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2 Intelligence

After Grenfell

3 Culture

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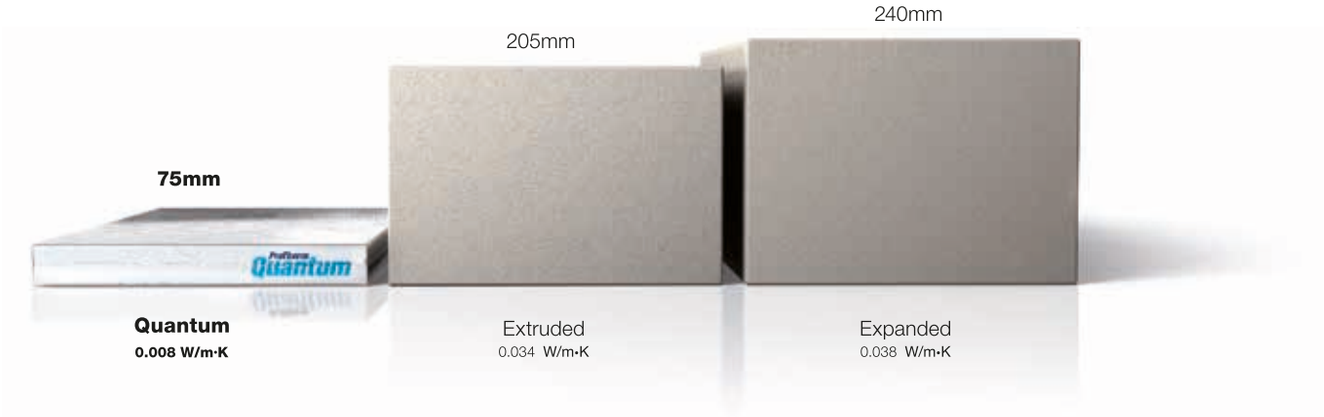

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1: Buildings

'A place for everything.' The ironing board may be posed in this photograph of artist Juergen Teller's Stirling shortlisted studio by 6a but it shows the disruptive power of objects out of place. Knowing where things belong is an unsung architectural skill that relies on observation and judgement as much as professional training – and balances on a knife edge between the invisible norm and something rather more unexpected. Architects interested in the interesting could take a lesson from artists on convincingly placing things where they don't belong. ●

ONLY ON RIBAJ.COM
From Egyptian mummy boxes to digital construction, plywood has been on quite a journey
Pamela Buxton at the V&A: ribaj.com/plywood

Below 6a architects' studio and other Stirling shortlisters, page 8

JOHAN DEHLIN

Material riches

Below Barrett's Grove in east London by Groupwork + Amin Taha.

This year's Stirling boasts three newcomers amid the well known names

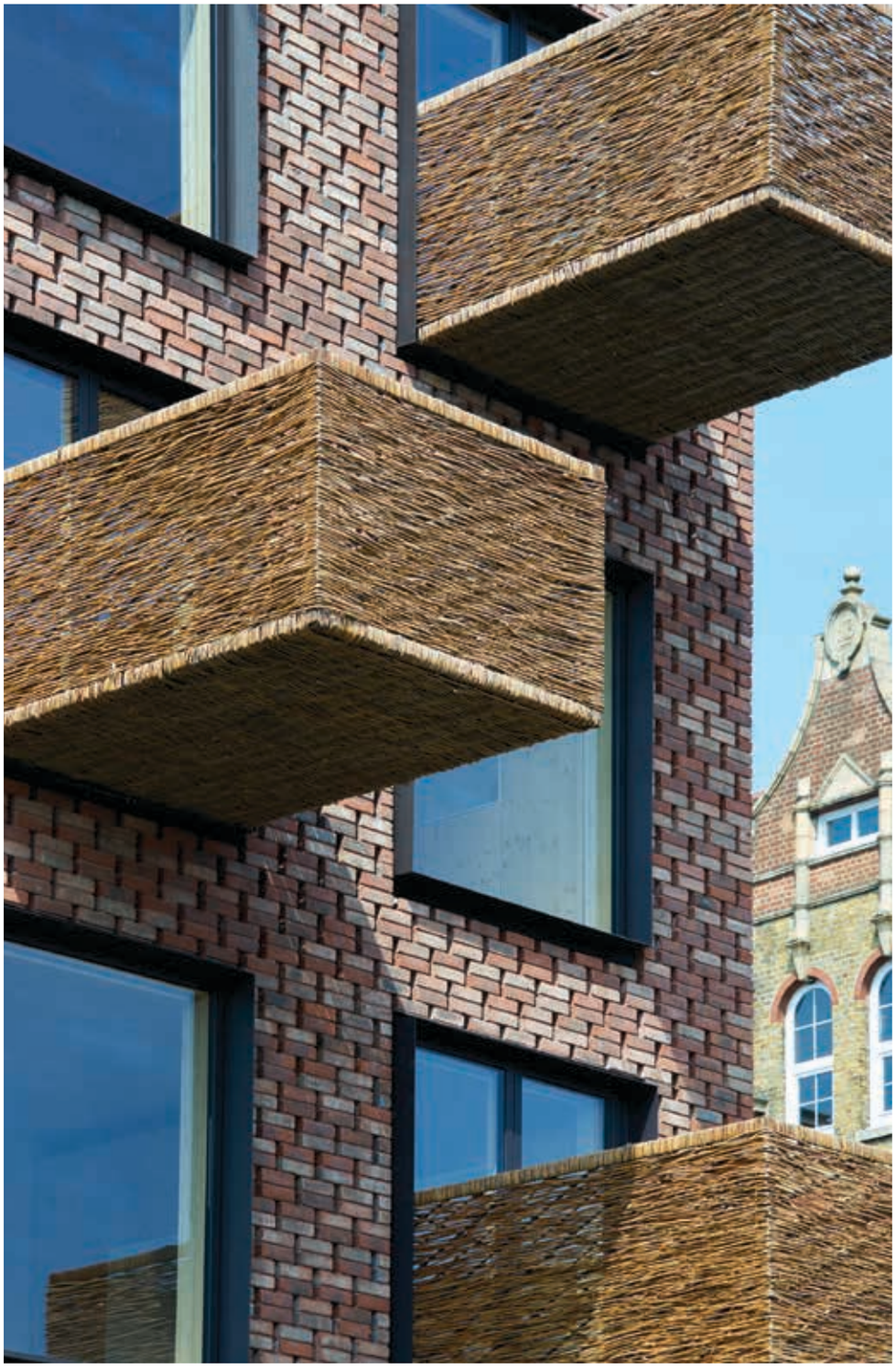
Words: Hugh Pearman

Wickerwork. I'm pretty sure that's the first time that building material has appeared on the Stirling shortlist but there it is, used externally on the balconies and front garden fences of the Barrett's Grove six-apartment block in east London by Groupwork + Amin Taha. Materiality is strongly in evidence throughout the shortlist of half a dozen buildings in fact, whether it's the timber-patterned playfulness of dRMM's Hastings Pier, the painted weatherboarding and black zinc of 'Command of the Oceans' at Chatham Historic Dockyard in Kent by Baynes and Mitchell Architects, or the sumptuous raw concrete of the Juergen Teller photography studio in west London by 6a architects.

The World Conservation and Exhibitions Centre at the British Museum by Rogers Stirk Harbour + Partners disguises its bulk through massing (broken down into five pavilions, with much of it sunk into the ground) and makes good use of fossil-rich Portland stone and kiln-fired semi-obscured glass cladding. The City of Glasgow College City Campus, an enormous white building by Reiach & Hall and Michael Laird Architects, at first gives an impression of icy restraint, works by contrasting the characteristic stone and brick of its city with warmer interiors making much use of timber.

So much for materials: what do the building types tell us about what's going on in UK architecture at the moment? Half of them (British Museum, Hastings Pier, Chatham Dockyard) are places you'd go for a day out, with such visitor destinations still a growth area. As ever, it's perhaps more about what isn't on the list: schools, social housing, civic buildings (though there were some fine examples of the latter in the national awards which form the longlist for the Stirling Prize).

Those looking for factories and laboratories will find them, perhaps unexpectedly, at the British Museum: that project is as much about industrial processes and distribution as it is about public exhibitions. Industry and education are equally to be found in the mega-campus of the City of Glasgow



TIM SOAR

JAMES ROBERTSHAW

KEITH HUNTER

Left Hastings Pier by dRMM.

Below Photography Studio in west London by 6a architects.

Below left City of Glasgow College by Reiach & Hall and Michael Laird Architects.

JOHAN DEHLIN

College. Both of these have considerable civic presence as of course does dRMM's Hastings Pier, the result of a great deal of community engagement.

There are well-established names who are no strangers to the Stirling shortlist including one firm – Rogers Stirk Harbour – that has twice previously won the prize. But it is also encouraging to see three names new to this stratospheric realm – 6a architects, Baynes and Mitchell, and Groupwork + Amin Taha.

Stylistically? Once again the shortlist demonstrates the plurality of aesthetic approaches now being applied, from the bolt together offsite techniques of what used to be called high-tech to the painstaking pleasures of handicraft. The responses to context shown here also vary greatly but one thing comes through strongly: contextualism does not have to mean more or less careful copying of what's there already, though there's a place for that: rather, as shown here, it can be an extrapolation from existing forms and proportions. You could characterise some of these shortlisted buildings as 'progressive vernacular'.

Outgoing RIBA President Jane Duncan makes the point that these buildings were commissioned at a time of great economic uncertainty, make every penny count and are all transformative in their localities. As for me, I'm wondering if this could be a year when more playful, domestic-scaled architecture is preferred over demandingly complex city-scale projects. But at the time of writing (early July, with the Stirling Prize not announced until October 31 – be there!) even the judges themselves won't know that yet. ●

Could this be the year when more playful, domestic scale architecture is preferred over complex city-scale projects?

PAUL RAFTERY

Right The British Museum by Rogers Stirk Harbour + Partners.

Below Command of the Oceans, Chatham by Baynes and Mitchell.

HÉLÈNE BINET

Frozen wave, calm sea: flood defence structure, Burnham-on-sea, Somerset
Photograph Quintin Lake
Words Jan-Carlos Kucharek

No mention of cameras, photographer Quintin Lake talks of his hiking gear: a Zpacks rucksack of Cuben fibre fabric – strand for strand stronger than steel – with its 'Arc' frame tailored to fit. And a Terra Nova tent: the double lining's crucial for the driving rain and gales encountered when you spend a week a month walking the UK coastline. Lake's almost halfway into his 10,000km journey, started and set to finish at St Paul's Cathedral; one always conducted alone, in a clockwise direction. He might meet nobody for days but keeps moving towards his 2020 goal; just thinking, observing and recording. He walks at night too, with a head lamp, and has seen the moon reflected perfectly in the sea's breezeless doldrums; or, as the waves foam white and black, watched its mirrored craters smashed on the rocks. The effort, he feels, is a form of meditation on his place in this isle, this culture; a prayer wheel of one giant revolution. ●

Follow Quintin's journey at www.theperimeter.uk

Second flowering

In its second intervention in the Garden Museum, Dow Jones Architects has delivered a small haven from urban London

Words: Eleanor Young Photographs: David Grandorge

IN NUMBERS

£4.5m
Total contract cost

820m²
Area (inside the church)

520m²
Area (new build)

1,340m²
Area total

£3,360/m²
GIFA cost

A tight church site in central London is not perhaps where you would expect to find the Garden Museum. But here it is in the deconsecrated St Mary-at-Lambeth, alongside the traffic spilling off Lambeth Bridge, at the far end of the ever extending parade of the South Bank. The pillows of soft Kentish ragstone that were used to rebuild the church in Victorian times unremarkably anchor the rash of towers along the banks of the River Thames.

Dow Jones Architects started work on the Garden Museum in 2007. Won in competition, it was its breakthrough project, working with museum director Christopher Woodward who had previously commissioned Eric Parry's fine extension of the Holburne Museum in Bath. At this stage Dow Jones designed a temporary exhibition gallery and a space for the permanent collection above, inside a CLT structure at the back of the nave. The centre was occupied by an event space, shop and often children on a school visit or people sheltering from the rain, so could be noisy.

As a cheap and cheerful solution the first phase was a revelation. Even so, the museum still seemed small, hemmed in by its historic

Right Seen from across the nave with the walkway and exhibition space running most of the length of the transept.

Below Pavilions, plants and tombs push up in and around the new cloister.


Fire exit

The museum director wanted the design to reflect that 'gardening is a happy subject'

churchyard as well as its many activities. But it had ambitions. In 2013 Dow Jones won a competition for phase two with landscape designer Dan Pearson. In the intervening years the practice had designed a lecture theatre for the Science Museum and the crypt at Christ Church Spitalfields. Here it wanted to create a haven from the city, set apart from passing buses and the heat of the pavement.

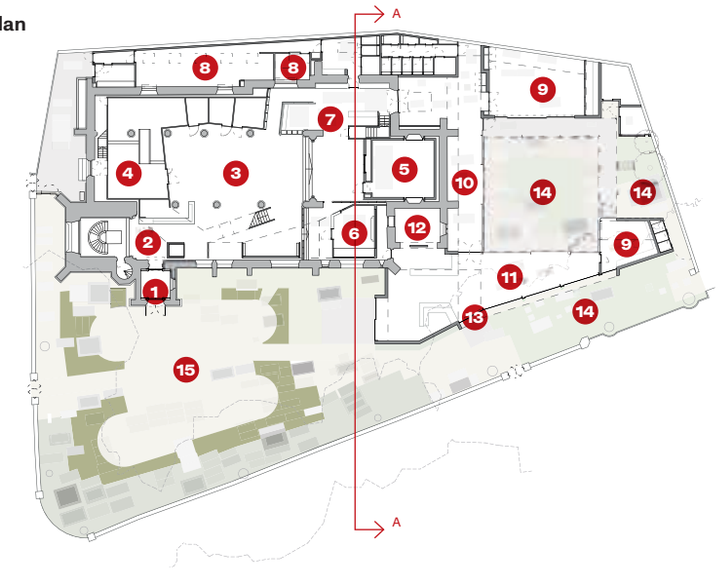
Director Woodward wanted visitors to feel refreshed and happy; the museum should reflect that 'gardening is a happy subject'.

The event space in the central volume of the nave has been protected so it can host talks, weddings and launches. Extra galleries – including the 'ark' of treasures from plant collector John Tradescant – and an archive room are built around the edges, in the chancel at the front of the church and Pelham Chapel to the side. They are linked to the earlier galleries at the back of the church by a first floor walkway that frames the entrance, resetting the axis of the church and directing your eye to the glimmer of garden light at the far corner.

Section

1 Main entrance
2 Reception
3 Nave events space
4 Temporary exhibition gallery
5 Ark
6 Archive study room
7 Shop
8 Office
9 Education/ learning room
10 Orangery
11 Cafe
12 Kitchen
13 Cafe entrance
14 Dan Pearson garden
15 Christopher Bradley-Hole garden

Plan



Facing towards the museum entrance and the River Thames, this café space is less protected from the busy city but still quiet.

Through this single new entrance is the extension: small bronze-lapped pavilions pushing up out of a perfect little planted courtyard, a delicate cloister around it drawing together education rooms and café. Rooflights allow sunlight to wash the historic garden wall of Lambeth Palace. A rather scrappy churchyard has been miraculously translated into the spiritual and gardening locus of the museum, emphasised by a cathedral of plane trees.

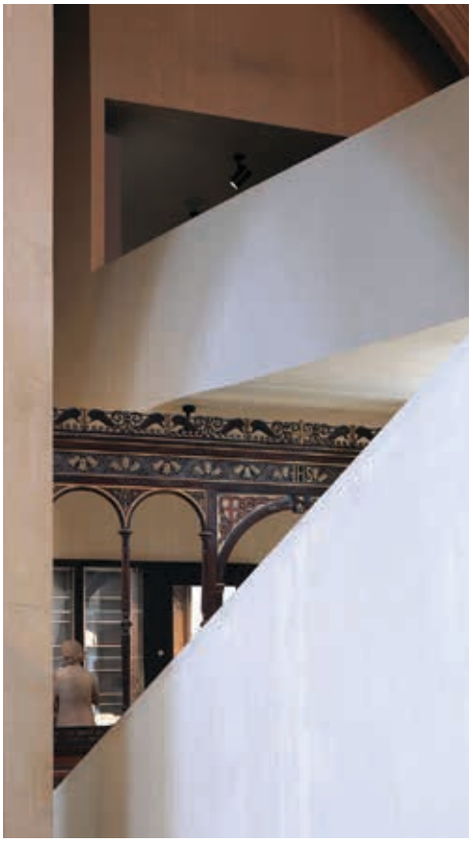
Of course there were no miracles. A constraints diagram showed the challenge of keeping sight lines to the 1850 Blore Building, home of the archbishops of Canterbury, from Lambeth High Street, and of manoeuvring around the grade II* listed tombs of Tradescant and Captain Bligh and nine tree protection orders. Dow Jones' Alun Jones also explains how the practice wanted to create an urban edge (which works) and not compete

Credits
Client Garden Museum
Architect Dow Jones Architects
Project manager G&T
MEP engineer OR Consulting
Structural engineer Momentum
Landscape design (cloister) Dan Pearson
Landscape design (front garden) Christopher Bradley-Hole
Heritage Neil Burton
Main contractor Rooff
Bronze Aurubis
CLT and exterior timber frame Kingspan
Polished concrete Steysons Granolithic
Joinery Icklesham Joinery

Right Dow Jones has designed the CLT forms to frame and work around the listed church.

Left The central volume of the nave has been protected as an events space, simplified by a polished concrete floor.

Below From inside the café appears as a slice into the Dan Pearson gardens.



with the museum entrance at the church's west door (harder, because the extension has a welcoming openness impossible to rival in a grade II* church). This drove the form. In section the constraints are even more punishing. With 36,000 bodies buried on the site everything had to be done in the first metre of ground – exactly where the protected tree roots run through the site. So a lightweight timber structure on a very thin raft was used. 'It is amazing we fitted anything in,' says Jones. 'That's what I am most proud of.'

Back in the church, the limewashed CLT can seem a little dumpy and the compromises of display walls over windows and a heating vent in the old altar position lack the elegance of the new-build neighbour. But new services, some areas with first-rate gallery conditions and dark corners for paintings mean that the museum has a certain freedom in its curation: letters from Gertrude Jekyll, Beth Chatto's archive, garden designs by Frederick Gibberd, Bill and Ben the Flowerpot Men, spades, forks, insecticides and films on sheds. So get absorbed in the rich and diverse set of exhibits – then admire the architecture while having coffee amid cloisters and pavilions. ●


VICTORIA

Carefully curated

AL_A's ambitious intervention at the heart of the V&A has much to live up to

Words: Hugh Pearman Photographs: Hufton + Crow

You have to understand this project not so much as a building – though a great deal of intense architecture and engineering is involved, and a large volume of useful and beautiful space made – but as the start of a gradual reorientation of London's enormous, venerable, steadily evolving Victoria and Albert Museum. The imposing south-facing Aston Webb main entrance, aloofly turned away from the other South Kensington museums, has now been joined by a western entrance and courtyard off Exhibition Road, penetrating Webb's colonnaded screen to what was the boilerhouse yard, leading to an enormous new underground gallery. The knock-on implications of all this for the rest of the museum will resound for years.

Those with medium-term memories will recall that the work of Amanda Levete's AL_A here is in the place

AL_A won the competition with a design that plays on the museum's long history of glazed tiles

IN NUMBERS

£54.5m
project cost

£38m
construction cost

6,400m²
GIA

1,200m²
area of Sackler Courtyard

18m
depth of excavations

48m
depth of tension piles to ground slab

11,000
handmade porcelain tiles

Left The tiled floor of the Sackler Courtyard is roof to the gallery below and contains the 'Oculus' rooflight.

Right The Aston Webb screen with perforated aluminium gates closed.

Below Visitors can enter the museum via the newly opened up Webb screen.

where a much more assertive edifice was previously proposed, namely Daniel Libeskind's 'Spiral' extension of 1996 which managed to miss the Millennial Lottery-funded cultural-building bonanza of the turn of the century and was eventually dropped in 2004. Those with longer-term memories may even remember the 'Boilerhouse Project' contemporary design gallery of 1982-87, a Habitat-like, white-tiled space inserted into the existing basement here by the Conran Foundation, with the young Stephen Bayley in charge. That eventually morphed into the Design Museum, first in Bermondsey, now in the former Commonwealth Institute not so far away from the V&A in Holland Park.

