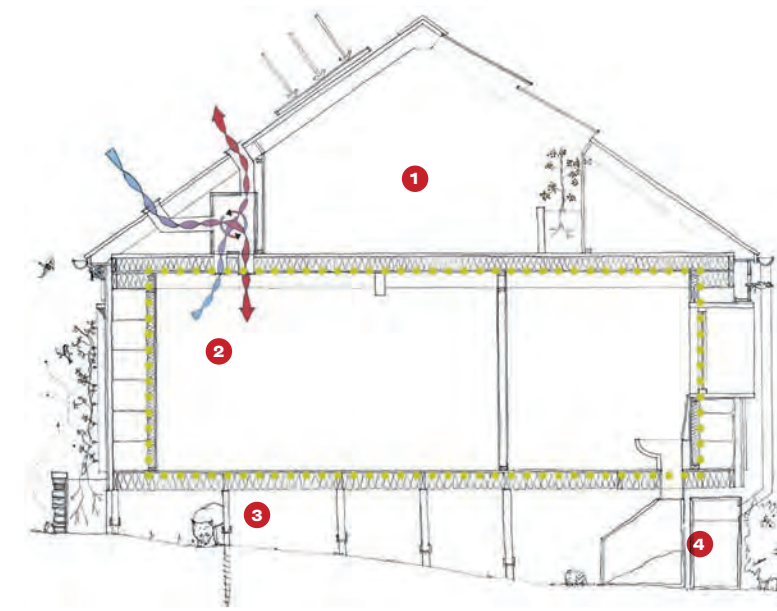
Top left Work/live/sleep units, separated by terraces, nestle into the landscape.

Above The scheme conveys a sense of low-density, low-impact luxury.

Top right The timber units are large and offer views to the landscape.

Above right Exterior spaces provide sheltered space for relaxing and/or working.

- 1 Winter garden for food production insulates the main living area
- 2 A highly insulated building envelope minimises heat loss and demand
- 3 Ground screws raise the buildings up and create wildlife corridors beneath
- 4 Composting toilets minimise water use and turn waste to compost



Use of ground screws rather than conventional concrete foundations minimises disruption to wildlife

Commended Lattice x Live x Work

Jason Scoot / Scoot Studio

Jason Scoot's Lattice x Live x Work was unique among the entries for proposing a radical retrofit of an existing building typology. The design enables occupants to live off-grid within a community setting, using an OSB lattice configuration to reconfigure the internal spaces. 'I really liked this one as a response to an existing site,' said Bethan Watson. 'I like that it is reconfigurable inside.'

The design converts a row of disused 1960s garages into a six-bay house type, removing internal walls and replacing them with OSB while also using OSB to extend above, raising the roofline. All walls are internally insulated and clad with OSB, using OSB glulam 'I' joists as structure. Ground-source heat pumps, greywater reuse and photovoltaic panels all contribute to the communal alternative power, water and heating solutions.

The intention was to create a 'living mesh' that can expand and contract to specific uses, respond to occupants' needs and, most of all, create an off-grid alternative that promotes social change through sharing resources, responsibility and awareness. 'There's a visionary aspect to this entry,' said Jan-Carlos Kucharek. 'It's a response to dense urban living and we have to get used to living in denser ways.'



Main image In this new extreme retrofit, the development's community garden is a key component.

Above clockwise from left

External view of the proposed site; wilded existing landscape; proposed site garage undercroft.

Left Method of construction and internal use of Sterling OSB Zero board.

Right Diagram denoting the internal arrangement of Sterling OSB Zero panels.



Commended Self-Sufficient Zero

DarX/ Alper and Yegana Dilek



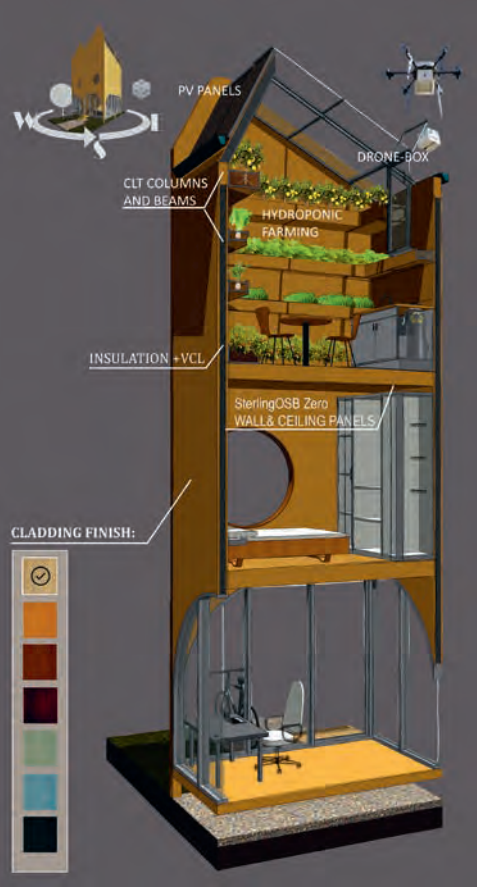
Interesting because of the way it embraces technology, Alper and Yegana Dilek's concept enables homeowners to build up their own property by stacking pre-designed, standard-sized OSB units on top of one another.

Ground-floor units are designed to activate the street, with consideration given to how the spaces between multiple such buildings would also work.

Covid-19, the designers argue, brought home the importance of self-sufficiency and the digitisation of delivery for goods and manufacturing. The proposal allows residents to shape their units – in an urban or rural context – using an online process

to select plots in a self-design project and completing them with furniture selection. Rooflights function as a delivery intake for a drone network while photovoltaic panels provide off-site energy. Other features include farming facilities such as hydroponics and greenhouses.

'In a city context, these stackable components work well,' observed David Connacher while Kristofer Adelaide commended the aspiration to building a self-empowered community, saying: 'I feel I could walk through this neighbourhood.' Stephen Proctor noted a resemblance to the medieval tower houses of San Gimignano, Italy – fine praise indeed.



Top DarX's was one of the few proposals that considered interventions on an urban scale.

Above left Units are combined to produce a nascent sense of a public realm.

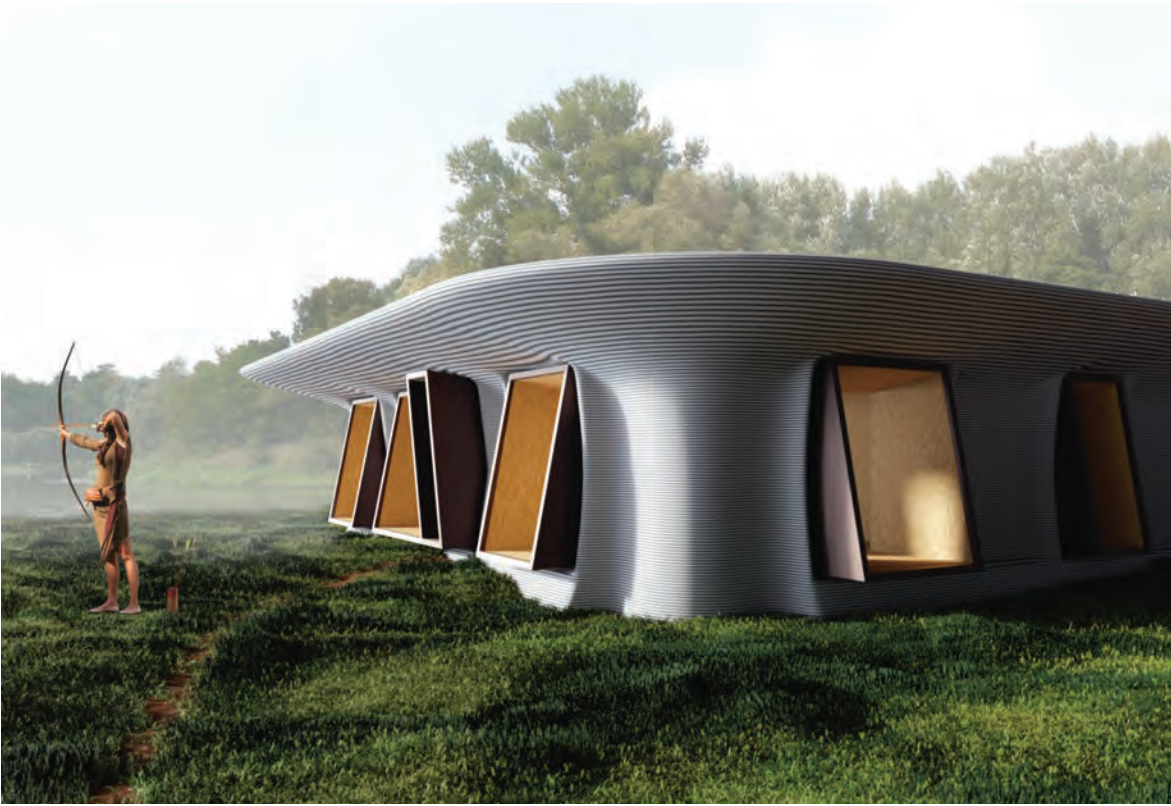
Above The unit as another iteration of 'live/work/grow'.