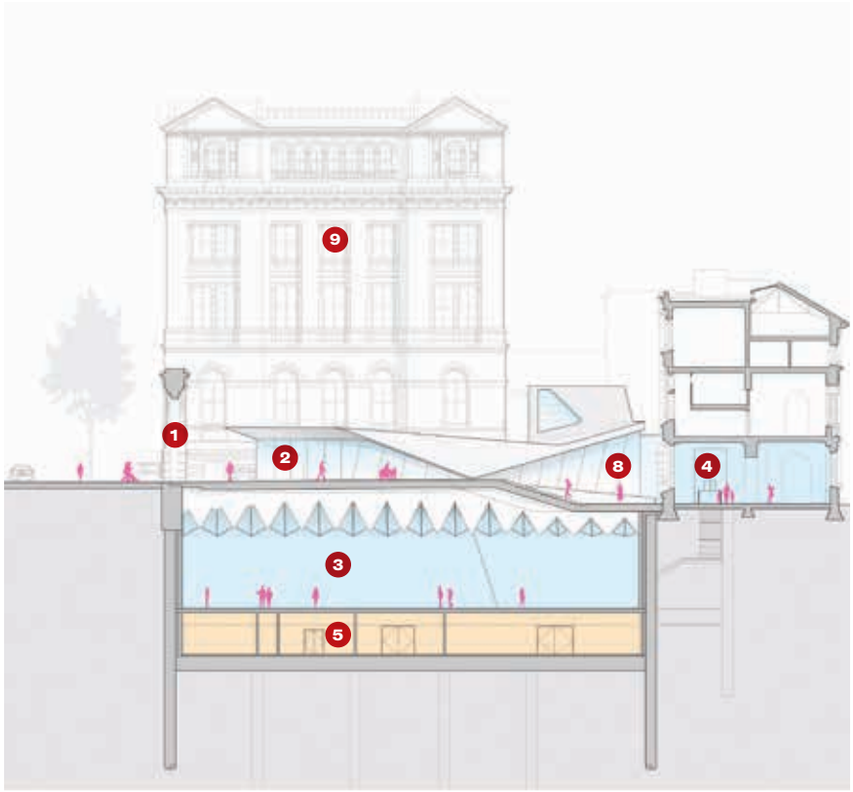
Those as-found basement spaces were always claustrophobic, while Libeskind's tumbling-stack-of-boxes offering, though cleverly linking the various levels of the museum wings to either side, would have offered several more smaller galleries, the purpose of which was somewhat unclear in this sprawlingly labyrinthine museum. But clearly, this was a place where something would eventually get built. The museum undertook a rethink, taking the form of a 2010 study by Ellen van Loon of OMA as part of the ongoing 'Future Plan' project, and came to a rather more radical if less intrusive conclusion: that what was needed was nothing less than a very large new gallery indeed for temporary exhibitions, of the same size as the present exhibition galleries in the North and South Courts combined. And that the best way to achieve that was to dig down rather than build up. That way you would get both a new public space on the surface and a new gallery and back-of-house facilities underneath.

AL_A won the resulting competition with a design that plays on the museum's long history of glazed ceramic tiles. Levete's hand-made Dutch tiles, cream and ridged with a pinstripe colour inlay, floor the new Sackler Courtyard (she sees it as a field, with some of the tiles coloured to suggest flowers) which is also the roof to the gallery below. Plainer tiles rather crudely clad the above-ground buildings (café and museum shop, principally) which hug the north side of the new courtyard and swerve round behind the Henry Cole Wing.

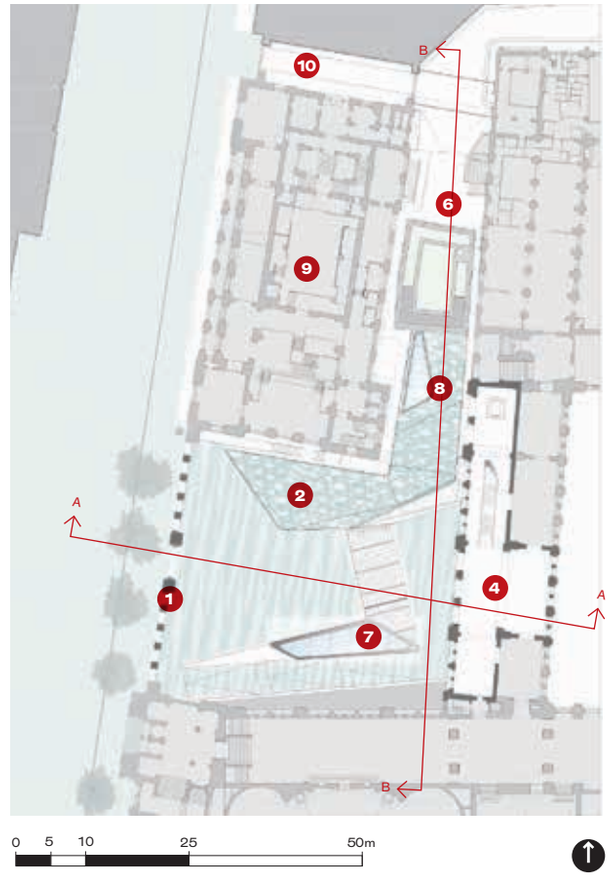
You enter this highly sculptural courtyard through the rebuilt Webb screen, now expressed as a pure colonnade with frameless perforated cast-aluminium gates performing the role of the now-vanished wall here. Not altogether successfully since, though these are solid, we tend to associate perforated aluminium with stamped-out flimsiness and impermanence, and it's hard to get away from that, even though these gates also carry ghostly imagery such as the royal coat of arms.

You then have a choice: continue on the slightly rising courtyard to the top of a broad sweep of steps leading down to the new museum entrance (rising in order that rainwater runs away from the museum rather than pouring down the steps towards it) or take a gently

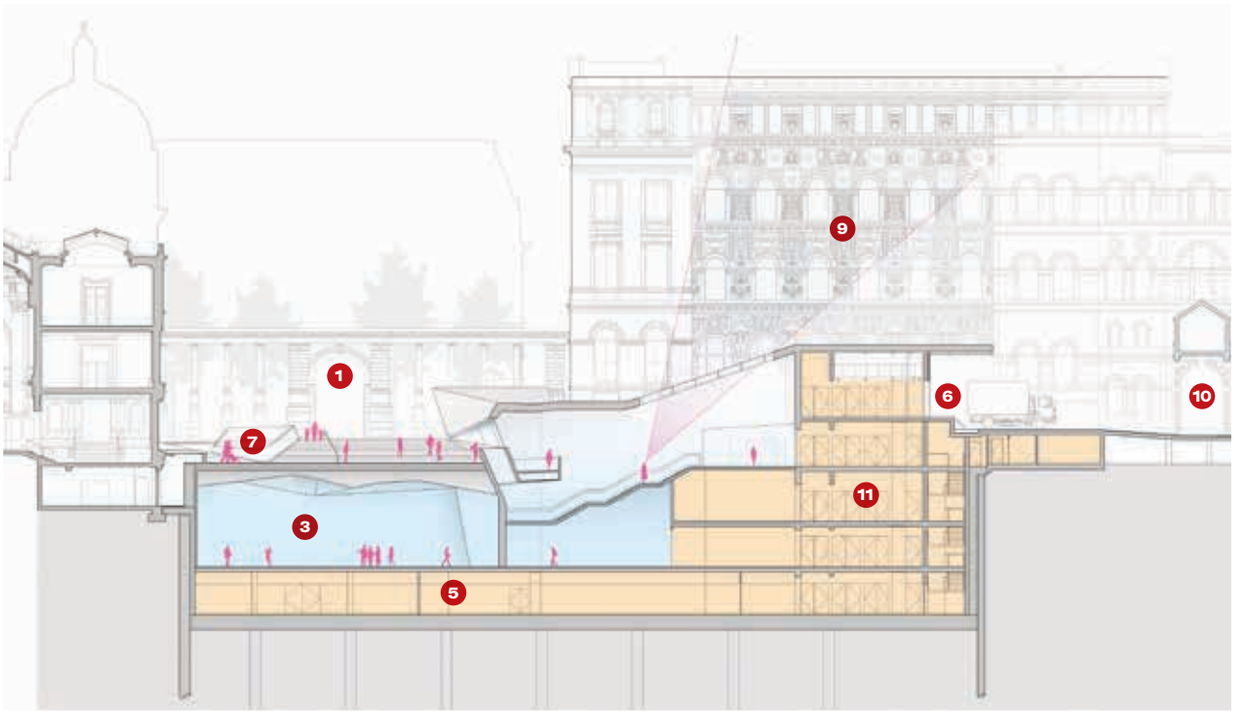
Short section AA



Entrance floor plan



Long section BB



1 Aston Webb screen
2 Café
3 Exhibition gallery
4 Blavatnik Hall
5 Conservation/ preparation area
6 Get-in
7 Oculus
8 Shop
9 Henry Cole Wing
10 Archway to Exhibition Road
11 Lifts

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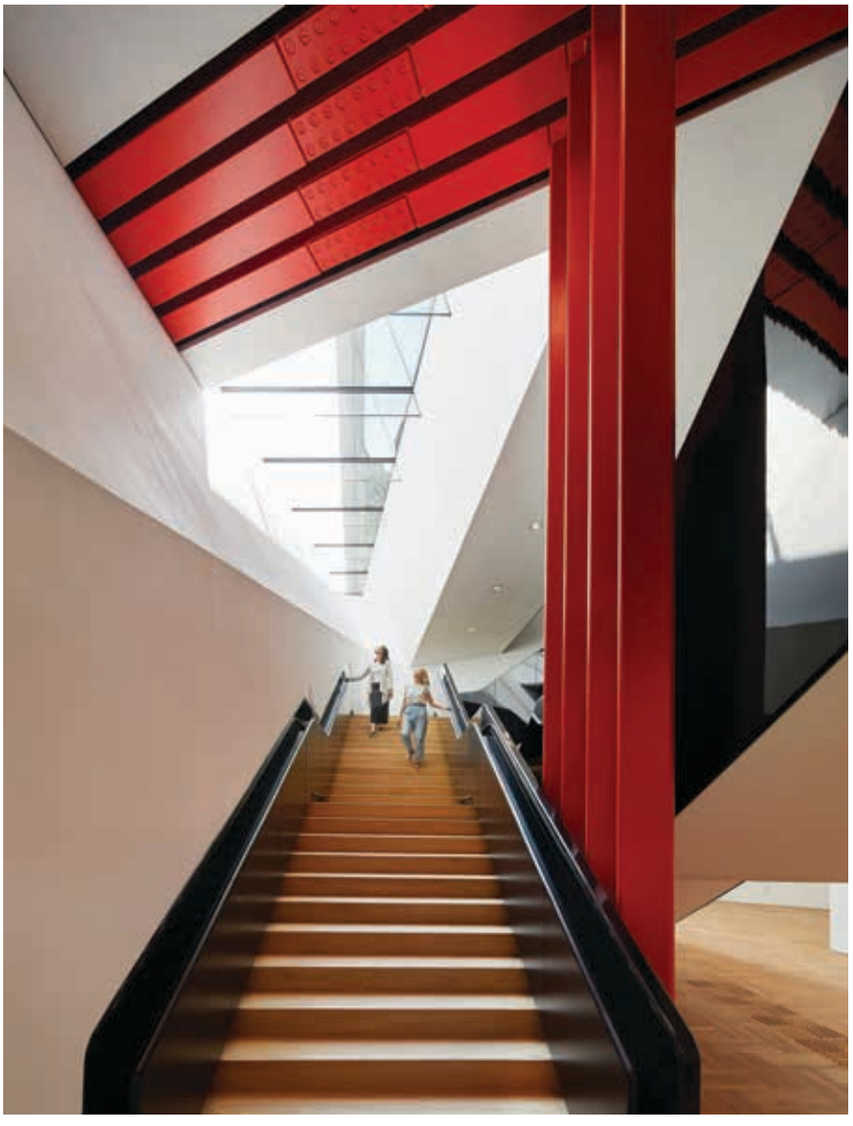
Right The Blavatnik Hall provides a new entrance to the museum, carved out of the existing structure.

Below The staircase passes below exposed red-painted steels that are holding up the wall of the old museum above.



sloping ramp peeling away down on the right-hand side. The courtyard and the ramp are separated by the 'Oculus', a long skylight surrounded by a stout stainless steel upstand that in normal conditions provides a view of the structure of the gallery roof below (for the opening it was obscured by an LCD art installation). Levete would have no truck with glass that you can walk on: in her view, and probably most people's, this is unsettling.

From the bottom of ramp or steps you enter the museum through other newly made piercings in the facade, to the Blavatnik entrance hall carved out of the western wing of the museum. Ahead of you, you see the museum's central courtyard through the windows but you cannot get to it from this point: you have to go to left or right. If left, then you find the staircase descending to the new Sainsbury Gallery below.

This is a fine, fluid staircase, lined in matt and polished black-lacquered tulipwood, its inset handrails making what looks like the world's longest marble run to the bottom. It takes you past the bundle of exposed red-painted steels that are holding up the masonry wall of the museum above – part of Levete's strategy, realised with engineer Arup, of revealing the structural workings of her building. There is a lift as well, of course, and a second stair for the return leg – debouching in the shop. This return stair starts rather awkwardly in a corner and is not obvious when you emerge from the gallery. Perhaps when circulation routes are defined for exhibitions, this will become clearer: for the opening the gallery was left open and, apart from a long curving aluminium bench by artist Jonathan Olivares, empty but for various performances and sound and light installations.

This is good because it is not often that one gets to see such a huge clear space (38m x 30m) empty. Looking up, you see a geometric folded-plate roof but this is not quite the nature of the structure beneath,

which takes the form of 14 triangular-section steel trusses, jointly weighing 256 tonnes. The roof tilts to take up the level change between Exhibition Road and the museum entrance, and rises to 10.5m. But the hole that was dug went down 18m, because beneath your feet in the gallery is another level of conservation studios and exhibition preparation. The programme here is quite similar to that at Rogers Stirk Harbour + Partners' World Conservation and Exhibitions Centre at the British Museum – another iceberg building sunk in a similarly deep hole, though one with more above-ground street presence if no public realm aspect.

The gallery floor is oak, the walls grey. It does feel appropriate for the V&A, though how often exhibition designers will want to use the daylight offered along one side is moot, as Levete admits. It's there if they want it. This underground organism does have above-ground fruiting bodies, however – the L-shaped structure containing the café and the shop, expressed as linked pavilions with an undulating tiled roof. There's terrazzo and mosaic and also the odd touch of welcome mischief: Levete made sure that male and female lavatories are both finished in the same baby-pink, for instance.

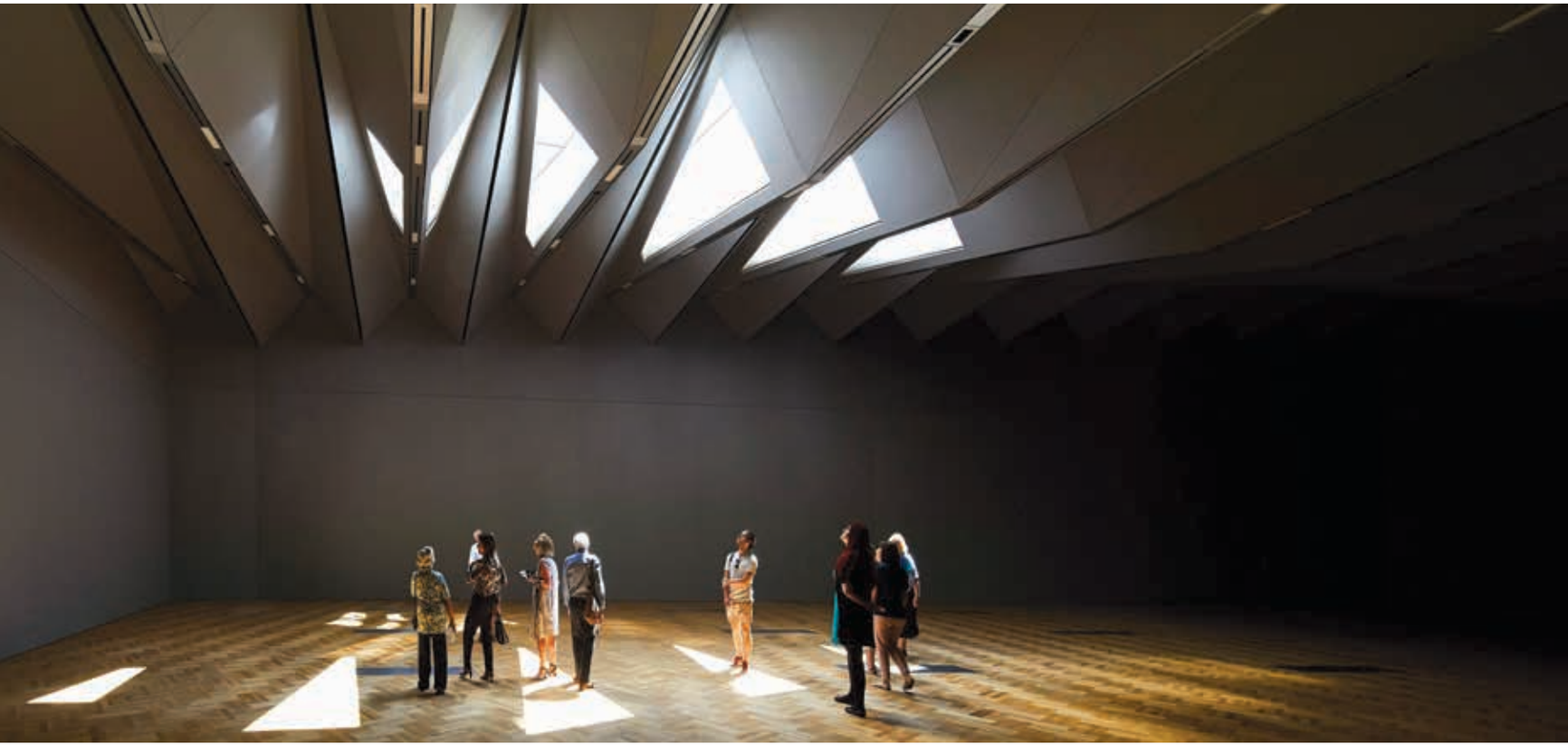
You can pick away at the detailing if you wish: some junctions are awkward, the pavilion roof tiling is distinctly clumsy in places, and so on. Some may well take exception to the incisions made in the historic structure to make this all work, but by and large it's pretty good. One of the great things about it is the new views opened up – notably of the previously unseen sgraffito- (scratchwork) covered facade of the rear of the Henry Cole Wing, and of the ponderous but interesting early 20th century neoclassical facade of the Geological Museum (part of the Natural History Museum) opposite.

On a bright day – not even a sunny one – you feel you need sunglasses to handle all the light being reflected off the tiling beneath your feet in the courtyard. You also realise – as do the museum authorities – that the whole complex now needs to adjust itself to accommodate the new arrival. The existing pedestrian tunnel entering from the subway to the west bypasses the new section completely, for instance, and while you can get to any part of the museum from the new place, you find yourself wanting a door out into the central courtyard to make an enfilade of public spaces.

So: we now need to test the new place with the first blockbuster exhibition, and we look forward to the strip-out of the old North and South Courts that will now take place, revealing, we are promised, marvellous long-concealed Victorian spaces. Meanwhile, AL_A's expensive surgical intervention into the fabric of the museum has finally completed one of the longest bits of unfinished business of any British cultural institution and provided a smart-casual west entrance to balance the very formal south one. Now it's for the public to decide which it prefers. As for me, I'm impressed by the interiors but I don't yet love the exteriors. They seem just a bit too effortful. I want to see how they will age. ●

Credits
Client Victoria & Albert Museum
Architect AL_A
Engineers (all aspects) Arup
Main contractor Wates
Quantity surveyor Aecom
Lighting designer DHA Designs
Historic buildings adviser Giles Quarme & Associates
Planning consultant DP9
Project manager Lendlease
Porcelain tiles Koninklijke Tichelaar Makkum
Aston Webb screen gates Midland Alloy
Gallery staircases EE Stairs
Courtyard steps Cornish Concrete
Oculus manufacture Octatube

Below Close Encounters, anyone? Light enters the Sainsbury Gallery through the Oculus.



Saving the whale

Big ambitions for Southampton's Watermark WestQuay development were nearly squeezed to death by value engineering. Can it yet reconnect the city with its waterside, and reel in the punters?

Words: Isabelle Priest Photographs: Jack Hobhouse

The site curves around the medieval wall and Arundel Tower from the city centre towards the sea.

Acme's Watermark WestQuay Southampton – a joint venture between Hammerson and the council – has been value engineered to within an inch of its life. As one of the few projects in the city's redevelopment plan to survive the cull after the financial crash in 2008, it's lucky to have arrived at all. But, having taken seven years to complete, it's been an arduous process for architecture practice Acme. The design has had to compromise significantly from what was originally proposed, again and again.

The building's envelope and appearance, less so its form, has taken the biggest kicking. What was supposed to be a leisure complex of three stacked horizontal parts with 'a pleated metal facade at the upper level and a pleated concrete facade at ground level' has become a concrete stepped facade at ground level with a coil of quite widely spaced pipes wrapping around the top, revealing the meant-to-be-unseen rainscreen behind. The design has inevitably been diluted of conviction as well as Acme's usual exuberance, leaving the city aesthetically poorer. The upper cladding alone was value engineered three times pre-tender and twice post-tender. At one stage even the building's characterising cantilever was threatened with columns.

Yet the council had started out with grandiose visions. Watermark WestQuay was supposed to resolve 60 years of planning mistakes, draw in visitors from the affluent catchment area who might otherwise go to Winchester, and encourage cruise ship passengers to stick around.

'What the Germans didn't destroy of Southampton in the Second World War,' says London-based Acme founder Friedrich Ludewig, 'the British did in the 1960s.

'Before that Southampton would have had a Regency spa town high street, as well as the best-preserved fortified medieval city walls on the south coast. But after the war,' Ludewig suggests, 'things were put back as quickly, rather than as carefully as possible.'

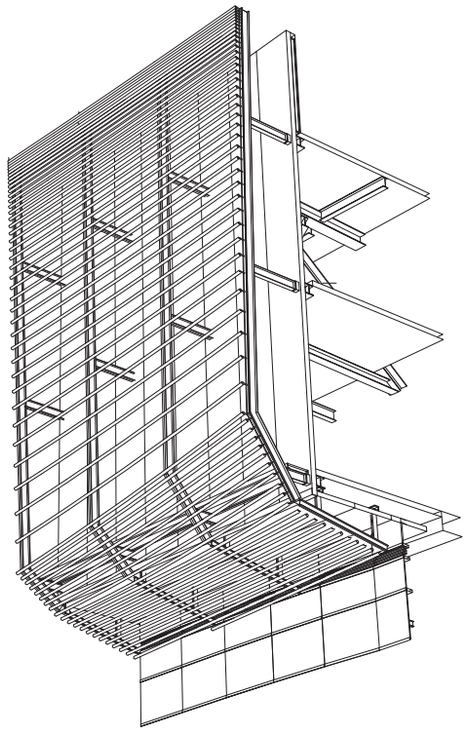
This added to the city's problems. The old town had already lost its relationship with the sea. Famous resident Jane Austen wrote

The upper cladding alone was value engineered five times

of looking out from Forest View to the New Forest on one side and the sea at the bottom of the city wall on the other in the early 19th century, but over the late 19th and early 20th centuries Southampton's waterfront was filled in to create a straight coast, 400m deep, 7m below the height of the city, to accommodate the arrival of big ships.

Watermark WestQuay, a 10-screen cinema, bowling alley and 24 restaurant scheme, lies at the corner of the medieval walls, by Arundel Tower, where these levels meet. The primary goal was to connect the levels in an effortless way, encouraging pedestrian flow to the lower level, where there hasn't been much for decades. For the long term, as the first of two phases, and possibly later redevelopments, the council wanted the project to re-establish the city's links with the water, currently nearly invisible from the centre.

Acme's project actively achieves this, creating a long 'upper' promenade that slopes 140m down to the cinema entrance on the other side of the site. Alongside a lower level promenade, the promenades wrap around the building and an outdoor public 'auditorium' to be used for events. Essentially, the building is a 7m tall hard landscaping project with a huge cinema box on top.



Cinema pipe facade diagram.

'We tried to find ways to break the scale of the building down,' says Ludewig, explaining why Watermark WestQuay is split into three parts: the ground level concrete and glass plinth, the glazed curtain wall middle for the 24 restaurants and bowling alley, and the cantilevered 7,500m² cinema box on top. These volumes are broken down again at each level using steps and marine grade stainless steel pipes. 'It's like a giant iceberg in the middle of the city but, given the Titanic, you can't mention those in Southampton.'

The ground floor envelope is primarily reconstituted stone panel cladding that encloses the bowling alley and disguises the building services behind. Although it differs from the intended pleated concrete facade, it still has a weighty feel created by a layering of steps that appear to fold into the walls. Its construction is remarkably 'simple' given its complex visual appearance. Sub-contracted by Sterling Services, it cleverly uses a palette of only five set panels and mouldings across

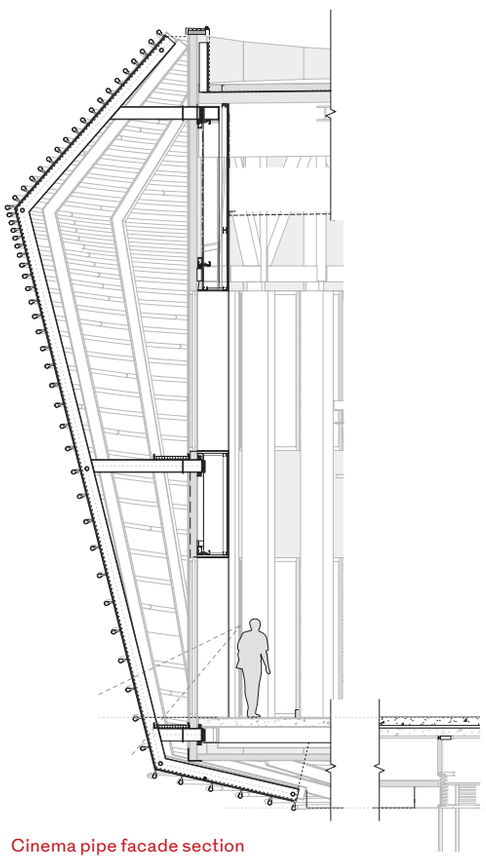
The lower and upper level promenades around a new public auditorium.

the ground level to break down the scale and create variation, so parts don't feel like sheer 7m walls. The reconstituted stone is a careful mix of sand and aggregate, acid etched to reveal the small stones and make it glisten.

Whereas the middle section of the building is a standardised glass curtain wall, much of the architect's time was spent developing the outer skin of the top section. Acme wanted something metallic and sculptural that would break down the massing and provide transparency.

During 2014 the practice experimented with shingles, standing seam, expanded mesh and ZEPPS but eventually settled on pipes in January 2015, inspired partly by Foster + Partners' More London – and by the fact that the site was once used by Pirelli for manufacturing 76mm thick metal cables for early telephone communication across the Atlantic. Acme found Austrian manufacturer Seele, which had developed a method to bend pipes in two dimensions for a project by Snøhetta in Saudi Arabia and was keen to use it again. Within this design, the pipes contain LED lighting that can be changed in colour to animate the building at night.

At this stage Acme was working with



Cinema pipe facade section

Acme started off with 40,000m of pipes and ended up with 15,000m

40,000m of 6m long, 76mm diameter pipes and narrow, similar sized gaps, set between 1.5m and 2m away from the cinema box behind – silver pipes on the vertical sides, and matt coppery pipes for the soffits. However, as the project went on the length of pipes was reduced repeatedly to cut costs: to 30,000m, 26,700m, 23,000m pre-tender and post tender to 18,000m and then to 15,000m.

The practice's task was to work with the distance between the pipes to make the shape read the same, with gaps as narrow as 50mm at the top and 400mm at the bottom, pushing the facade back at the top and bottom to create an angle. At 26,700m the team switched into Grasshopper to help with the modelling, scripting it to flow pipes according to defined criteria around the building, over the roof and under the soffit, with some fiddling afterwards. When the pipes were cut to 15,000m, rather than widening the gradient of gaps, the practice scrapped the pipes altogether in the alleyway between the building and the BDP-designed shopping centre next door.

The pipes are tied back to the primary white steelwork structure using a secondary steelwork structure set out at nominal 3m centres and fixed to thermally broken projecting steel stubs connected to the primary structure. The cladding pipes provide the horizontal bracing, and isolating tape and plastic washers have been used to prevent bi-metallic corrosion between dissimilar metals. An additional secondary structure had to be developed for the final iteration to support the pipes that had been cut in the alleyway. At the bottom of the void between the pipes and main body of the building, the architect has incorporated a 600mm wide platform that can be used for cleaning and maintenance. Black netting, only visible from inside the cinema foyer, stretches across this void to prevent birds nesting.

The substructure behind the pipes is necessarily as dark as possible to make it seem invisible. The inner skin (installed by sub-contractor Lakesmere) is clad in Kingspan insulated composite metal rainscreen panels

The reconstituted stone stair flows into the vertical cladding at ground level.

with a U-value of 0.26, more commonly found on industrial buildings, chosen in the darkest available shade. At the top, the parapet rises above the building line to avoid an additional screen to hide the enormous plant, which has roof access for all 24 restaurants. The soffit was resolved in a similar way, with a 0.20 U-value composite inner skin and metal tubes supported off a framework below, and installed by airport ceiling specialist SAS.

Watermark WestQuay might be unjustifiably tall next to the medieval wall, given the excess space surrounding it on the lower level of the city, but Acme has battled within a challenging context to create a building that fulfils its aim of drawing people down towards the water with a design that is suitably sculptural in form. ●

Credits
Masterplan/architect Acme
Main contractor Sir Robert McAlpine
Developer/client Hammerson
Structural engineer AKTII
Environmental / M&E engineers Hoare Lea
Quantity surveyor / cost consultant Currie & Brown (previously Sweett Group)
Project manager Gleeds
Acoustic engineers Hoare Lea
Accessibility David Bonnett
Landscaping Grant Associates
Interior design Retail Design Concepts
Lighting design George Sexton
Interior design Scott Brownrigg
Pipes Seele
Metal composite cladding to cinema box Lakesmere

Heat, air, moisture movement – managing the balance

For any building to have an energy efficient, healthy, moisture free envelope there is a clear need to manage the balance of heat, air and moisture movement (HAMM) throughout the process of the building's life cycle from design to construction, completion and use

Understanding the importance of these key elements upon the building envelope is crucial to the successful construction and operation of a building. Architects, designers, and building products manufacturers must seek to ensure that they fully understand the science behind our buildings, managing the external and internal forces, which impact on the quality of the completed building, its performance in use, as well as the health of its occupants and the wider environment.

Heat (thermal insulation)

Depending on climate and location 'heat' is keeping heat in or keeping heat out, therefore when we are considering heat we are mainly concerned with thermal insulation. The effects of heat flow can have a significant impact on the energy efficiency of a building.

The impact of heat flow

To maximise the design of a building's energy efficiency what is required is a holistic approach to a total system which fully embraces the principles of HAMM, considering an integrated approach to airtightness and condensation control.

The incorrect specification or installation of effective thermal barriers will lead to unmanaged heat loss, impacting directly on the energy efficiency of the building and its systems.

In many cases insulation has been a 'silver bullet' to improve the energy efficiency of buildings, driven by the need to reduce carbon emissions and reduce energy costs. However, while insulation has a key part to play, the most effective solutions will demand a total system approach from the outset.

Air (air permeability & airtightness)

Air leakage control strategies

As Building Regulations have imposed ever-tougher energy performance criteria on the building envelope, and in the drive for higher standards, the significance of localised areas of reduced insulation or thermal bridging leading to air leakage has become even more crucial.

Air leakage through cracks, gaps, holes and improperly sealed elements such as doors and windows can cause a significant reduction in the performance of even thermally insulated envelopes.

As thermal insulation requirements increase, a consensus has emerged in the industry that discrepancies between 'as built' and 'as designed' performance are largely attributable to uncontrolled air leakage.

The impact of air flow

Impact on the building

Unmanaged or uncontrolled air flow can act as a carrier for moist air, drawing it in from the outside, or pulling it out from the inside, into walls, ceilings and roofs. The impact of this uncontrolled moist air movement can have a long term detrimental effect on the durability and life of the building.

Impact on energy efficiency

Uncontrolled air flow will almost certainly influence the energy efficiency of the building. Initial heat load calculations for heating and cooling equipment will usually make an allowance for a level of natural infiltration or uncontrolled air flow. The higher the infiltration rate, the lower the energy efficiency of the building. Efficiency levels can be affected by both natural and mechanical air movements. The forces of wind and stack effects will lead to a level of air filtration and subsequent efficiency loss. Sealing the shell of the building and any undesigned holes can reduce the impact of wind and stack effects and improve the overall energy efficiency.

External vs internal air barrier systems

There are two main ways to achieve airtightness in the building envelope, internally or externally. Another way of thinking about this is 'inside the services zone' or 'outside the services zone'. Traditional use of internal air barriers can be more complex and costly to install, due to the need to accommodate building services such as electrical, lighting, heating and drainage systems. An internal air barrier is only as good as its installation. If all the service penetrations are not adequately sealed, performance will be compromised.

By moving the air barrier to the external side of the structural frame, Wraptite-SA from A Proctor Group allows for an almost penetration-free airtight layer, which can be installed faster and more robustly. Essentially a simple system comprising self-adhesive vapour permeable air barrier membrane, plus vapour permeable sealing tape, Wraptite-SA provides effective secondary weather protection, while preventing trapped moisture and air leakage, therefore showing the importance of the HAMM principles.

Far simpler than internal options, the Wraptite-SA external air barrier system maintains the envelope's integrity, with fewer building services and structural penetrations to be sealed, and less room for error.

Moisture (condensation control)

Moisture vapour will pass through the various layers of any construction by both convection and diffusion. Controlling the moisture flow in a building is fundamental to the core principals of HAMM and to maintaining the durability of the building envelope, maximising energy efficiency, and protecting the health and safety of the occupants.

The impact of moisture flow on the building

To avoid the occurrence of excess condensation, which can result in mould growth and damage to the building fabric and/or contents, designers should assess the amount of water vapour likely to be generated within the building and determine the resultant increase in internal vapour pressure above that of external air. They should then consider the physical properties of the construction separating inside from outside.

Managing the balance

In addition to assessing energy performance it is importance to assess how the building design balances moisture, ensuring that all moisture within the building can dry out, and any moisture accumulation is balanced by the equal and opposite drying. BS5250 (The Code of Practice for Control of Condensation in Buildings) has been amended to specify the conditions when the traditional simplified Glaser modelling is not appropriate, and when more sophisticated modelling to BS EN 15026 is needed. The A Proctor Group uses WUFI software, which is fully compatible with BS EN 15026 and dynamically predicts moisture movement and storage as well as condensation for each location.

It is crucial that architects, designers and contractors fully embrace the principles of HAMM, and understand how to incorporate them into modern building design to achieve the ultimate building performance for many years to come.

2: Intelligence

A reproach to the whole construction industry: the fire-blackened hulk of Grenfell Tower.

ISABELLE PRIEST

After Grenfell

How did it happen, and what should happen now? RIBAJ devotes its Intelligence section to consideration of the Grenfell Tower tragedy

Jan-Carlos Kucharek

The early hours of 14 June 2017 were when the world changed for hundreds of residents caught up in the Grenfell Tower tragedy; the thick tendrils that tightened around those fatal few hours stretch back, thinning, into the past. We must follow them to find the roots of decision-making that led to one of the UK's worst modern day fires.

When it took hold, having started on the fourth floor, 350 people are thought to have lived in Grenfell Tower's 129 flats. Eighty are confirmed to have lost their lives, most on the upper floors. Advised to stay put in notices by the tenant management organisation, by the time people tried to evacuate, the corridors to the escape stair were filled with smoke from flats below or from the insulating over-cladding. The latter, though thought to meet fire regulations, was now burning rapidly, turning the 24-storey concrete-faced 1970s tower into a giant torch.

Among the dead was a young architecture student couple, Gloria Trevisan and Marco Gottardi from Italy, who called their parents for the last time from their flat on the 23rd floor. Leeds University estimates that 18 tonnes of insulation and 8 tonnes of cladding panels were installed, which, French experts said, would have generated 69MJ/kg of heat. As the fire raged temperatures were in the order of 1,000C. 'Such was the intensity of the

Finger pointing is no help; soul searching is what is required of the industry

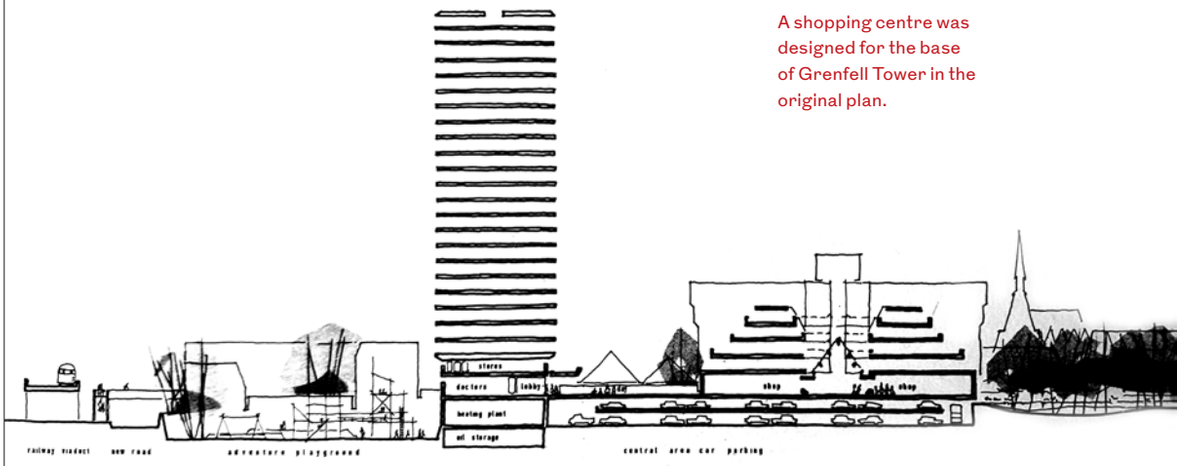
fire and devastation,' the London Metropolitan Police stated in a press release, 'that some of the recovered remains will not be able to be attributed to a named victim.' Of the 255 survivors, Luana Gomes, 12, suffered smoke inhalation injury and cyanide poisoning, the result of burning polyisocyanurate, present in both furniture foam and insulation. Her mother, seven months pregnant, also survived but lost her baby.

How the Reynobond PE Aluminium Composite Material cladding and Celotex RS5000 rigid insulation came to be specified and approved on the £9.6m tower refurbishment is one of the issues for the police and the public inquiry. They were not initially proposed in architect Studio E's and Max Fordham's October 2012 sustainability & energy report. That looked to fire retardant Celotex FR5000 insulation and non-combustible zinc cladding; but after a demand by Kensington & Chelsea council for 'good costs' both were supplanted in a value engineering exercise, saving £293,000.

Finger pointing is no help; soul-searching is what is demanded of the construction industry. Architects have a duty of care to highlight bad practice, and contractors and suppliers to avoid lowest denominators of specification and execution as a commercial target. And the BRE, paid £21m by the industry last year, must prove itself above reproach in its forensic analysis of Grenfell Tower and counter an accusation by Prof Richard Hull, fire expert at the University of Central Lancashire, of conflict of interest with its EU report on smoke toxicity of construction products in fires. Saint Gobain, which has since withdrawn supply of Celotex RS5000 for buildings over 18m, supports the architectural press with advertising. And of the 65 London towers whose cladding failed initial combustibility tests, five on the Chalcots Estate in Camden were re-clad by RIBA President-elect Ben Derbyshire's HTA Architects.

It's clear that as an industry, we must atone for the dead by a root and branch reappraisal of best practice to save lives in the future. The tendrils grip us all. ●

Being Safe Compliance



A shopping centre was designed for the base of Grenfell Tower in the original plan.

A turbulent history

On the site of a former slum, Grenfell Tower was supposed to provide a brave new world for its residents

Isabelle Priest

The story of Grenfell Tower is in many ways a timeline to tragedy. According to his widow Pauline, architect Clifford Wearden never wanted Grenfell Tower to be built as part of his post-war masterplan for Notting Dale, west London. His disgust for it was such that he later pretended to his family that it had been demolished, though it was in plain sight when they drove over the Westway.

Grenfell Tower is part of the Lancaster West estate built between 1972 and 1981 on a 28 acre plot behind Latimer Road Station. The area had a turbulent history. In the early 19th century it was infamous as a shanty town of shed housing and piggeries built amid stagnant water. After the bombing of the Second World War, the 1860s terraced housing became slums and in 1958 it was the locus of the Notting Hill race riots.

In the 1960s, Kensington & Chelsea commissioned the Lancaster West development to replace these Victorian streets that were deemed 'rank with decay'. It was seen as an opportunity to replace them with something cleaner, better and more spacious. Clifford Wearden & Associates, a small private practice, was appointed in 1963.

Influenced by Robin Hood Gardens and the Lillington Estate, the masterplan was designed as an environmental area that segregated vehicles from pedestrians in a combination of linear and radial development. It included housing, shops, offices and pubs as well as a swimming pool, post office, nursery, elderly people's home, library, children's home and petrol station, all linked by raised integrated walkways. The masterplan accommodated 3,700 people in 1,038 apartments provided to Parker Morris Standards, with a density of 137 people per acre.

Grenfell Tower was, despite the architect's reservations, the landmark of the masterplan, indicating the centre. Planning was granted in 1970, and construction began in 1972, completing in 1974. It was part of the first part of phase 1, which included three low-rise finger blocks fanning out to the south from its base, replacing Barandon Street, Testerton Street, Blechyden Street, Hurstway Street and part of Lancaster Road.

Grenfell Tower itself was designed to contain 120 flats: 40 one-bed (51.4m^2) and

Grenfell Tower was a world away from the housing the residents had come from

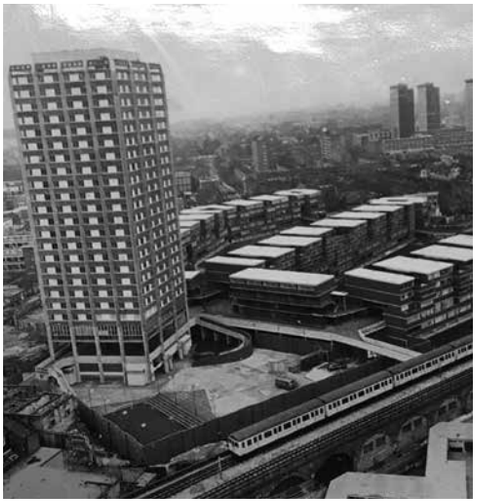
80 two-bed (75.5m²). At 24 storeys, it was bulkier and taller than the slightly earlier four towers on the GLC's Silchester Estate next door. The central boiler for the entire development was in the basement, 4m deep and with 2m of concrete beneath, so the tower could be used as the chimney. In situ concrete columns, slabs and pre-cast beams tied the building together. Unusually, the tower was designed with external perimeter columns to create a flexible floor plate so internal partitions could be rearranged. The first four floors were for offices and community uses. The core containing the lift, staircase and vertical risers for the services was positioned in the centre with six surrounding flats to a floor – two-beds on the corners.

The tower used insulated precast concrete beams as external walls, giving it an unusual texture. The homes themselves had radiators heated centrally for 30 weeks a year, gas and electrical points for a cooker and fridge, and a fuse board, usually in a hall cupboard. It was a world away from the housing the residents had come from.

However, it was not plain sailing. Despite working on the project for more than a decade, Clifford Wearden only completed the Grenfell Tower and finger blocks part of phase 1; the remaining phases were built by other architects to more generic designs. Subsequent development abandoned many of the masterplan's key features, including walkways and higher rise, compact housing. The second part of phase 1, the shopping district, never happened, eventually becoming outdoor sports pitches.