Longlisted

The Rain Catcher – Davide Roth

This self-sufficient detached house uses site-sourced materials (such as clay-based earth) alongside preformed OSB structural components and 3D printing for construction efficiency. Two fixed cores contain essential services around which seven flexible rooms can be assigned and closed off according to co-living/working requirements. The judges praised the independent booths for working or studying. Recycled plastic roof tiles and natural fibre insulation, rainwater harvesting and photovoltaic panels contribute to its sustainability. The judges were all taken by the striking curved form. ‘It’s an interesting shape and an interesting use of the material,’ commented David Connacher. Stephen Proctor agreed, saying: ‘I like that it starts from first principles ... the plan is clever.’

Right With fixed elevations, two cores and water storage tanks beneath the floor, all internal partitions could be reconfigured to create rooms according to changing needs.



The Matchbox Townhouse – Hon Yen Chong and Chen-Yong Tan

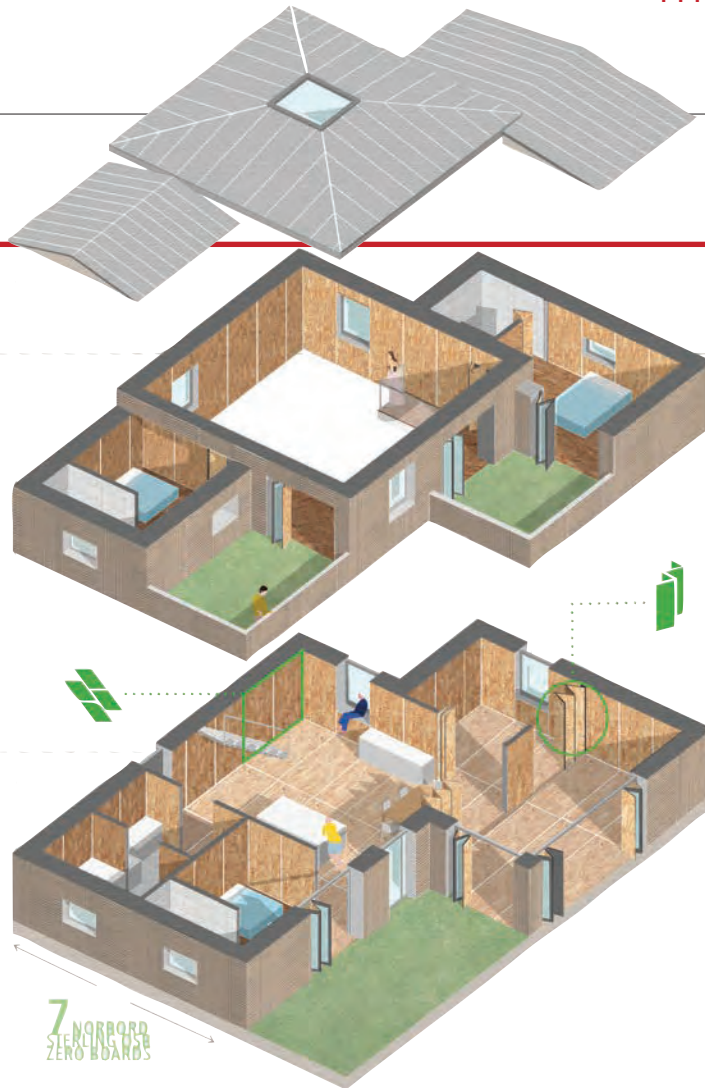
The Matchbox Townhouse explores how changing household sizes can be supported by flexible spaces within a contemporary home. In a scheme of two-bedroom homes with a retractable third room OSB pod, the designers aim to establish a sustainable and long-lasting community whereby families can settle, avoiding relocation to up or down-size. An energy core, fuelled by a photovoltaic roof and rainwater-harvesting system is shared between four households for even distribution. A shared filtration system recycles greywater for non-potable use. The judges commended the inclusion of gardens in a town setting and the spatial efficiency as well as the presentation as a whole. ‘I thought the graphics were really lovely,’ said Bethan Watson. ‘I could live there; it has an appeal,’ added David Connacher.