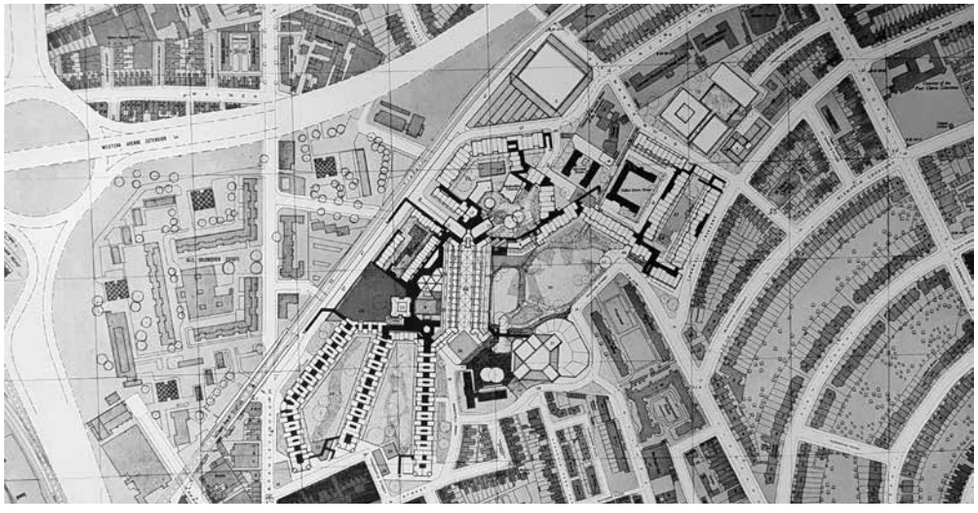
Soon after completion, the problems began. In a residents' survey less than five years after the first people moved in, 67% of them reported being satisfied living in Grenfell Tower but 'only happy once inside the door' and 'you could die here and no one would notice'. Eighty-five percent of respondents reported that basic facilities (lifts, lighting) were not satisfactory. Sixty-two percent reported vandalism and comments included the 'estate is too big and impersonal'. The survey concluded that Grenfell Tower was the least satisfactory part of the estate, with reports that the 'stairs were like a prison, lifts smelly, rubbish not collected, and the upstairs flats not safe for children'.

By 1982 the council was carrying out consultancy studies of the estate's problems. At the time it was estimated that 4,000 people lived in 950 homes. These early troubles were compounded in 1982 when there was a cockroach infestation affecting 500 people, including residents in Grenfell Tower, and with asbestos in the buildings that resulted in the council being found guilty of negligence towards its maintenance workers. In the late 1980s focus shifted away from housing to crime prevention on the estate. The Estate Management Board was registered in 1993, writing in its 1994 newsletter: 'The Lancaster West Estate has, for a number of years, had an ill deserved reputation as an area to be avoided.' It highlighted priorities as lighting and reducing youth crime by providing more facilities for young people. As a result of these concerns, modifications were made to access arrangements to the finger blocks and Grenfell Tower. Internal walkways to the finger blocks were divided so each flat only had one point of entry. Grenfell's two means of entrance were reduced to one.



Above Grenfell Tower shortly after construction, with its low rise finger blocks behind.

Below The original 28 acre masterplan by Clifford Wearden, from the architect's 1968 report.



Most recently, the tower was refurbished as part of a project by Studio E Architects to redevelop the outdoor sports pitches and leisure centre area at its base. The plans were publicised in 2012 and carried out in 2015-16. The renovation undertaken by Rydon aimed to replace the long-problematic heating system and the windows, increase the thermal efficiency and improve the tower's appearance with external insulation and rainscreen cladding in the style of the new Kensington Academy built on the sports pitches. It also reconfigured the four lowest levels to insert nine more flats, including 101m² ones for six-person families. In early 2016, similar recladding plans were being considered by the council for the neighbouring Silchester Estate's four towers, after Grenfell Tower was considered a success. ●

Being Safe | Where people live | Designing & building It

Design for fire safety

This statement on design for fire safety was released by the RIBA in the wake of the Grenfell Tower tragedy

RIBA statement

Starting in the early hours of 14 June 2017 a devastating fire at Grenfell Tower in Kensington, London caused a significant number of fatalities. This article supplements statements made by the RIBA in the immediate aftermath of the tragedy and provides three new contributions:

- Commentary on the regulatory and procurement context
- Guidance for members on fire safety
- Recommendations for government.

Commentary on the regulatory and procurement context

Understandably there has been a lot of media speculation about the causes of the Grenfell Tower fire and the reasons for the huge loss of life, and a desire to seek answers as quickly as possible. The relevant authorities, including the police, will inevitably require some time to complete their investigations and the public inquiry will provide an opportunity for the fullest possible examination. This should be a full public inquiry, with evidence taken under oath and the inquiry able to order witnesses to attend by summons.

However, for a number of years concerns have been raised by RIBA members and other experts about aspects of the regulatory and procurement regime for buildings in the UK. These include:

- Delays to the review of Approved Document B, particularly with regard to the relationship of the Building Regulations to changing approaches in the design and construction of the external envelopes of buildings.
- An Approved Document which together with related British Standards provides a very comprehensive but highly complicated regulatory framework.
- The impact of the Regulatory Reform (Fire Safety) Order 2005, in particular the introduction of a regime of fire risk self-assessment and the repeal of fire certificate legislation with oversight by the local fire authority.
- Developments in building procurement approaches which mean that the lead designer (architect or engineer) is no longer responsible for oversight of the design and the specification of materials and products from inception to completion of the project, with design responsibility often transferred to the contractor and sub-contractors, and no single point of responsibility.
- The virtual disappearance of the role of the clerk of works or site architect and the loss of independent oversight of construction and workmanship on behalf of the client.

The RIBA believes that future proposals for the fire safety regulatory regime should be informed by the specialist fire safety expertise of relevant professional organisations and groups, such as the Building Research Establishment, the Fire Protection Association, the Fire Safety Federation, the Institute of Fire Engineers, the Association of Specialist Fire Protection and the All Party Parliamentary Fire and Rescue Group, and also take full account of this wider set of construction industry regulatory, practice and process issues.

Guidance to RIBA members on fire safety following the fire at Grenfell Tower

Requirements for fire safety are set out in Approved Documents B Vol1 (Dwellinghouses) and B Vol 2 (Buildings other than Dwellinghouses) of the Building Regulations as appropriate, including means of warning and escape, internal fire spread and compartmentation, external fire spread and access for fire and rescue equipment. For larger, more complex buildings, designs may alternatively conform to BS 9991 Code of Practice for Fire Safety in the Design, Management and Use of Residential Buildings and BS 9999 Code of Practice for Fire Safety in the Design, Management and Use of Buildings. The fire safety options set out in the Approved Documents for compliance with Part B requirements are minimum acceptable solutions.

The RIBA will be calling on members to provide expert evidence to the inquiry

Section 12 of Approved Document B Vol 2 covers the design of external walls for fire safety, and includes specific requirements for tall buildings, above 18m. External walls are elements of structure and must meet the relevant period of fire resistance. Section 12 also includes requirements to ensure that the external envelope of the building does not provide a medium for fire spread that is likely to be a risk to health or safety. It sets out requirements for external surfaces, insulation and cavity barriers and the test standards that products and components must meet, as well as the alternative method of demonstrating that the complete proposed external cladding system has been assessed according to the acceptance criteria in BRE report BR 135 'Fire performance of external thermal insulation for walls of multi storey buildings' for cladding systems using full scale test data from BS 8418-1:2002 or BS 84142:2005.

In blocks of flats, effective fire compartmentation is crucial to overall fire safety. Requirements for compartment floors, compartment walls and protected shafts (for stairs, lifts, chutes, ducts and pipes) are set out in Section 8 of Approved Document B Vol. 2. Particular care is needed when undertaking works to existing blocks of flats to ensure that compartmentation is maintained.

The role of sprinkler systems in reducing the risk to life is recognised in Approved

Document B Vol 2. Even when sprinkler systems are not required in the Approved Document, we recommend that clients consider the benefits of installing sprinkler systems as an additional means of providing life safety. This may be particularly relevant in projects which involve material alterations to existing buildings, where the overall building as whole may not comply fully with all aspects of the current Approved Document B Vol 2.

The Department for Communities and Local Government (DCLG) issued letters, to all local authority chief executives and housing association chief executives, on 18 June 2017, and to owners, landlords and managers of private residential blocks in England, on 20 June 2017, communicating that in the aftermath of the tragic events at Grenfell Tower, owners and managers of residential tower blocks need to urgently carry out fire safety checks to ensure that appropriate safety and response measures are in place. In particular, it is important to identify whether any high-rise buildings incorporate panels of aluminium composite material (ACM) and if so that the right type of ACM cladding has been used.

Annex A to this letter states that 'On buildings with a floor over 18m above ground level, where ACM panels are identified, it is necessary to establish whether the panels are of a type that complies with the Building Regulations guidance, ie the core material should be a material of limited combustibility or class A2.'

A footnote clarifies: 'Material of limited combustibility as described in Table A7 of Approved Document B (Vol 2); Class A2-s3, d2 or better in accordance with BS EN 13501-1.'

Local authorities and housing associations have been asked to check residential blocks over 18m in height to identify whether they have ACM panels and to submit small samples of the panels for laboratory testing to ensure that they are of limited combustibility.

The letter from DCLG to local authorities and housing associations is available at https://www.gov.uk/government/publications/safety-checks-following-the-grenfell-tower-fire.

DCLG is also offering private owners of residential buildings an opportunity to test cladding on blocks over 18m high through arrangements put in place with the Building Research Establishment (BRE). These checks will be paid for by DCLG, and the information will be available to DCLG from BRE.

Where building owners and managers consider they may have concerns about cladding on buildings over 18m high, they should follow the process defined in the letter from DCLG available from https://www.gov.uk/government/publications/safety-checks-on-private-residential-blocks.

The review of Approved Document B must be a comprehensive, transparent and fundamental reappraisal rather than amendment or clarification

Recommendations to the Government

The RIBA called for a public inquiry in the immediate aftermath of this tragedy and will be calling on our members to provide technical and expert evidence to it. We wish to stress that this should be a full public inquiry, with evidence taken under oath and the inquiry able to order witnesses to attend by summons.

The public inquiry is likely to take some significant time. It would be irresponsible for the RIBA to speculate at this stage about the cause and spread of the Grenfell Tower fire and the reasons for the shocking and distressing level of loss of life.

However, the RIBA believes that certain actions should be commenced in parallel with the public inquiry process. In particular we urge the Government to:

- Commence immediately the delayed formal review of Approved Document B, which was first proposed by the Secretary of State for Communities and Local Government in 2013 in response to the Coroner's rule 43 letter following the inquest into the deaths resulting from the 2009 fire at Lakanal House.
- Revisit the recent review of Building Bulletin (BB) 100, and in particular to consider the mandating of sprinkler systems in all new schools, in parallel with the overall review of Approved Document B.

(The design of fire safety in schools is covered by BB 100. Approved Document B states that schools will typically satisfy Part B of the Building Regulations where the life safety guidance in BB 100 is followed. A final draft consultation document for a new version of BB 100 proposed that it would no longer include an expectation that all new schools will have sprinkler systems fitted. We note that the All Party Parliamentary Fire and Rescue Group raised serious concern about both this proposed change and also the inclusion in the current version of BB 100 of alternative approaches that avoid the need for sprinkler systems.)

Update (5 July 2017)

Following the devastating and tragic fire at Grenfell Tower, the RIBA called for the immediate commencement of the delayed formal review of Building Regulations Approved Document B; a review recommended by the Coroner after the inquest into the deaths resulting from the 2009 fire at Lakanal House.

The results emerging from the current DCLG testing programme, prompted by the Grenfell Tower fire, demonstrate more than ever an urgent need to investigate the efficacy and usability of the current version of Approved Document B and related standards, as well as the building control compliance and enforcement regimes. The RIBA believes that the review of Approved Document B must be a comprehensive, transparent and fundamental reappraisal, rather than amendment or clarification, and should begin without delay to remove uncertainty, provide clarity and protect public safety.

Further information

The RIBA is actively monitoring the issues raised by the tragic fire at Grenfell Tower, and will update members on any important developments – see architecture.com.

RIBA members with information or concerns should contact our members' information line on 020 7307 3600, or their RIBA regional team.

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Another atrocity

Grenfell Tower and Lakanal House fires show how overdue regulation change is

Sam Webb

The phone call you've expected for most of your life can still take you by surprise. Especially at half past four in the morning. 'Get up, switch on the TV. There's a tower block on fire in west London. The entire building – every floor.' It was Ronnie King, a retired chief fire officer and an expert witness with me for the families of Lakanal House where six people died in a Southwark Council tower block in 2009. Even though we had predicted a fire like this, Grenfell Tower still shocked.

Sitting on my mother's lap aged three, in front of an open window on 7/8th September 1940, is among my earliest memories. We watched a sight not seen since London burned in the Great Fire, as the Luftwaffe bombed London and the whole sky glowed red. The entirely preventable and predictable fire which enveloped Grenfell Tower on the night of Wednesday 14th June 2017 changed everything. It is a great historic event. Such events have toppled emperors and destroyed governments. It reminded me of that view I saw as a child, not on just one night, but every night through 1940 and 1941, until Hitler's invasion of Russia. Anyone who was alive then, and there are fewer and fewer of us left now, still carry around the sights, smells and noise we experienced. So it will prove for all who witnessed the Grenfell Tower disaster. That experience will last for the rest of their lives.

Standing in front of Lakanal House on Saturday 4th July 2009, not 24 hours after the fire, I was asked by Tony Bird, an independent housing expert, why it had happened: 'This building doesn't comply with the building regulations, or if it does there is something seriously wrong with them, because buildings are not meant to behave like this.' As it transpired both assumptions were correct. Meanwhile in Kensington, the leaders of which were no doubt full of financial genius, we have to go back centuries to find an echo of the council's disaster response. We find it in the actions of Sir Thomas Bloodworth, Lord Mayor of London at the time of the Great Fire. Summoned from his bed he refused to allow demolition to take place to create firebreaks and expressed a complete lack of concern about the danger of the fire spreading. Dismissing the fire, he said, 'A woman might piss it out.' Then he went home and back to bed. The fire destroyed more than 75% of the City as he slept.

What is to be done? Do we really need any greater proof that Approved Document B (AD B) is totally unfit for purpose than the sight of Grenfell Tower on fire from top to bottom on world television screens? A building so safe that it apparently ticked all the boxes. Why then if it was so safe, did mothers throw their children out of windows? Ignorance is not a defence. There are the Rule 43 letters, also known as reports to prevent future deaths, from two coroners following the inquests from Shirley Towers in Southampton where two firefighters died in 2010, and Lakanal House. These letters went to ministers of the Department of Communities and Local Government, together with far too many letters from the Parliamentary All-Party Fire & Rescue Group.

Below The two men on the 11th floor are standing in flat 79 of Lakanal House in Southwark. The fire broke out two floors below. The other two lower fires were caused by burning debris blowing in open windows.

> Do we really need any greater proof that Approved Document B is totally unfit for purpose?

We have a situation similar to that which faced Wren and his colleague, Sir Matthew Hale, in the rebuilding of London and drafting the Rebuilding of London Act 1666. Architects need to have the courage to face up to the fact that we need a complete root and branch overhaul of the building regulations, their enforcement, and a complete rewrite of AD B.

I have sat in far too many meetings of the Parliamentary All-Party Fire and Rescue Group where ministers say that they do not understand the building regulations on fire safety and tell us they rely on their expert advisor. Have they and their predecessors groomed and programmed their advisors over the years like Pavlov's dogs, to give the answers the ministers expect?

I sat in one meeting where we discussed the need for the retro-fitting of sprinklers during the refurbishment of multi-storey blocks of flats. As Ronnie King patiently outlined the reasons, the then minister for DCLG pointed his finger and shouted, 'Mr King you are in a minority of one'. When we interjected the minister leapt to his feet, threw his papers down and stormed out of the room, shouting as he went that he was resigning from the group. That was then. Grenfell Tower is now.

It doesn't have to be like this. ●

Sam Webb is a former member of RIBA Council and the Practice Committee. He is a member of the RIBA PCC and the Parliamentary All-Party Fire & Rescue Group.

Being Safe | Procurement & contracts | Compliance

Where the faults lie

Complex and confusing guidance, plus flawed procurement processes, are the recipe for disaster, AHMM senior technical consultant Paul Bussey tells Jan-Carlos Kucharek

At the RIBA regulations and standards group and the Construction Industry Council we've been wanting to tighten up fire safety regulation for the past two years; CIBSE and RICS have been discussing it too. The tragedy has pulled it all sharply into focus, with everything pointing to endemic, systemic problems in the industry.

Part of that is due to the sheer volume of codes and guidance on fire issues. I'm on the Fire Sector Federation steering group with the DCLG representation advising on regulation but even I have trouble navigating Approved Document B (ADB). While there's a lot of good technical guidance in its two volumes it's a complex and confusing document; there's a general feeling among architects that it's not set out in a manner that allies with the chronology of the design process.

And Part B is only the start. BS9999 (Code of practice for fire safety in the design, management and use of buildings) is massive and largely impenetrable to the general architect. It seems it was written by experts to encourage the use of fire consultants rather than to help architects design buildings. Currently routes to compliance are by meeting ADB, a testing route, or by fire engineering, usually a desktop study – this last being the most interpretive of them all. But the sheer volume of codes and the fact that they need to be cross-referenced is asking for trouble.

While fire engineering using BS9999 is complicated, using BS7974 (Application of fire safety engineering principles to the design of buildings) goes back to first principles of calculating escape distances, fire sizes, smoke development and ventilation, door widths etc, necessitating fire consultants. Cladding testing regimes are in BS8414-1 (Test methods for non-loadbearing external cladding systems applied to the face of a building). Then there's BR135 (Fire performance of external thermal insulation for walls of multi storey buildings). Some of this guidance, such as fire brigade access, needs to be referenced at masterplanning stage or at the outset of planning applications, not when you're already committed to a design.

The ambiguity of ADB and dependent codes and the level to which they can be interpreted is deeply problematic and this has been emphasised by the Grenfell fire. The issue with its overcladding is the apparent ambiguity in Section 12 of the ADB guidance on 'limited combustibility' and 'non-combustibility' of the insulation material for buildings over 18m. Even though the external rainscreen cladding could have had a combustibility factor, it could still have been code compliant within the whole wall build-up. The crucial point in guidance is, how limited is 'limited'? That will be a significant focus of the criminal investigation and public inquiry.

Class 0 fire resistance for external cladding means meeting BS476 Part 6. Tests have to prove that the material is of limited combustibility – but at higher temperatures most things burn, so that is where misinterpretation occurs. It's clear the government initially misunderstood these complicated test criteria. If 243 tests have since been carried out on towers and they've all failed, it suggests to me that it's not about incorrect specification per se but that they're setting fire to cladding systems that are of 'limited' – and allowable – combustibility under the current code. Full scale, properly set up fire tests are needed.

> The crucial point in guidance is, how limited is 'limited combustibility'?

Guidance on construction of non-load-bearing external walls is more about fire spread to adjoining buildings than over the surface of the building itself, which is a further misunderstanding. No adjoining buildings caught fire at Grenfell, so in that regard it worked due to separation distance. The cladding is non-structural, so it's not about structural integrity in fire, which again has not been compromised. This isn't trying to make excuses for industry, it's trying to show that guidance is easily misinterpreted.

The DCLG seems to have sat on its hands after the Lakanal House fire in 2009, not wanting to accept that ADB was not fit for purpose. Working backwards, it's a good document for capturing perceived current technical guidance, highlighting life safety issues and prosecuting people, but not actually for designing buildings. Yet 80% of its users of are design professionals trying to understand and apply it. In that regard I champion deregulation by government, not a means of getting rid of good legislation but to pare it down to make it simpler and more accessible.

Flawed procurement

Problems are as manifest in procurement as in guidance. Architects increasingly rely on industry players to say they meet certain criteria. As performance specifiers we can only demand that it complies with regulation – it's for the facade engineers, approved inspectors and the manufacturing industry to look into the specificities.

You're in a procurement chain of trust that assumes others are taking the responsibility of ensuring the right product or suite of products gets specified and constructed. This can, accidentally or due to financial pressure, be reduced to a base denominator of minimal acceptability at best.

Under design & build it is difficult to ensure compliance. Clients, funding bodies and banks may prefer it for its budgetary surety

and contractor control but it has undermined the fire and safety compliance process because there is no clear chain of responsibility. Architects are not involved enough in final specification, and with the demise of district surveyors and clerks of works, sign-off of passive installations is left to third party inspectors paid by contractors or self-certifying approved installers. You might have begun with a fire consultant specifying but you can end up with a fire stopping package sub-let to approved installers and PU foam used to seal penetrations in compartments. This cannot continue. A non-partisan and informed role, such as that of the London district surveyors or local authority building control inspectors, must be reintroduced into the process, with a greater degree of independent checking by owner or commissioning client bodies.

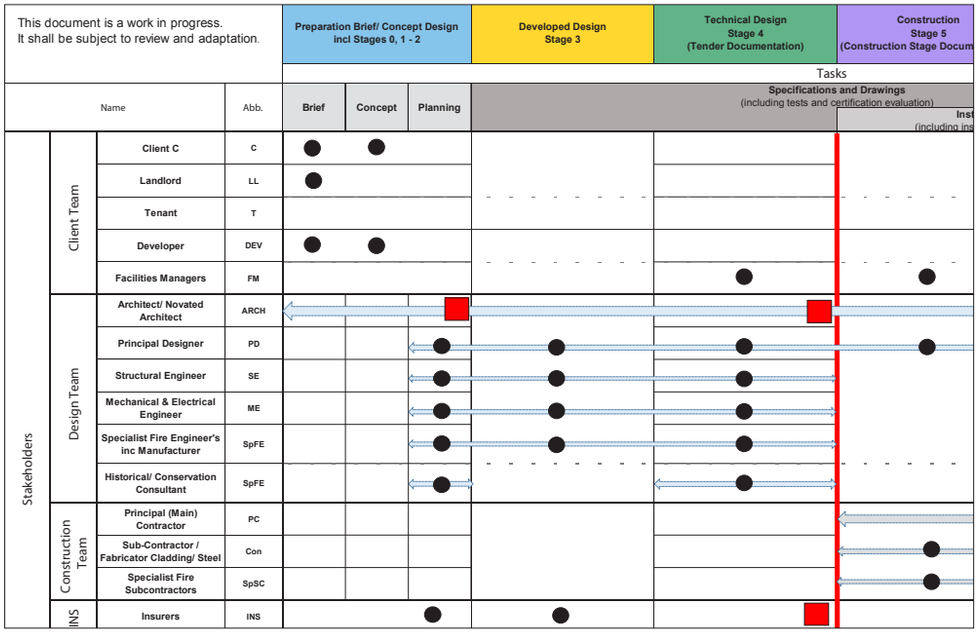
This is the thinking that led to our Plan of Work proposal being worked up with the Association of Specialist Fire Protection, and industry supplier Hilti, aiming to pull together all parties in the fire engineering process and to assign roles and responsibilities for decision-making, specifying or signing off every stage of the RIBA Plan of Work.

And that means everyone. Not just the main consultants and the fire and facade engineers but the client's agent, insurers, even sub-contractors.

It's a holistic, chronological approach to procurement which acknowledges that commissioning clients and architects are generally the only ones who hold a thread of continuity throughout the project. It means more methodical approaches to the design. That entails getting sign-off from the fire brigade for access and firefighting cores and deciding on the use of sprinklers or early warning systems at the outset. If insurers want asset safety beyond building regulation life safety criteria, they need to state it clearly and early. These aspects will then become non-negotiable as they affect occupation and escape distances. It will, further down the line, involve local authority as well as third party accreditation and sign-off for design and materials installation. With input and accountability from the whole team, it will finally end the vagaries that riddle the procurement process.

Embedding the process

The Fire Plan of Work process needs to be embedded in the ADB and ideally needs to dictate the way the document is ordered to reflect the chronological process of design. It should start with fire brigade access, entrance points and stair core positions – but none of that appears until Section 16. By contrast, compartmentation, cavity barriers and fire stopping, often barely mooted before building control stages, is in Section 3. A colleague on the RIBA Expert Fire Panel feels Part B needs completely rewriting, but I think it just needs to be made more intuitive and comprehensible. That means refining technically, improving clarity and co-ordinating the sections better with the RIBA Plan of Work stages. The veracity of desktop fire assessments should be seriously addressed and it should mandate full-scale testing of cladding systems as they will be built.



A snapshot of the proposed matrix of responsibility in the proposed Fire Plan of Work.

Design & build has undermined the fire and safety compliance process

Building Regulation 38, ensuring information critical to the life safety of people in and around the building is communicated to the owner or occupier so that buildings can be operated and managed correctly, needs to be enforced. The fact we're going to have to design and audit the construction of every compartment service penetration in a building will horrify a lot of people but it just takes a change of mindset. BIM has to be the vehicle; it's the only way to accurately change-register designed and completed buildings – but it will cost.

Our industry has evolved to where it is today through a combination of societal expectations and clients' and lawyers' contractual and economic perspectives. British Standards help you achieve Part B but they are no roadmap to compliance. We need to re-evaluate that. That's why I've also been looking at reworking the CDM Regulations.

It's clear that cladding products on tall buildings will probably have to be 'non-combustible' but concentrating on this distracts us from a necessary root and branch reappraisal of fire guidance. In future, we must obviate the need to answer crucial questions raised by the Grenfell Tower disaster.

- Why was the fire not confined to the flat of origin?
- Why didn't residents get out in time as a two-hour rated fire stair should have allowed?
- Why were residents told to stay inside a burning building when evacuation was imperative in a single-staircase building?
- Was the escape stair maintained and how was whole building compartmentation compromised?

The Fire Plan of Work would frame those questions and demand answers from every participant. Pre-empting history, it would help us guard against repeating it.

Being Safe Compliance

How Europe does it

A comparison of fire safety regulations across Europe shows that on the whole, most are more prescriptive than the UK's

> In Sweden there is a simple choice for cladding: non-combustible material or pass a test

Tom de Castella

To examine fire regulations across Europe is at first sight like comparing apples with nectarines, lemons with lingonberries. There are the remits of official agencies to be understood, different devolved systems of government, contrasting legal systems, and diverse approaches to the public and private sector.

In most European countries the national government sets the fire regulations. But in Germany, it is the responsibility of the federal states. They rely heavily on Musterbauordnung – a national model building code – but are free to tweak this to come up with their own Landesbauordnungen (federal state building code). In the UK, Scotland has devolved building regulations and enforcement is carried out by 32 local authority 'verifiers'.

The UK is not alone in allowing private companies to certify fire safety. In Spain, both at the design stage and when the structure is finished, a building can be approved either by the local authority or by a private contractor certified to provide such services.

In France the system is rather different. In public and high rise buildings fire installations are signed off by safety commissions. These bring together technicians, experts and firefighters who hold a brevet de prévention, or prevention certificate. This can take place at different stages: during the procedure to gain planning permission, before the mayor allows the building to be opened to the public or at any time afterwards, in the form of unannounced visits. For houses there is no systematic mandatory control, just spot checks on newly constructed buildings.

And what of clarity? After the Grenfell Tower fire there was no consensus on whether the cladding contravened or complied with UK building regulations. In Sweden the rules are pretty clearcut, says David Tonegran, a fire safety expert. In cladding it is a simple choice: non combustible material or pass a test, SP Fire 105.

Perhaps the most fundamental divide is prescriptive rules versus performance testing. In the UK the regulations do not state how a building should be designed. Instead they set out how it is expected to perform, says Danny Hopkin, an associate at Olsson Fire in London. 'It allows creative, iconic buildings to be delivered based upon sound scientific and engineering principles.' Many countries have variations on this. Italy has 'an old way' – rules – and a 'new way', performance modelling, says Enrico Molinaro, a fire safety consultant in Milan. 'The new way is hardly followed in Italy because it is giving the technician a big responsibility.' In other words, fire experts are more comfortable with the rules than going out on a limb.

In Germany, fire safety relies on prescriptive rules, although industrial buildings have more performance based testing, says Boris Stock, a fire safety consultant. 'There is a growing trend for using computer based models, but it is not as widespread in Germany as in the UK,' Stock says. You might show the resistance of steel through a simulation for example. But use a computer model to prove that burnable materials would be acceptable on a skyscraper? 'No chance.'

England and Wales

The Building Act 1984 is the primary legislation. The legal requirements for fire safety are found in two principal pieces of fire legislation: Part B of Schedule 1 of the Building Regulations – sets out the requirements for design, alterations and refurbishments. The Regulatory Reform (Fire Safety) Order applies when a building is in service. Even before Grenfell, pressure was growing to review the building regulations. In 2009 a fire at Lakanal House, a housing complex in south London, killed six people. The inquest found that panels fitted to the outside of the block in 2006-07 burnt quicker than the original materials. The coroner called Part B 'a most difficult document to use' and recommended it be reviewed. In particular the section relating to 'external fire spread', regulation B4, should 'provide clear guidance' with regard to 'the spread of fire' over the outside of a building and whether 'attention should be paid to whether proposed work might reduce existing fire protection'. Since 2007 all new tower blocks in England over 30m high must be fitted with sprinklers by law. Grenfell Tower was built in 1974 so did not have any installed.

Scotland

Scottish building standards are defined by the Building (Scotland) Act 2003. No local authority or housing association tower blocks in Scotland have been found to have the same cladding as Grenfell Tower. After a fire at Garnock Court, a tower block in Irvine in 1999, a series of reports led to a different policy from England's. Scottish regulations state that cladding on high rise domestic buildings built since 2005, and cladding added to existing high rise domestic buildings since 2005, must be made of non-combustible materials or a cladding system that has met stringent fire tests. A fire in January 2004 at Rosepark Care Home in North Lanarkshire resulted in the mandatory fitting of sprinkler systems in all care homes from 1 May 2005 onwards.

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Republic of Ireland

The Building Regulations 1997-2017 Part B (Fire safety) of the second schedule of the Building Regulations states the statutory minimum standards of fire safety provision. Fire safety is considered at the detailed design stage, after planning permission has been granted. A fire safety certificate is required before work begins. This is issued by the building control authority (local authority) which states that the works/building will comply with the requirements of Part B.

A certificate of compliance on completion is signed by the builder and the assigned certifier. These certificates must be submitted to the building control authority. The regs apply to existing buildings for material alterations, change of use, extensions, repair and renewal. They prohibit works that would cause a new or greater contravention of any provision of building regulations. The Fire Services Acts 1981 & 2003 place responsibility for fire safety on every person having control of a building. Fire authorities have powers of inspection and a range of enforcement powers.

Where works do not require a fire safety certificate, the design certifier states before they begin that the proposed designs comply with the regulations.

France

The fire directorate (Direction des sapeurs-pompiers), attached to the civil security and crisis management directorate general, sets the legal framework for fire prevention in public buildings and buildings more than 28m high. It is a public authority attached to the interior ministry. For houses, the interior ministry shares responsibility with the housing ministry. France brought in strict laws for high rise and public buildings after a fire in an Isère night-club in 1970 killed 146 people and three years later 20 people died in a Paris secondary school.

Since October 1977, materials used in construction have to be non-combustible and any works in the building after its opening cannot begin without a building permit, an authorisation of the préfet (the state's regional or local official) and an oversight of security commissions. But more recent high-rise fires – at Roubaix in 2012, and an arson attack near Orly airport in 2005 – suggest problems remain with inflammable cladding and toxic smoke.

In Germany fire protection is included in the first stages of the design process

Germany

In Germany fire protection is regulated by federal states, which are guided by a national model building code, Musterbauordnung. Most states' rules differ only in nuance. Fire protection is included in the first stages of the design process. For nearly all buildings with a floor level above 7m, some proof of fire protection is needed. This also applies for all buildings of special usage. During the design stage a fire protection concept is devised by the Sachverständige, a qualified private fire expert. These are then checked by the building regulator or certified experts. After construction, detailed checks on structure and fire safety are done by private contractors. These are then backed up by more basic checks by the building regulator.

All special buildings must be rechecked from time to time. This is usually done by a special unit of the local fire department.

Spain

The document regulating fire regulations is called DB-SI (Documento basico de seguridad en caso de incendio). It is national law under the responsibility of the ministry of housing. A developer will need to show the building design is compliant with the DB-SI as a proyecto basico. This is when a project has not reached detailed design but is more than concept design. It has to gain approval from the Colegio de Arquitectos (institute of architects), whose members do the first sign off. The project will also need to be registered with and approved by the municipality. Either it will check the project or the developer can use a private contractor approved by the municipality. When the structure is complete it is either signed off by the municipality or one of its certified contractors. Spain suffered two serious fires in the 1970s. In 1977 a hospital in Seville caught fire and although no one died more than 300 children had to be evacuated. In July 1979 a hotel fire in Zaragoza killed more than 80 people. These incidents led to the first national fire safety regulation, the NBE CPI-82 (RD 1587/1982).

Italy

Fire safety rules are set nationally. The law is the Decreto Ministeriale 3 agosto 2015 – Approvazione di norme tecniche di prevenzione incendi, ai sensi dell'articolo 15 del decreto legislativo 8 marzo 2006, n 139. The fire brigade supervises the rules. At the design stage a technician (usually a fire engineer) checks that a project accords with the regulations. Before the developer can start construction they must receive approval from the local fire brigade authority. When the structure is built the technician must apply to the same body for a certificato di prevenzione incendi before the building can be used. This has to be renewed every five years. If something is changed the owner must apply for a new certificate.

Finland

Fire regulations come under the Land Use and Building Act (132/1999). Revised requirements concerning fire safety can be read in Section 117b Fire safety of an amendment, Land Use and Building Act (958/2012). Building legislation is the responsibility of the Ministry of the Environment. During the building control process the local authority consults with the fire authority about the fire safety aspects of most building work. In high risk developments such as public buildings, healthcare facilities and high-rise buildings, a fire authority normally carries out a fire inspection before the premises can be used. The owner is responsible for safety during its lifetime. A building permit is required for repair and alteration work if it is obvious that it may affect the safety or health of those using the building. The fire authority has the powers to require additional fire safety measures if alterations have been carried out.

Sweden

Laws and regulations are set at national level. The detailed fire rules are found in the BBR (Boverkets Byggregler). Proposed buildings are handled at the municipal level – a fire safety strategy document is often required to get a permit to start construction. But this is not always the case; there are differences between municipalities. After a design has been built a private contractor certifies that the building meets the code. This is often with the help of the fire consultant who designed the fire strategy. Sweden had a fire disaster in 1998 when 63 people died at a disco in Gothenburg. The disco was in a building not approved for that activity. The fire began in an adjacent stairwell, and when someone opened the door to the disco, the fire filled the disco with smoke and fire within seconds. Today for performance based design it is mandatory to consider that a fire might break out in an existing building adjacent to the new public place, if that building has no fire alarm.

Netherlands

The Woningwet (housing law) covers all buildings, not just housing. Technical requirements, including fire safety, are found in the Bouwbesluit (building decree) and the Regeling Bouwbesluit (building decree regulation). The rules are national and fall under the purview of the ministry of the interior and kingdom relations. Minor additions can be made by local authorities. Fire risk is usually considered in the later stage of the building design process. The regulatory regime is a mixture of prescriptive requirement and performance based testing. A permit is given by the local authority not only on fire resistance but all other fire safety aspects covered by the building decree.

After a building is complete the local authority may check whether it accords with the accepted design. But often this is not done or only for a very limited part of all aspects, says Rudolf van Mierlo, a senior fire safety consultant at DGMR. For any substantial alterations the owner needs a new permit from the local authority. The owner has prime responsibility for the fire safety of the building.

Austria

Fire regulations are set by Austria's federal states, but they are linked to national regulations known as OIB guidelines, which refer to subjects such as fire safety, fire in operational structures, garages, car parks, and tall buildings.

Fire protection compliance has to be carried out as early as possible in the design phase. Consideration at a later stage leads to increased costs. For specific projects, it is possible to deviate from the provisions of the OIB guidelines if a fire protection concept demonstrates that the same level of protection can be achieved.

After construction, a licensed engineer, who must be different from the builder and the construction supervisor, has to confirm that the project complies with the building permit and the regulations. This takes into account inspection reports of the active and passive fire protection systems. If changes are made to a building (eg construction of a new facade), approval must be obtained from the local authority.

External management

Procurement & contracts

Value has to add up

The call for 'good costs' on Grenfell's cladding changed the specification. Value engineering can have unforeseen consequences

Tom Taylor

Value engineering (VE) is sometimes referred to as cost cutting – but that can sound like corner cutting, which can be perilous.

Undoubtedly the best approach is to look for better, not just cheaper, solutions, although better can also be lower cost.

VE is usually a reactive process, when there is appropriate material on the table for systematic review. This puts architecture on the front line. Usually the pressure is applied to the 'design' and frequently the most pressure is on the architectural elements. It can be argued that the structural and services engineering elements should be expected to deliver contributions commensurate with their proportions of the budget.

But it is not just about design. The client can be asked to look at the brief or statement of requirements. This when 'must-have' and 'nice-to-have' can be applied – again. The contractor can be asked to look at the construction programme and method statements for economies in durations and preliminaries. However, not all this information may be readily available or presented, while there is usually a large heap of architectural drawings and specifications that everyone can get stuck into.

The VE exercises are usually applied while concept design, scheme design and detailed design are taking place: the techniques, the opportunities and the issues are different for each. One of the difficulties can be new parties raising aspects which have, or should have been, addressed at a previous review. Thus the involvement of contractors and their construction and supply teams is important – and the earlier the better.

There can be difficulties if parties become involved in VE activities alone and have not actively participated in the project processes to achieve the proposed solutions. In such circumstances the review may need to be conducted as a series of presentations, discussions and sub reviews, possibly on an elemental basis. This will take longer.

Sometimes when a project cost plan or tender returns exceed the budget provision a VE exercise results. Such a pressurised, time-constrained, one-off exercise can be less collaborative with project team members staunchly defending their own proposals, contributions, interests and cost provisions. And while such a review may be at, say, detail design stage, the financial gap may be so large that it is necessary to address fundamental aspects of brief, design and scope that were established at concept and scheme stages.

To ask contractors and their subcontractors at the sharp end to be involved or to lead VE exercises sounds like a good idea, but it is important that the right people are involved – those with managerial, commercial (QS) and technical expertise. All representatives should be briefed on the topics in hand; should undertake some research and thinking beforehand; and should be authorised to speak on behalf of their organisation. It's better if VE exercises have duration, rather than being single events, so that functionality can be explored, alternatives can be identified and analysed, and recommendations checked and tested. 'Design it once' doesn't work here.

VE exercises mean that design information usually has to be revised and refined to accommodate and reflect the changes and then reissued. At this point some 'simple' VE proposals are discovered to have complications with secondary effects on other aspects, or are not able to achieve the stipulated standards or the full financial savings.

This can apply to modern, sophisticated assemblies and systems where some cost-saving tinkering or re-engineering substitutions can upset the whole arrangement – for example when wishing to achieve particular levels of air-tightness, sound insulation or water or weather proofing.

Therefore time needs to be allowed to verify the application and credibility of VE changes – just as with any other variations or 'good ideas'. Similarly it is inappropriate to adopt a technical 'works' change that will be largely offset by costs to the design teams or construction teams that diminish or eliminate the proposed cost saving – in some cases members of the project may not even be obliged to participate in VE activities or may participate only partially or with extra fees.

> Time needs to be allowed to verify the application and credibility of VE changes

Design and build and two-stage tendering, plus the previous popularity of management contracting and construction management, have all had expectations of some aspects of buildability and value engineering. The extent to which this is undertaken on a collaborative, team wide, holistic, transparent approach very much depends on the parties involved, their cultures and expectations of each other.

Statutory requirements, standards, planning permissions and the like may appear to be inviolate in VE considerations but this is not always the case. Designers can be asked to explain their specifications or their safety factors or to go back to the statutory bodies to obtain clarifications.

While 'innovation' tends to be seen as a good thing, care does need to be taken when value engineering attempts to introduce innovative materials, components, assemblies or systems that are unproven in the context. This might remove a cost but could generate technical or time risks and ultimately lead to the same or additional costs.

Whatever the sources and directions of suggestions for VE contributions, it is important to remember that the responsibilities remain with the primary parties for each element – legalistically, contractually, appointment-wise, insurance-wise, duties of care, signing off, etc – unless specifically agreed otherwise in writing. ●

Tom Taylor is principal of dashdot, a joint founder of Buro Four and vice president of the Association for Project Management (APM).

External management

Compliance

Got to get this right

To avoid future tragedies we need a true understanding of the causes of this one

HOLLY EXLEY

Maria Smith

Should I write a column about Grenfell? Should I write about a need to review our regulatory landscape, the implications of prevailing procurement routes, or architects' duty of care to a diversity of stakeholders? Is it OK to co-opt it to make a point or serve some agenda I may have? Should I stay silent? Or would it be negligent of me not to speak out against the injustices that are arguably complicit in this tragedy?

It was striking how adeptly and quickly journalists, politicians, campaigners, and Facebook users presented the tragedy as evidence in support of an extraordinarily diverse set of agendas. 'Green targets' were being blamed by some while others seemed to miss the insulative properties of the cladding altogether, claiming it was only there to protect sensitive posh eyes from aesthetics associated with social housing. It somehow managed to work as an illustration for any persuasion.

This always happens of course, but for me, and I'd imagine others in our profession, it was especially chilling because this is a topic we know something about. We all write specifications and risk assessments, work to meet multifarious requirements, to balance the needs and desires of diverse groups of stakeholders, to nurture a design such that it can survive out there on its own among greedy beleaguered contractors.

We are all acutely aware of how conceivable it is for something to go wrong in this complex landscape. This is our world and we know that it bears no resemblance to the sensationalist reductive headlines.

Co-opting a tragedy for personal agendas is shocking but unsurprising in this climate. This phenomenon of fake victims demonstrates an extraordinary but telling level of callousness. It feels like tremendously bad taste to capitalise on others' misfortune, even if it is for a good cause.

The media has shown us how easy it is to spin the story to support any agenda and this decouples the call to arms from the cause. The chaotic media coverage of Grenfell is arguably following the now familiar pattern of stirring up a hysteria as a preface to clumsily or covertly exacerbating the root cause with superficial fixes.

Naomi Klein describes this pattern of 'shock tactics' with terrifying clarity: 'Wait for a crisis, declare a moment of what is sometimes called "extraordinary politics", suspend some or all democratic norms – and then ram the corporate wishlist through as quickly as possible.'

Phin Harper last year wrote similarly of the 'housing crisis', arguing that that term itself was counterproductive: 'From "economic crisis" to "refugee crisis", the narrative of perpetual catastrophe is being deployed to divert attention from root causes, allowing flawed retrogressive proposals to be pushed upon a panicked public.'