Left A two-bed home with retractable third room pod proves a novel way of creating additional family space when required.

Off Grid 2030 – Angus Eitel, Isabella Hicks, Josh Smith and Olivia Laughlin

Off Grid 2030 is a model home intended to be implemented on any site by any client. A core central space is surrounded by standard-size OSB modules to reduce material waste, promote simplicity and guarantee the modules will tessellate. Low-embodied-carbon materials and considered fittings (such as low-flow taps and dual-flush toilets) contribute to the sustainability features. The thermal modelling tool, designPH, informed the heating strategy. The core module has a double-height space with a large central skylight promoting wellbeing through natural daylighting. Large OSB doors between rooms provide the opportunity to open up spaces into an inclusive family living area. A roof terrace promotes healthy and inclusive living, in particular on smaller sites with limited space. The integration of outdoors space as a core element of the design was praised for its generosity. In terms of its commitment to efficient use of OSB, Bethan Watson said: ‘I thought they took the opportunity of a sheet material and used it sensibly. The details are believable, the customisation is good.’

Right Adhering to Passivhaus standards, heat loss was minimised by optimising the surface area to volume and allowing the building to be modified according to site orientation.



Above ‘A nuance of function’. Versatile prefabricated spaces may be switched at different times of the year or adapted to suit differing housing needs. Layering of sliding shutters with large format facade glazing assists with shading.

Mitre House – Peter Dagger

Intriguingly described as ‘somewhere between a conventional Roman villa courtyard typology and a mobile home’, Mitre House comprises four prefabricated OSB units framing a central 120m² courtyard. The units are oriented according to prevailing wind conditions to maximise natural ventilation and cooling, and can be stacked or tessellated alternatively, according to need. An inset pond cools the microclimate while deciduous fruit trees offer shading and food. Photovoltaic arrays and small-scale turbines provide off-grid stores. A ‘blue roof’ irrigates polytunnel and moveable planter-bed-grown crops. Despite the impracticality of disconnected rooms (wet weather risk) the judges praised the home’s aesthetics (‘It looks like a spa, I’d like to go there for the weekend,’ said Kristofer Adelaide) and the proposal’s commitment to a self-sufficient lifestyle.



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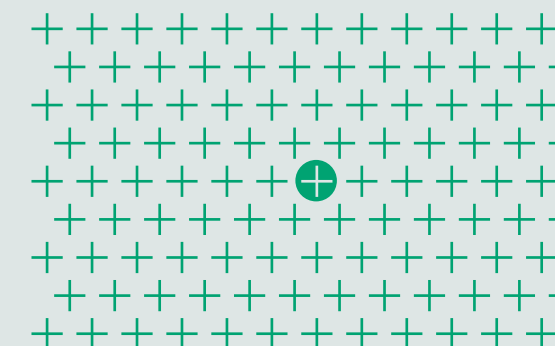
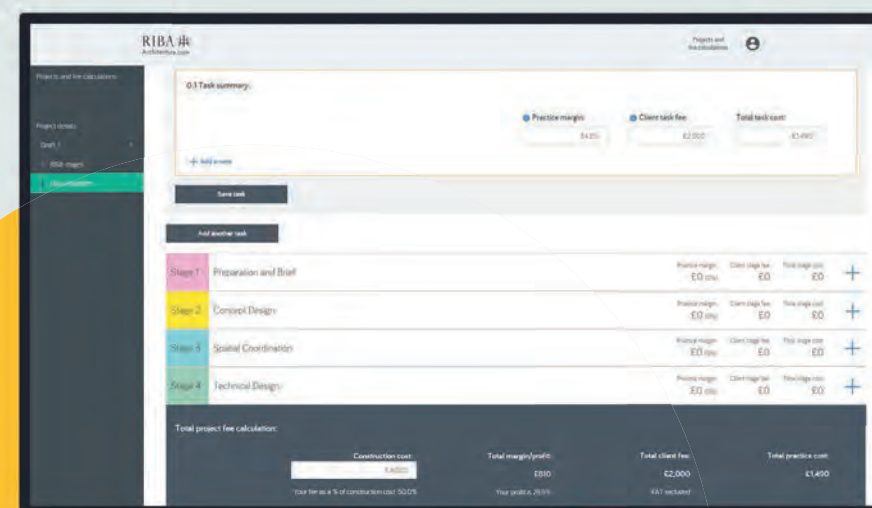
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Eric Parry and Lee Higson of Eric Parry Architects on material innovation, avoiding wallpaper and why Parry gets sore knuckles when he visits site. And the glamorous side of toilet specifications.