I could see this happening here if we're not careful. On the day after the fire I was invited to sign numerous petitions, all well-meaning, but indicative of a more insidious issue. Our society can be impressively reactive. I could see it becoming very difficult to improve the thermal performance of existing buildings or reuse existing buildings at all.

I could see additional layers of consultants deployed in the name of oversight making communication more convoluted. I could see premiums being charged in the name of health and safety but actually paying for those best at shirking responsibility to better legally protect themselves. I can see larger proportions of budgets being diverted away from materials or labour and into ineffectual bureaucracy and risk aversion.

> We are all acutely aware of how conceivable it is for something to go wrong in this complex landscape

Something that especially frightens me is the potential for regulations to become longer, more complicated, and more difficult to understand and implement. In recent years, road safety researchers have been promoting a reduction in the amount of signage and clutter bombarding drivers.

The studies show that excessive or misplaced safety measures have two negative effects: to give the illusion of safety (crudely, if it's green it's definitely safe to go); and overwhelming the drivers with excessive information, drawing attention away from the other road users that these regulations are there to protect. This is not about anarchic deregulation, it's about smarter, clearer, effectual regulation.

Arguably the largest disservice we can do to those who lost their lives, homes, and loved ones is to fail to learn from this disaster. We can't not make changes to prevent future tragedies, but surely these changes need to come from an understanding of the causes of the tragedy and not volatile being-seen-to-be-doing-something measures or, most terrifying, counterproductive, pro-corporate, undemocratic measures that favour a few, while setting up the rest for the next crisis. ●

Maria Smith is director of architecture and engineering at Interrobang

Paul Winch Furness. Source D&D London

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When converting a Listed C19th gym into a restaurant for the King's Cross Central Limited Partnership, architect Allies and Morrison found that the Janisol Arte steel renovation window from Schueco Jansen delivered the perfect combination of appearance and performance. With narrow face-widths of just 25 mm or 40 mm, a wide range of opening types, multi-point locking and U_w values from 0.8 W/m²K, Janisol Arte is also soon to be available in stainless steel and Corten steel. **www.schueco.co.uk**

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3: Culture

Miasmas, prog rock

– it must be Eye Line 2017

HOLLY EXLEY

Hugh Pearman Editor

There are fashions in architectural depiction as there are in everything else, and after five years of running our annual Eye Line competition for what we loosely call drawings (any medium or combination of media allowed) I feel like I've seen them all, though I undoubtedly haven't.

Dark, rainy dystopias gave way to colourful, pop imagery. The style of graphic novels and comics got steadily more popular. The placing of the architect-artist in their own drawings – their hands, arms, even on occasion complete figures as god-like beings manipulating their manufactured worlds – became a thing.

Photo-realism appealed to some, almost total abstraction to others. Multi-point perspective has its adherents. And the fantasy kingdoms of TV series and films have much to answer for. I'm seeing drawings now that look a lot like 1970s prog-rock album covers.

Then there are the obsessives, the Where's Wallyists, those who clearly lose themselves, doubtless for months, in their steadily more minutely detailed designs. The kind where you can take a square centimetre, expand it to full screen, and see more and more open up. Worlds within worlds. And always, there are the bird-lovers.

We are all familiar with the birds, are we not? Fact: most architects and architecture students want to design everything in the drawing and the sky is no exception. It can't just be sky. There has to be something IN the sky, and artful clouds or a cartoon smiling sun are not enough.

It's always been this way – hot-air balloons, airships and helicopters were routinely pressed into service in the past.

We passed peak birdflocks about three years ago but they are still there. They're harmless enough I guess, and if the drawing's good enough you don't really care but – when I see them I shoulder an imaginary shotgun.

> We passed peak birdflocks about three years ago but they are still there. I shoulder an imaginary shotgun

Mists, fogs, miasmas, they're another thing. The ghosting of the image, the fits of the vapours, drifting between you and the drawing. Again, I wonder if this consciously or unconsciously comes from steampunkish drama series.

Of course there are still old-school plans, sections, elevations and perspectives, soft-pencil sketches and watercolours to be found and this year – I silently cheered when I saw it – a proper measured drawing of a historic building, just like they used to make.

And finally – the drawings done with a few lines and splashes of colour, deliberately naïve perhaps, which can be an object lesson in how to communicate much with little.

Every year it's a real pleasure to see the incredibly varied ways you communicate your architectural ideas, so thank you to all who entered, thanks to our judges and to our sponsor AVR London.

You'll find the results a few pages on from here. And next year? Something wholly unexpected I'll be bound. Maybe even bird-free. ●

ONLY ON RIBAJ.COM

It is an incestuous country and difficult to compete within. The rules of the game are closed

Why Ricardo Bofill has never built in the UK: ribaj.com/ricardo-bofill

My eyes are in polychromatic shock

Pamela Buxton is dazzled: ribaj.com/glass-chain

Loud and clear

Now more than ever architects must make their individual and collective voices heard

HOLLY EXLEY

Jane Duncan

'There's always a moment that separates the past from the future, and that moment is now.' Aniekee Tochukwu Ezekiel

I'm writing my last RIBAJ column as your president following two major events, one awful – the devastating fire at Grenfell Tower – and one uplifting: the RIBA International Week. Both will and indeed should have far reaching effects on the profession.

The horror of watching the inferno at Grenfell Tower shocked the nation. Our hearts go out to the victims of the tragedy, including two young architectural assistants, Gloria Trevisan and Marco Gottardi, whom we remembered at RIBA Council last month. As the authorities struggled to support survivors, the response from the community was both astounding and generous in an era of supposed smart-phone social isolation.

It is essential that the public inquiry seeks the detail of what issues – technical, regulatory and managerial – led to the events at Grenfell Tower. In advance of that the government urgently needs to undertake a comprehensive, transparent and fundamental reappraisal of the fire safety and building regulations to remove uncertainty, provide clarity of guidance and protect public safety. However there are also wider issues to consider about the role of social housing, and about the impact of value engineering versus the value of people, and the value of quality.

For decades councils have been unable to borrow money for new or replacement council housing. Only a few enlightened ones have grasped the social housing procurement nettle and now stand as responsible, professional role models. Social housing tenants are often ignored in decisions that have a significant impact on their homes, living conditions and even potential risks to their lives. This situation is unacceptable and has to change.

At the RIBA International Conference global policy makers and architects reflected on the UN's New Urban Agenda with its mission to 'end poverty and hunger in all its forms and dimensions; reduce inequalities; promote sustained, inclusive and sustainable economic growth; achieve gender equality and the empowerment of all women and girls contribute to sustainable development; improve human health and well-being; foster resilience; and protect the environment…'

George Ferguson claimed architects are natural campaigners who need to be brave and play their part in local politics. David Chipperfield challenged us to speak up and act together, lifting our focus from the red line around our site of the moment. Liz Diller exhorted us each to take action, however small. It was an energising day full of insight and challenge – if you weren't able to attend catch up on the highlights at architecture.com.

As members of the RIBA we are part of an organisation that can amplify our individual voices and lobby for change, but we also have a responsibility to our own communities and should consider what action we can take as individual practitioners. Yes, every little helps.

I've been inspired by the recent clamour from the Chicago-based Architects Advocate Action on Climate Change, an industry-focused public outreach campaign involving 68 architectural practices and six design and engineering firms to 'give voice to an important issue that affects healthy and liveable communities and cities'.

After the devastation of the Grenfell Tower fire and the challenges thrown out by the RIBA's international week we must not settle back quietly, but ensure that we take action together – loudly.

'There are risks and costs to action. But they are far less than the long range risks of comfortable inaction.' John F Kennedy ●

@JaneDuncan/PRIBA

We should consider what action we can take as individual practitioners

INTERNATIONAL PRIZE

Entries for the 2018 RIBA International Prize are now open, deadline 17 October 2017.

The prize is open to any qualified architect in the world, for any building of any size, type or budget. Elizabeth Diller of acclaimed US firm Diller Scofidio + Renfro will chair the grand jury. Enter at www.architecture.com/ribainternationalprize

Glorious mud

The desert is blooming in Iran with exotic restorations

Olly Wainwright

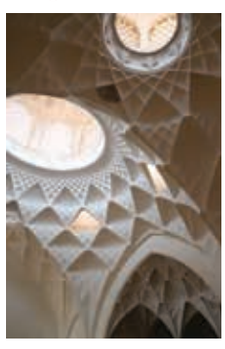
A little way north of Iran's main uranium enrichment facility, where anti-aircraft guns line the main road, workmen are busy manhandling mud bricks in a deep sunken courtyard, surrounded by lush fruit trees. Around them stand the semi-ruined walls of an 18th century merchant's house, its rooms dug deep into the ground, opening on to the courtyard with broad apsed iwans. At the top of a ladder, a craftsman is painstakingly carving an ornate pattern into a panel of wet mud plaster, while others fix wooden mashrabiya screens into windows below.

Behind the tall mud walls that line the winding streets in the ancient desert city of Kashan, dozens of long-derelict houses are being reborn. Many of the city's grand homes are being renovated as boutique hotels, restaurants and galleries, in a conservation building boom that has taken the region by surprise.

Designer Shanaz Nader was first drawn here in 2008, when the owner of one of the grandest mansions in town commissioned her to draw up plans to convert it to a hotel. Manoucherhi House opened three years later as a jaw-dropping showcase of traditional Persian craftsmanship, with immaculately restored stained-glass orsi windows, latticework screens and beautifully sculpted muqarnas vaulted ceilings. A textile workshop opened in the basement, demonstrating silk and velvet weaving – the industry from which many of the town's merchants originally made their fortune, this being a key stop on the Silk Road – along with an art gallery and restaurant serving regional food. When she finished the hotel, Nader acquired a place of her own here. Her son Marco, also an architect and designer, has one too. Relocating from hectic Tehran, he now spends his time mixing paint colours from natural stone powders in his basement.

Manoucherhi House is a jaw-dropping showcase of Persian craftsmanship, with immaculately restored stained-glass orsi windows, and muqarnas vaulted ceilings

One of the badgirs that naturally vent spaces by acting as wind towers.



Seeing what these dusty old relics could become, many others have followed suit. Over the last decade, Kashan – thought to be the place from where the Bible's Three Wise Men set out – has been inundated by rich Tehranis buying up its ruined homes – which wasn't immediately welcomed by locals. Alarmed by the flood of newcomers, and upset that some renovations were using government money that they wanted spent on modern housing, hundreds of people signed a petition against the restorations, wanting the outmoded buildings bulldozed instead.

But as more of these majestic courtyard houses are restored, the tide of opinion is turning. Kashanis are finding a renewed appreciation for their heritage, and understanding the environmental benefits of rooms buried a storey below ground and ventilated by the badgir wind towers – things that have long been seen as outmoded signs of the past.

Stepping into Ameriha House, a seven-courtyard, 12,000m^2 mansion that is now an 85-room boutique hotel, you feel the temperature drop. Along with gigantic badgirs, sunken courtyards filled with pools of water and trees encourage a flow of cool air that rivals air conditioning. Since it opened in 2015 Ameriha House has seen a steady flow of tourists seeking the luxury desert experience.

Although Iranian law prevents foreigners from buying property directly, the restoration work in Kashan has generated international interest, too. Belgian artist Wim Delvoye, who courted controversy in the past by tattooing live pigs with Louis Vuitton logos, is restoring five of Kashan's mud mansions. He plans to open a 900m^2 gallery in one and a Belgian restaurant in another.

He says that working on historic buildings in Kashan is a breeze compared to back home, recalling how he acquired a small castle outside Ghent to turn it into a sculpture park, but was fined €45,000 by the environmental agency following a seven-year legal battle, after he 'started to clean out the moat'. ●

Oliver Wainwright is architecture critic at the Guardian. Read him here every other month and at ribaj.com

ARCHITECTURAL FUSION

In a very different sunken courtyard garden in Tehran, the first graduating students of the new CAAI School of Architecture recently put on their summer exhibition, showcasing a range of experimental pavilion structures that could have come straight from London's Architectural Association. The work was a far cry from the traditional approach taught in Iran's universities, including one studio dedicated to new approaches to mud-brick building, combining the vernacular of desert cities like Kashan with new robotic technologies.

Prepare to be dazzled

Bruno Taut-inspired coloured glass installation will play with your perceptions

Pamela Buxton

Illustration by Space Popular for the fabric panels at The Glass Chain, an installation by Space Popular at Sto Werkstatt. See more images at ribaj.com/glass-chain

The Glass Chain, a new installation in London by Space Popular, is a feast for the eyes. Designed for Sto Werkstatt's Clerkenwell showroom, the temporary piece creates a kaleidoscopically coloured glass structure full of rich pattern and trompe-l'oeil effects. It is mesmerizing.

Sto Werkstatt approached Space Popular, a multidisciplinary design and research practice led by architects Lara Lesmes and Fredrik Hellberg, to consider new possibilities for its product StoVentec Glass, a rainscreen cladding system with a glass-faced composite panel. The duo, who favour outfits every bit as colourful as their glass creation, teach at the Architectural Association and are interested in exploring visual perception and environmental psychology in architecture.

This is Space Popular's first built UK project. The architects chose a concept inspired by The Glass Chain – the series of chain letters initiated by Bruno Taut. These set out utopian visions for fabulous new glass cities and were circulated around a select group of expressionist architects including Hans Scharoun and Walter Gropius. Correspondents envisaged glass as a key architectural material, used in vivid and intricate forms and colours for everything from furniture to crystalline cathedrals on mountaintops.

'They thought the architecture would be so incredibly overwhelming that it would solve social problems,' says Hellberg.

Space Popular shares this desire to broaden the way glass is used. As the project progressed, the practice became interested in exploring how 2D treatment of opaque glass can support a virtual content by creating a perception of multi-dimensionality. This, says Lesmes, broadens the scope of what could be considered an alternative reality.

The colour application has been designed so that every little bit is screaming for attention

Working with curator Amy Croft of Sto Werkstatt, the practice created a folded structure of 21 opaque glass panels covered in intricate abstract patterns. The architects made the patterns using 3D computer modelling, working on different panels alongside each other so that they were always aware of the other's designs. From a 3D image, they produced a flattened, 2D version which was printed onto the panels with ceramic ink using a bespoke printer. The printed colour was then fused with the glass during an enamelling process.

The glass structure sits on a stepped podium on a blue carpet suggestive of water with a patterned seat projecting out from the entrance. On the reverse, the 23 opaque panels are left plain white. The walls of the surrounding room are hung with designs inspired by Taut's alpine visions.

In particular it's the drawings in the Glass Chain letters that have inspired the designs. Each panel is unique and is patterned with various scales of abstract motifs including rusticated stonework, doorways, arches, staircases, pediments and building structure, all designed to draw the eye into the building by giving the illusion of three-dimensionality and questioning perceptions of space.

Once my eyes had recovered from the polychromatic shock, they were drawn to the only dynamic elements in the pattern, the swirling forms flowing in and out of frames above the entrance. This is something of a focal point, highlighted further by a clutch of crystals in the panels above. But there is interest, and conflicts of scale, everywhere, with the heady array of patterning united only by the common colour palette.

'The panels seek attention equally. The colour application has been designed so that every little bit is screaming for attention,' says Hellberg. 'It's meant to be joyful.' ●.

The Glass Chain – A project by Space Popular, until August 16, Sto Werkstatt, 7–9 Woodbridge Street, Clerkenwell, London EC1R 0LL

Mersey upbeat

Can the new RIBA North centre become a catalyst for good far beyond Liverpool? Well, why not?

Hugh Pearman

JOHANNES MARBURG

Above Red marks the spot: the entrance to RIBA North overlooked by the listed Mersey Tunnel vent tower.

RIBA North is open, and what a long, long trip it's been to get to this point. It was 1978 when, as a cub reporter fresh out of college, I first saw Liverpool. That year the RIBA held a well-attended conference there to address the problems of the declining industrial city. James Stirling refused to take part – despite Liverpool being his birthplace – on the grounds that the great mercantile centre had become an 'insipid mess' wrecked by everyone from planners and traffic engineers to 'commercial architects'. He got a ticking off from the Institute for that, but did he care? Big Jim was Big Jim.

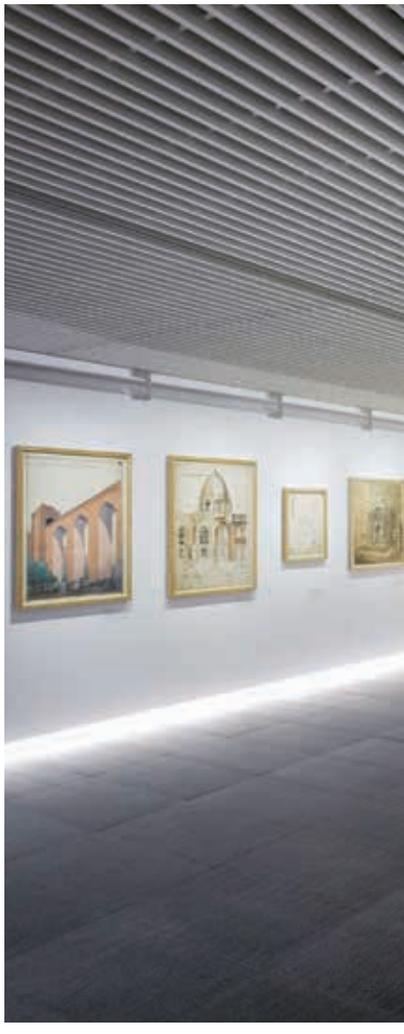
What struck me then was not so much the quality or otherwise of the new stuff as the swathes of dereliction throughout the city. I had never seen anything like it. And the waterfront seemed to be more or less sealed off behind a formidable brick wall, behind which not much was going on – certainly not in the great Albert Dock, which had closed in 1972 and was standing forlornly empty.

Things were to go lower still for the city with the Toxteth riots of 1981. But then the fightback began, aided by the energetic and popular Michael Heseltine as 'minister for Merseyside'. The Albert Dock reopened in 1984, the Tate moved in (in a Stirling/Wilford conversion), regeneration of various kinds commenced. Not that the city ever lost its reputation for cavalier demolition of good buildings, mind. And I wish they hadn't so comprehensively removed the great wall around the central docks – it had a mystery and nobility to it – though I can understand the rationale in opening up to the waterfront.

As for the commercial architects derided by Stirling, they eventually proved their mettle not only in the salvaging of the Ropewalks district (kickstarted by an early Urban Splash project with ShedKM) but also in the Stirling-shortlisted Liverpool One development masterplanned by BDP with a starry back-up cast of architects. Liverpool has been City of Culture. It's a big tourist destination. It's buzzing. Assemble won the Turner Prize for its community-based work there. Liverpool now has a real spring in its step – but regeneration comes with its own set of problems. Some contentious high-rise developments are planned close enough to the centre to alarm UNESCO, which is threatening to remove its World Heritage Site designation from the waterfront.

Liverpool now has a real spring in its step, but regeneration has its own problems

After seeing all these phases of city rebuilding over the years, I'm back for the opening of RIBA North. This is on Mann Island, close to the famous 'Three Graces', Edwardian commercial palazzos including the Liver Building on the Pierhead. As the opening exhibition reminds us, you are standing where Will Alsop's famously unbuilt 'Fourth Grace', the swirly thing he called 'The Cloud', was going to go. What got built instead is a complex of three black-glass



HUFTON + CROW

Left Once inside, the red spine wall offers you a choice of routes: café and shop downstairs, galleries and offices upstairs.

JOHANNES MARBURG

Left In the main gallery, the opening show is of Liverpool's great unbuilt.

buildings by Broadway Malyan, two of which form a chiselled pair linked by a glazed external 'winter garden'. This is where you find RIBA North, its presence marked by a strong red Corian spine wall leading you in and up.

It helps that the RIBA's centre is designed by Matt Brook, who did the whole award-winning development for Broadway Malyan and is a stickler for detail. Materials are good, and feel durable. The centre contains the RIBA's first museum-standard gallery outside London. The opening show, 'Liverpool(e): Mover, Shaker, Architectural Risk-Taker' may be a mouthful of a title but it contains some real gems of unbuilt projects in the city including a lost masterpiece, Denys Lasdun's design for the Liverpool Metropolitan Cathedral. The Heritage Lottery Fund helped pay for the conservation of the drawings, models and watercolours shown.

The centre starts downstairs with a café and shop, then moves upstairs to the gallery – or galleries, since there are two other spaces that can be used for exhibitions and events. The main one includes a big model of the city – physical, but interactive. Then there are the enviable offices, looking out across the historic docks. They house RIBA North West as well as desk space for practices and a graphic design company that works with the Institute. At the opening RIBA chief executive Alan Vallance revealed that, despite his Aussie accent, he hails from across the Mersey in the Wirral. President Jane Duncan joined the mayor of Liverpool, Joe Anderson, for the launch.

It was interesting to note at the red-themed opening how various people referred to RIBA North as being part of the Northern Powerhouse initiative. In other words it is seen as an agent for urban improvement across the North. Can a gallery, shop, café and offices really have such impact? Thinking back to 1978 and how hopeless everything seemed then, and what a difference the arrival of the Tate made in Albert Dock, I'd say – why not? This is a region with plenty of big-hitting architects, industrialists and cultural institutions. There is now another place for the RIBA to display its unrivalled collections as well as act as a regional and national forum. The challenge for RIBA North is to become a catalyst for beneficial change far beyond Liverpool. It is, as they say, a big ask. But there's nothing like being there, on the ground, open to public and professionals alike. ●

AVR LONDON

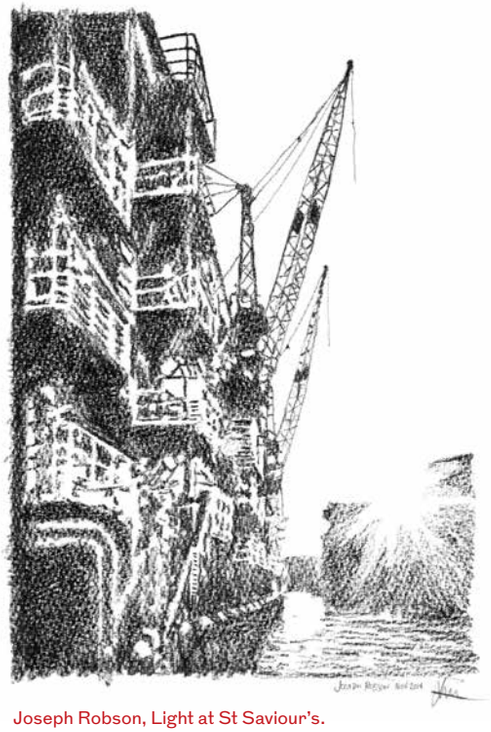
The mind's eye

Sketches often capture the essence of a building in a way polished CGIs cannot, and act as a vital part of refining the design, says Joseph Robson of Eye Line partner AVR London

Illustrative drawings need to hold just enough information to capture the imagination and to encourage minds to fill in white space with vision. They should always be part of the process of design, expressing the interaction of the hand, mind and eye. Michael Graves once wrote that there are three types of drawings: the referential sketch, the preparatory study and definitive drawings. The referential sketch is not likely to 'represent reality, but rather to capture an idea'. Renzo Piano's original sketch for the Shard is perfect in conveying the building's form and concept, and even more pared back is Picasso's sausage dog drawn with a single line.

Drawings serve as memory etchings that record the thought process. Sometimes the best work can result from trial and error, which could clearly be seen in some of this year's entries. Only drawing can provide such immediacy and opportunity to experiment and build on preliminary ideas. It is a vastly personal medium, as it encapsulates the essence of what one is trying to portray through honest expression. The spitting and splashing of an expressive watercolourist adds texture – sometimes quite literally – and all the randomness that entails.

During this year's Eye Line judging there was one particular entry, stylistically unique among the shortlisted ones, which provoked our interest, admiration and conversation: Jonathan Shekon Chan's sketches of the Hawkins\Brown entry for the Leicester Mainline museum were elegantly drawn in a loose but informative manner – the characters almost as if from the hand of Donald McGill, playful and animated. The scheme is described not just through the proposed built form. Despite their simplicity, the images told a story – a story we wanted to know more about (see page 74).



Joseph Robson, Light at St Saviour's.

Wilkinson Eyre was the eventual winner of the museum competition, amid some strong opponents such as Grimshaw, Farrells and BDP. However, the online published entries, while very descriptive, were more conventional definitive polished CGIs. Chan's referential sketches were unfortunately not among them. One can argue that competition images should be looser in style, more evocative, whereas a well-polished CGI may be more appropriate at planning or fundraising stage.

The annual Eye Line entries provide us all with a remarkable insight into the wide gamut of architectural illustration, and the judging of this demonstrates that which excites us as architects and drawing critics. The illusory, simple abstraction of an idea to make a beautiful image, an image that we find hard to pull our gaze away from. ●

Joseph Robson is founder of AVR London
avrlondon.co.uk

AVR London's competition CGI for East Wick and Sweetwater by FCB Studios.

Only drawing provides such immediacy and opportunity to experiment and build on preliminary ideas

Clear visions

This year's Eye Line winners embody a shift towards a more measured, craft-based approach to representing space

Words: Jan-Carlos Kucharek

Below Yale's Christopher Leung's commended Decommission/ Recommission project, with his Hadid-like overview of Bridgeport, Connecticut.

As a foil to last year's riot of colour, it seems Eye Line's judges were this time more intent on honouring the craft of drawing; a craft which might ultimately be digitally enhanced but is ignited by the stroke of graphite or brush against paper. From nearly 300 entries, including mainland Europe and east coast America, whittled down to a longlist of 50 by RIBAJ editor Hugh Pearman, the distillation seemed to reveal his subjective desire to perhaps move away from chromatic delirium and abstraction to a more measured and calm means of representing space.

It was a notion that the judges proved receptive to, despite two of them, Sandra Youkhana and Luke Caspar Pearson, having been responsible for the heady colour excesses of the 2016 winning entry. Knowing colour as they do, maybe they were aware of its ability to distract or confound, to remove clarity rather than add to it. Neil Spiller, chair of architecture at Greenwich University and a respected artist in his own right, was also not in a conciliatory mood; for him, colour seemed to presage the Trojan Horse of post-modernism, a threat to be checked at the gate. Studio Weave's Amelia Hunter and Eye Line sponsor Joseph Robson of AVR London by comparison seemed to bring a non-partisan balance to proceedings, keen to acknowledge how much 'lovely stuff' was in the selection with its sheer variety of styles and greater emphasis on digital manipulation of hand-drawn techniques.

Despite an initial sense of polarities in viewpoints, the submissions drew out how aligned the judges' thinking actually was. From the shortlist of 12 entries, the winner simply fell into place: simple, quiet, artful images that challenged the viewer's interrogation, but which, according to Pearman, 'talked of the ordinary nature of place'. Crucially, they embodied a temporal component: the fourth dimension so necessary to the communication of architecture.

Hunter was satisfied with the winning selection, sensing a 'return to reality after the madness of last year's winners'. Spiller saw it as a point lesson, sending out a 'message that the additive process of layering for no reason needs to be undone'. Pearson saw it as an antidote to the sophistry of digital techniques that can make things appear as they are not: 'The strongest entries have been painterly in the best sense of the word, without ever pretending they are paintings.' It's true, in the end there was no blindingly original work that pushed the envelope, but Youkhana was happy with that: 'The winners' styles have been obsessive, enjoying their medium and never anything other than fully in control of it.'

First winner

Matthew Kernan, Queen's University, Belfast

Fragmenting Nostalgia and Locus Amoenus

Matthew Kernan looked to no less than author James Joyce to act as the inspiration and frame for his academic work, intrigued by the notion of Joyce's 'epiphany': 'a sudden focus into depth, of naked revelation in what seemed to be a trivial incident'. It is this sense of reification of the everyday present in this image of rooms in an 'economy housing scheme' in Aarhus, Denmark, and a 'tower keeper's bedroom' that so impressed the judges.

Part of the allure was their figurative, Hockney-esque nature, layered with a subtle veil of abstraction that defies the assumptions of the viewer. Kernan has been masterful in controlling both compositions, playing games with us in a way that forces us to look again, with Robson noting: 'The more you look at them, the more they engage – I'm reminded of Holbein's Ambassadors.' The artistic references aren't just visual, but conceptual; Spiller too noted the compositional skill: 'It's sophisticated, with a sense of Velázquez's "Las Meninas". The subject is off centre, slightly hidden, the painting on the wall suggests reflection and other dimensions… the umbrella's surrealist touch.'

Hunter noted the strange contemplative choice of image on the wall behind the tower keeper, the bird frozen on the cusp of flight, past and future intimated in the present. Yet the wintry light thrown on to the walls past the bare trees outside lines up despite their different positions; a perspectival conceit that removes the image one layer from reality. Taken together, these slightly unsettling but satisfying elements combine to create a complex evocation of time and place from what, at first, seems a conventional representation of volumetric space.

'The more you look at them, the more they engage – I'm reminded of Holbein's Ambassadors'

Right Fragmenting Nostalgia: on the face of it a simple perspectival view is actually a complex and nuanced thing.

Slightly unsettling but satisfying elements combine to create a complex evocation of time and place

Left Locus Amoenus: the tower keeper's room, with bird, wings outstretched, and misaligned carpet, contains moments of tension in its apparent repose, featuring Hockney's dad.

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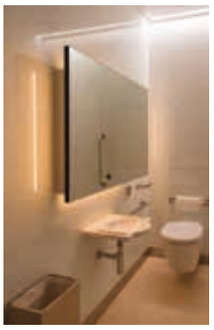

Leicester Square, London

Dolphin Alavo

Space, time, energy, money: now clean hands

When space is at a premium, and energy-efficiency is a priority, this modular, touch-free, behind-mirror handwash system from Dolphin has got all the answers – quick to install, easy to replenish, and a pleasure to use.

Designed with input from architects, designers and clients, Alavo uses the latest technology – including infra-red sensor taps, foam soap systems and high-speed low energy dryers – to save time, water, energy, soap, space and money. (To take just two examples from that list, the system can reduce water use by 70%, while hand-drying takes just 13 seconds.)

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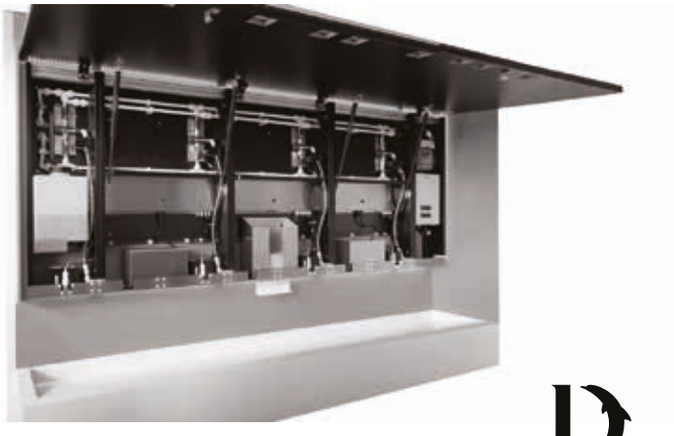

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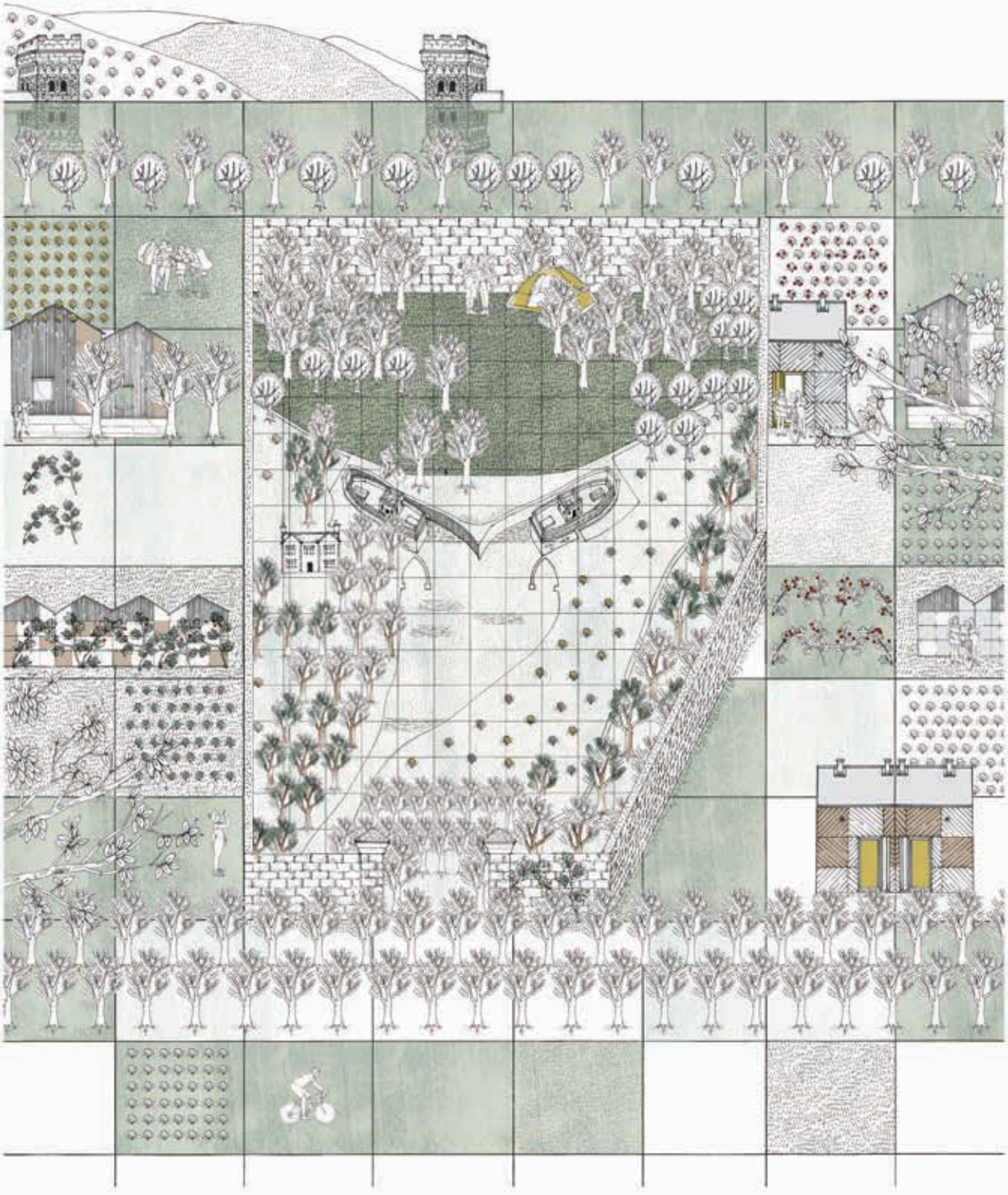
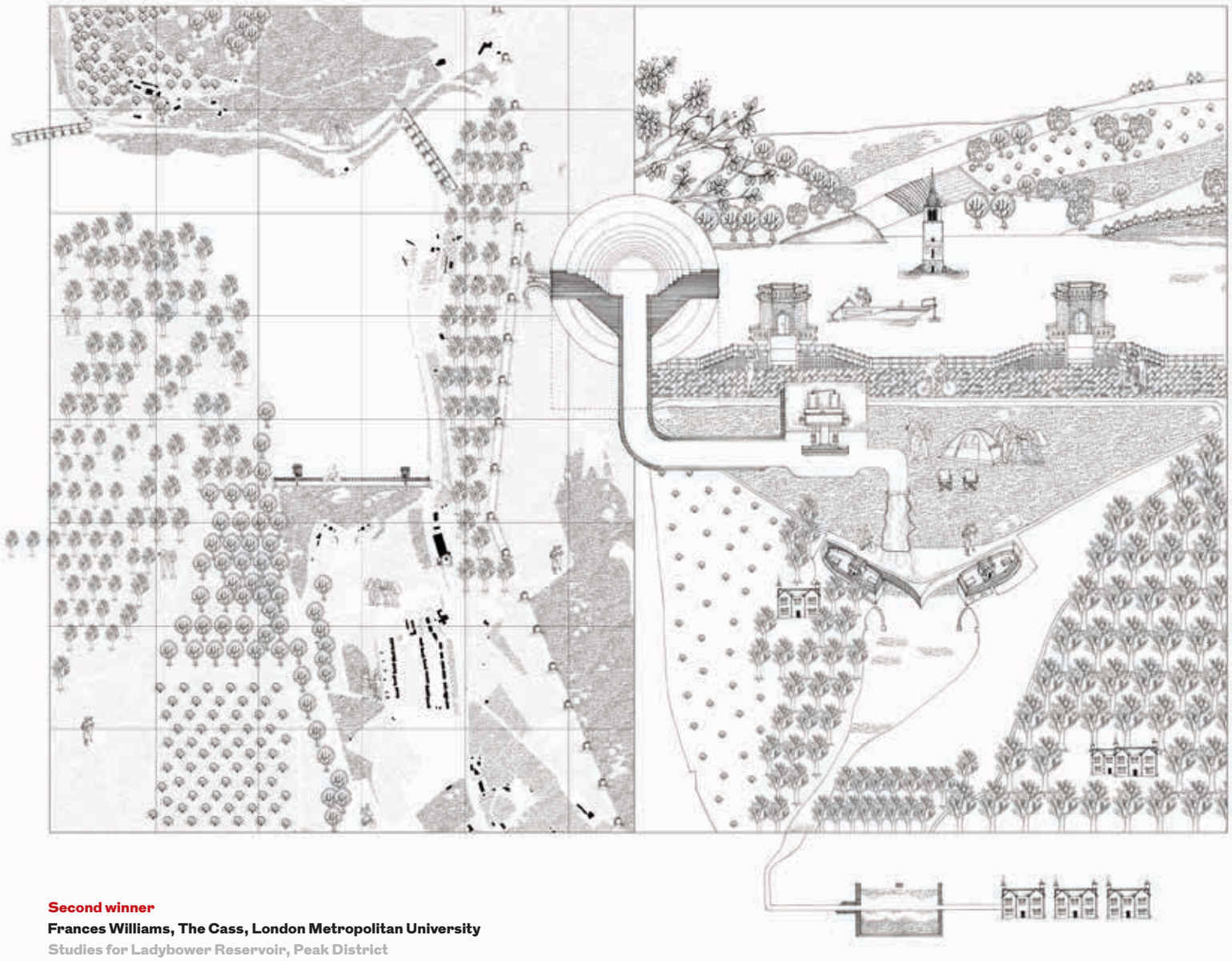
Right Ladybower dam. Water management is highlighted in this semi-infographic image.



Above Cultivation vs Artifice vs Wilderness. Inspired by Indian miniatures, nature is read against the 'naturalistic' dam.



Second winner

Frances Williams, The Cass, London Metropolitan University

Studies for Ladybower Reservoir, Peak District

Perhaps Frances Williams' interest in the Ladybower reservoir was piqued by the blotting out of architecture rather than its creation — haunting photos exist of the lost village of Ashopton's church spire slowly disappearing beneath the waters in the two years it took to fill the reservoir. Legend is that on occasion you can still hear its bells chiming out languorously from the depths. That lost past is perhaps intimated in Williams' choice of drawing style: a flattened, grid-like, cartographic technique that bears more resemblance to medieval representations of space than it does a major piece of 20th century infrastructure. Here, nature and artifice swirl around each other and challenge the viewer to question what is original and what has been created.

In her own way, Williams is challenging what a national park is and the kind of interventions that must force a structural questioning of the appellation. An underlying initial resonance with Romanticism is countered with sections explaining the workings of the dam itself like a Haynes Manual bound inside a 12th century illuminated panel. Spiller read it as 'the Garden of Eden meets OMA's La Villette competition', while Pearson read it like a reredos screen, a 'medieval map with an infographic twist'. The result is a set of architectural renderings, as Pearman noted, 'of pared-down beauty and strangeness'.

Pearson read it as 'a medieval map with an infographic twist'

Third winner
Luca Gamberini, Architectural Association
The Retrieval of Bodies, The Last Known City, Vertical Forest

There's a grim but fruitful purpose to Luca Gamberini's studies of a post-apocalyptic world – one where water levels have risen, flooding arable land and forests, where millions have been displaced into new, high level, temporal enclaves, and where single buildings take on a mythology not evidenced since the construction of the great European cathedrals.

Gamberini used the works of architect/artist Massimo Scolari as the inspiration for his work, the sense of loss of something being evinced in the confident but conscious erasure of the drawing itself. It was the epic nature of Last Known City that captured Neil Spiller's attention and 'sealed it for me'.

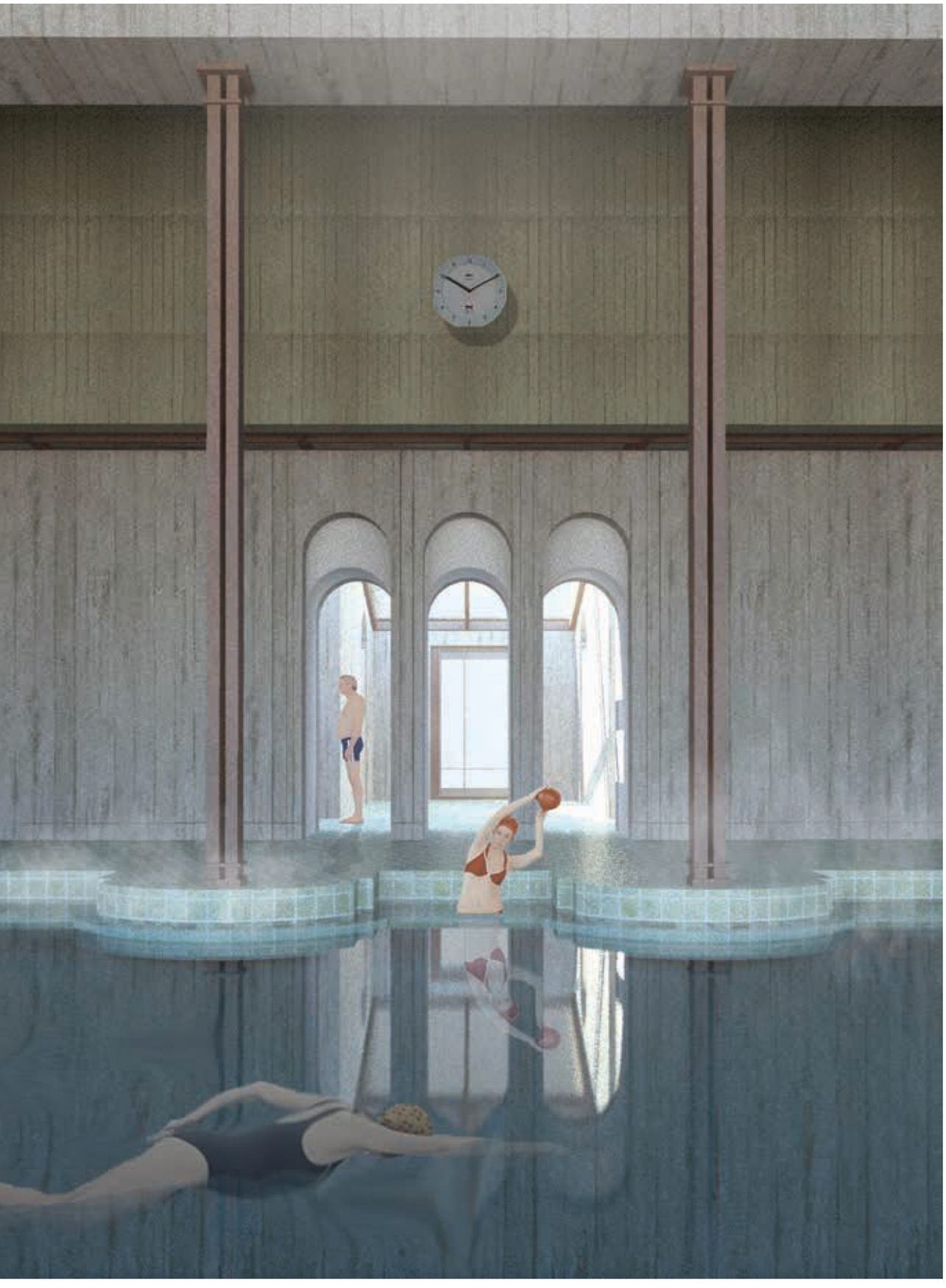
Joseph Robson, who has seen a lot of work while teaching part-time at Bath University, called them 'indulgent and gorgeous'. Bartlett research unit tutors Sandra Youkhana and Luke Pearson acknowledged that these works were of a type frequently seen at the London schools but saw them as undoubtedly beautiful examples. 'What draws us to them is not the theme or style but the skill of execution,' said Youkhana.