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Obituary

Director of Ron Arad Architects who delivered a wide range of schemes, ran a workshop-of-wonders in the office and was himself an exhibited photographer



Asa Bruno 1971 – 2021

There are few people in the profession of architecture who can effortlessly manage the complexities and vicissitudes of creating and delivering ground-breaking schemes as diverse in programme, scale and intent as one of the tallest buildings in Israel, a world-renowned design museum, a cancer hospital, a mall, and the UK's newly-consented National Holocaust Memorial, to name but a few. Asa Bruno – who has died aged 49 – was such a person.

This varied output was achieved not with the vast machinery of a starchitecture practice, but rather as director of the small team at Ron Arad Architects, and in a long and close relationship with Ron himself. Born in Jerusalem, Asa moved to London in 1993 to study at the Architectural Association, graduating in 1998 and joining Ron's famously multi-disciplinary design studio as a young architect in 2000. He quickly became an indispensable team member, and by 2007 was director of the studio's architecture arm.

As more architectural work came in, Asa was uniquely able to take Ron's visions and sketches and – in a constant dialogue with him – turn them into fully worked-out buildings. Whenever Ron began sketching a new scheme, his primary concern was 'not the client, not the authorities, not the consultants, but Asa. He was very fast to grab the idea, go to his desk, and in a very short time there would be a project.'

A notable example of this mutually reinforcing creative dynamic is found in the ToHA office towers in Tel Aviv. Tower one is LEED Platinum-rated and won best tall office building at the 2021 Council on Tall Buildings and Urban Habitat Awards; the forthcoming second tower will rise to 80 storeys. When pitching for the project, Ron produced a series of concept sketches that were 'almost designed to scare the client, but because of Asa's processing and

understanding, the client not only wasn't scared but didn't consider proposals by anyone else.'

Asa also inspired confidence in the office. As a leader, he established a culture in direct counterpoint to the toxic expectations and presenteeism endemic in many UK practices. The studio in Camden, north London, often had an atmosphere more akin to a gathering of friends than a conventional practice delivering major schemes. In consequence, staff turnover has always been very low and the team is unusually close-knit.

Asa was committed to ensuring a healthy work-life balance for everyone involved – something I experienced myself when I worked there some years ago. Almost all my colleagues were entrepreneurs outside the office in some way, or had families, and the need to make time for a rich life beyond work was heartily encouraged. Julian Gilhespie, a senior associate, recalls leaving the office with Asa every day at 6pm on the dot, 'like a Swiss clock'. He and Asa – who was very tall and broad – would squeeze into a tiny car like the odd couple, laughing and joshing as they tootled off.

Asa's own interests always extended far beyond architecture: outside work he was a successful, exhibited photographer, an accomplished mountaineer, an avid reader, and someone who ate his way through the culinary specialties of many nations. Most importantly, he was a loving husband to Tamara Bloch, whom he married in 2001, and father to their two sons, Benjamin and Emmanuel. His broadness as a human being was driven by an insatiable curiosity about the world. Combined with an heroic gentleness and concern for those around him, that created a never-to-be-repeated magic workshop-of-wonders in the office he was so integral to running. ●

Adam Nathaniel Furman

IN MEMORIAM

Henry Walter Harrison
ELECTED 1959, ST ALBANS

Hazel Denise Allen
ELECTED 1962, LEEDS

Stephen Barrington Orrin
ELECTED 1988, TUNBRIDGE WELLS

Mark Sebastian Granger
ELECTED 2000, QUEENSLAND

Stanley Frederick Amis
ELECTED 1950, CORNWALL

To inform the RIBA of the death of a member, please email membership.services@riba.org with details of next of kin

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Wednesday 10 November: Joining Forces
Sessions on Practice and Academia Collaboration, Accessing New Sectors, and Empowering Practices to Punch-Up.

Thursday 11 November: Making Friends
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Culture Stirling Prize

Why does the Stirling Prize matter?

After 25 years of the RIBA's top prize, what has it done for us? Tony Chapman has an emphatic answer

We knew the RIBA Stirling Prize was really working when prime minister Tony Blair said in 2000 during the first televised Stirling: 'There was a time when people thought that all modern architecture was rubbish and basically the only building that was good was the one you saw in history books. Now, we should be really proud of our heritage – it's fantastic – but what's happening now is that we're getting great new buildings.' The RIBA had invited him to present the fifth edition of the prize and he'd agreed, but something of greater importance came up. So he sent a video instead in which he continued: 'I think there's a whole different type of agenda around architecture and design in public policy terms that would have been considered eccentric five or six years ago.'

In those five years public attitudes to modern architecture had indeed changed. We had emerged from the Carolingian Dark Ages in which architecture dared not speak its name and only princes were entitled to opine on the subject. TV had been an important part of that change. We'd gone from Changing Rooms to Grand Designs. Architecture was being taken seriously and the Stirling Prize, Grand Designs and Cool Britannia formed a powerful triumvirate in effecting that. But in this climate architecture itself was changing too. No longer did buildings have to be diffident; the



Above Future Systems' Lord's Media Centre.

question was no longer whether Prince Charles would like it but whether it would work, would stimulate people, would improve their lives. The Stirling Prize didn't make that change on its own but it did endorse it, and it set ever higher standards for architects and their clients.

There was a strong sign we'd begun to get it right in 1999, when the judges dared give the prize to Future Systems' Lord's Media Centre and not the River and Rowing Museum (David Chipperfield's turn would come). And now Peckham Library – 'f*ck the past', Will Alsop was in fact bellowing at the cameras as he accepted the prize. This was modernism without the capital M. The prize was embracing the future, not the past.

Awards such as the Stirling Prize are about getting people to love architecture, that's half their point at least. And they make us care about the way things look and the way they're made. They make the world a better place – that's what Stirling has done for us. ● Tony Chapman was RIBA head of awards, 1996-2016



Left Peckham Library, designed by Alsop & Störmer.

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34 Gallery
London, 1934

In 1934, art dealer Sydney Burney set out to create an exhibition with a difference – all the works of art were in miniature. Burney commissioned architect Marshall Sissons to create a doll’s house-sized gallery to contain tiny but perfectly formed artworks by 34 of the best modern British artists including Ben Nicholson, Barbara Hepworth, Henry Moore, Vanessa Bell and Paul Nash.

The model was displayed as part of an exhibition called ‘Children Through the Ages’ in aid of the Greater London Fund for the Blind. It was described

in the catalogue by the art historian and critic R H Wilenski as ‘an artistic tour de force, a fascinating peep show, and a page of history all in one. It really is a microcosm of modern aspects of English painting and sculpture in 1934’.

The 34 Gallery disappeared after the exhibition but 11 of the original artworks were discovered in a suitcase by Burney’s grandson. In 1997 these were given to Pallant House Gallery in Chichester where they are now on display in a replica miniature. ● Justine Sambrook

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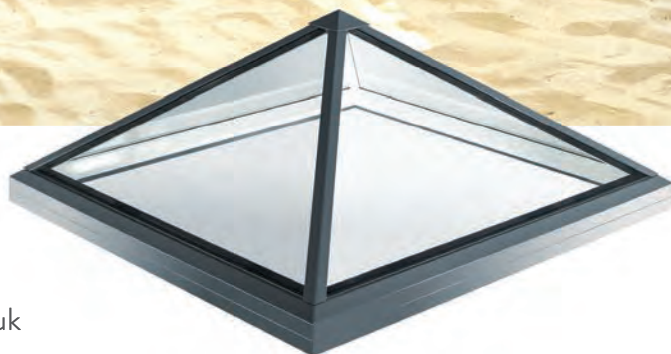


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