Above The Retrieval of Bodies. Post-apocalyptic reality requisitioning of private land for new, communal purposes.

Left The Last Known City. A reinterpretation of Scolari's visionary drawing depicting a smoking tower as the last known place in the world.

The sense of loss is evinced in the erasure of the drawing itself

Above Vertical Forest: 'a sequence of lithic spaces… a future pilgrimage destination of the displaced looking for the past'.



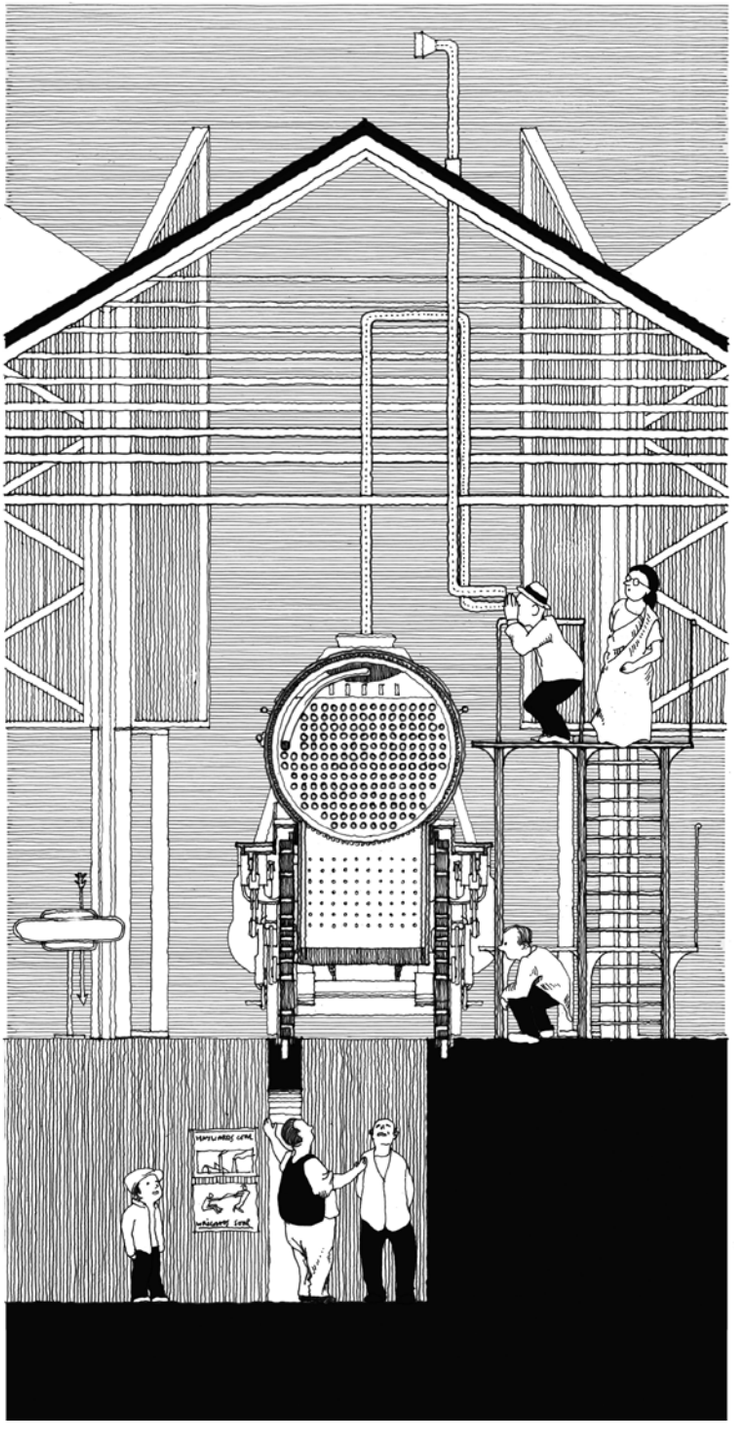
Commended
Deimante Bazyte
Royal Danish Academy of Fine Arts School of Architecture
Frigidarium: Lost Mariner Swimming Pool

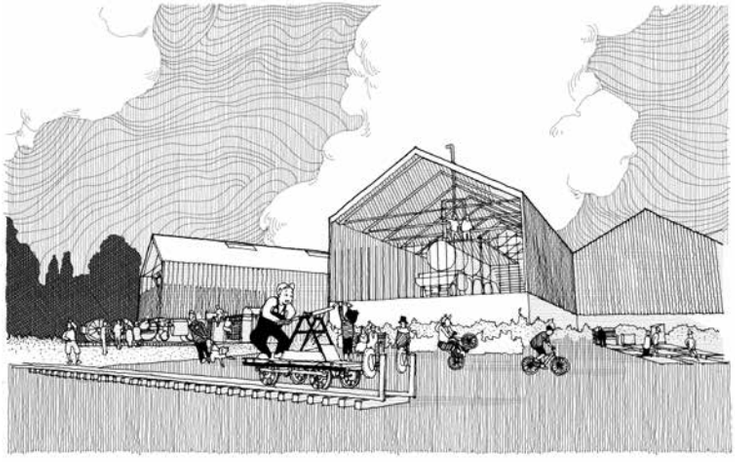
De Chirico's metaphysical 'Enigma of the Hour' painting was a thematic as well as a formal influence on Deimante Bazyte's representation of her project, a dementia centre in Copenhagen with its therapy pool. The sensory detachment evidenced in De Chirico's work translates beautifully into this context, the slow, even frozen movements of the residents captured at precisely ten past ten in the morning. Note: there is not one ripple on the pool.

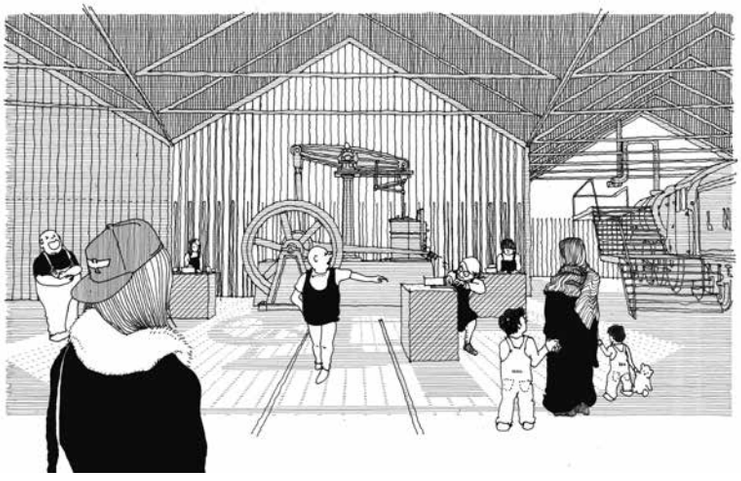
The artistic veil layering the image reinforces that detachment, and alludes to dementia itself; the image having the feel of being 'dead behind the eyes'. A cut-out drawing Bazyte submitted seemed more derivative, but as Amelia Hunter noted, 'all show a breadth of architectural skills'.

But it was the sheer multitude of art references of the paintings that provided the project's richness. Spiller saw not only De Chirico but Madelon Vriesendorp's artistic contribution to Koolhaas' 'Delirious New York'- and even Seurat's 'The Bathers': all relevant, all anaesthetised, all picking up on a very contemporary sense of soullessness.

Left 'Frigidarium depicts a moment in a swimming pool for the elderly and explores architectural elements in regards to cognitive perception and therapeutic environments.'







Commended
Jonathan Shekon Chan, Hawkins\Brown
Leicester Mainline museum

A series of seven drawings carried out for Hawkins\Brown's competition entry, these beguiling images by Jonathan Shekon Chan were as much about the inspiration found in the work of William Heath Robinson as they are about responding to the project brief.

Heath Robinson's tongue-in-cheek humour is here transmuted to pick up on the spirit of the place, with Chan keen that 'the drawings conveyed not just what the building would look like but what it would feel like to be at the museum'. Modelled in 3D, the hand-drawn component was actually scanned in, overlaid and applied digitally.

Conveying key spatial information, the digital process has not compromised the images' sense of playfulness and fun. Youkhana thought that: 'Sitting next to conventional drawings, these feel like statement pieces – it's good to see a contemporary building represented in this way.' Pearman lauded its 'professional technique while being very client friendly'. Hunter agreed that it was a 'good use of academically learned skills', osmotically bringing them into the realm of practice.

Commended

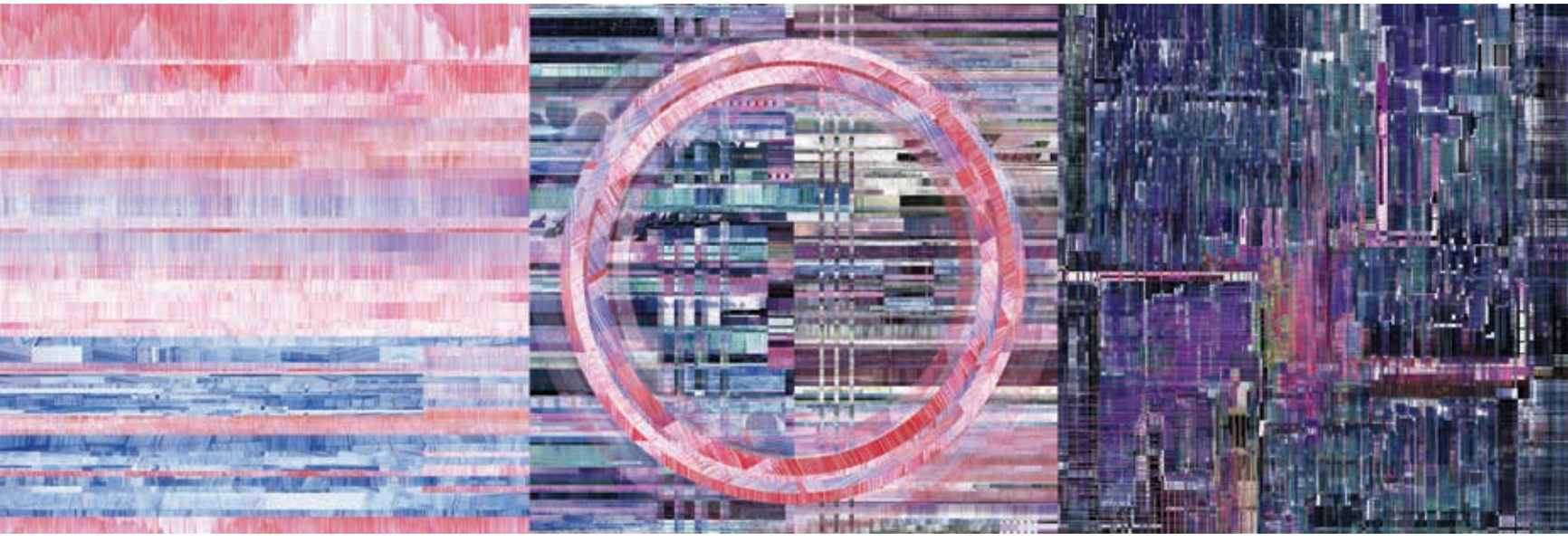
Snežana Zlatković, University of Belgrade Faculty of Architecture

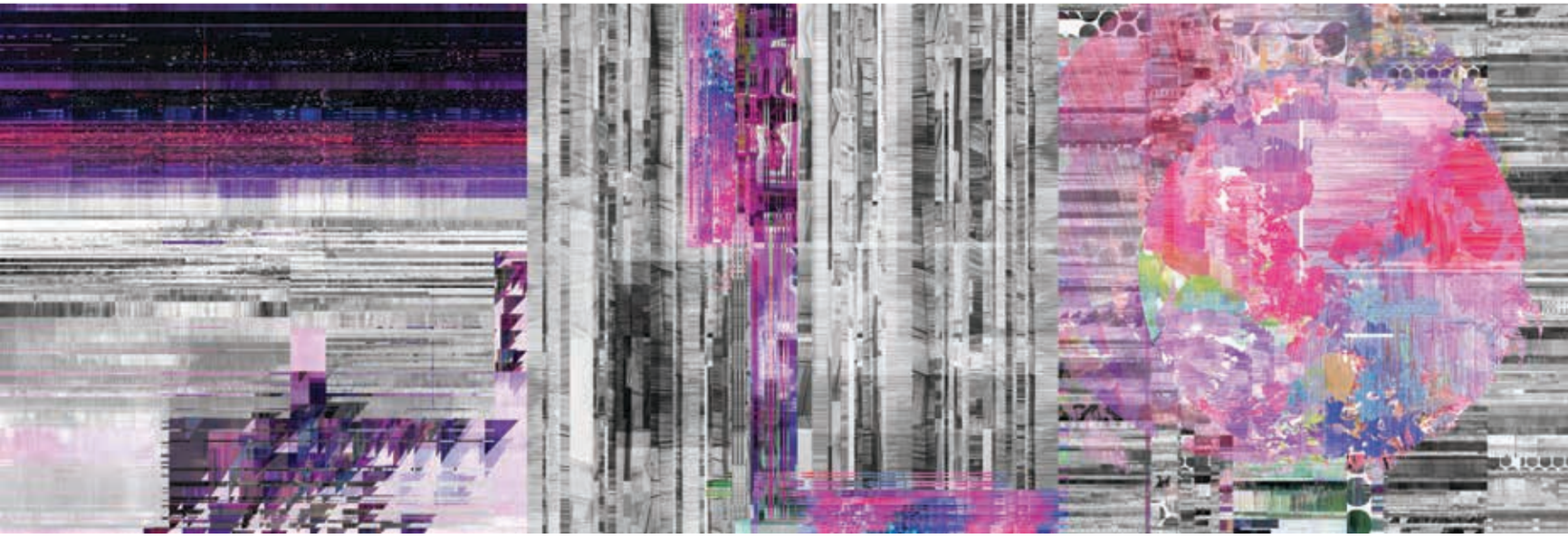
Millions of City Plans Transformation: Micro Macro Atmospheres Mapping

Produced as part of Zlatković's PhD research, and initially described by Joseph Robson as resembling 'the output of a broken printer', this entry proved its worth by making it through to the end. The submission's attendant explanation is not likely to help, either through translation or concept itself. The narrative around these digital transformations of city planning is dense and obfuscating, much like the images.

But there is a fizzing, electric energy to Snežana Zlatković's monochrome and clashing colours that suggests method to the madness. Hunter spoke of 'Gerhard Richter-like qualities', whereas Youkhana was reminded of James Corner's renderings of the American landscape. Pearson was keen to highlight the potentiality of the image rather than whether it realised space or not – something picked up on by Spiller, who called it 'a type of glitch space'. 'Everyone has been describing a project directly,' said Pearson, 'Zlatković has been more indeterminate, quite the opposite in fact – a field of pink noise.' Even the circumspect Robson was won over by the techno-punk graphics, admitting the author might be on to something. 'I agree we can't not have it in,' he concluded. 'It's mad – but it's also exciting and inspiring.'

A fizzing, electric energy to the clashing colours suggests method to the madness





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Building with conscience.

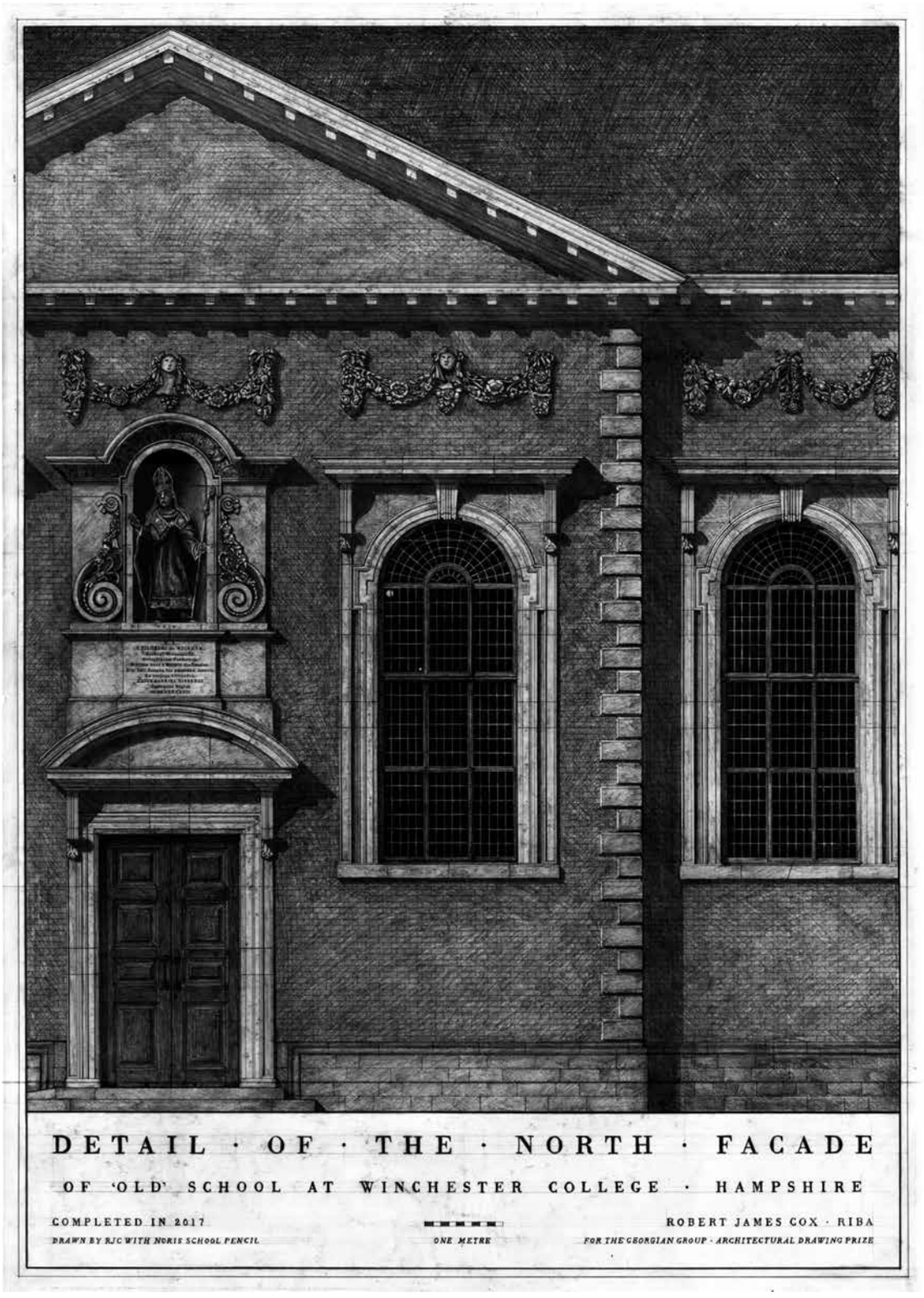
This is a proposed concept using digitally printed glass panels to show design possibilities. Specific detailing around panel design, sub construction and weathering would evidently need to be taken into account.

Commended
Robert Cox, ADAM Architecture
'School' at Winchester College
Measured drawing

Robert Cox's precedents, ADAM Architecture's Robert Adam aside, are all long dead – but he will be of the same opinion as his boss: if you want to learn about architecture, you need to go back to Alberti and Palladio. Or possibly Wren, if some people's attribution of Winchester's 17th century School building is to be believed.

And to commune with the afterlife takes time and patience – Cox took three days to measure the building and then carried out a set of 1:20 and 1:5 site drawings before pulling them all together over the next two months to create the final A1 image. Cyberarchitect Spiller conceded it was a 'very good measured drawing', with Pearman remarking that 'the trads never get a look in', despite it being a significant sector.

The work did throw up issues about the nature of the measured drawing, however, and the lure of the quoin. If Cox had delineated David du Roi Aberdeen's 1948 TUC building, would he have approached it differently, and would it have been singled out as a winner?



Cyberarchitect Spiller conceded it was a 'very good measured drawing'

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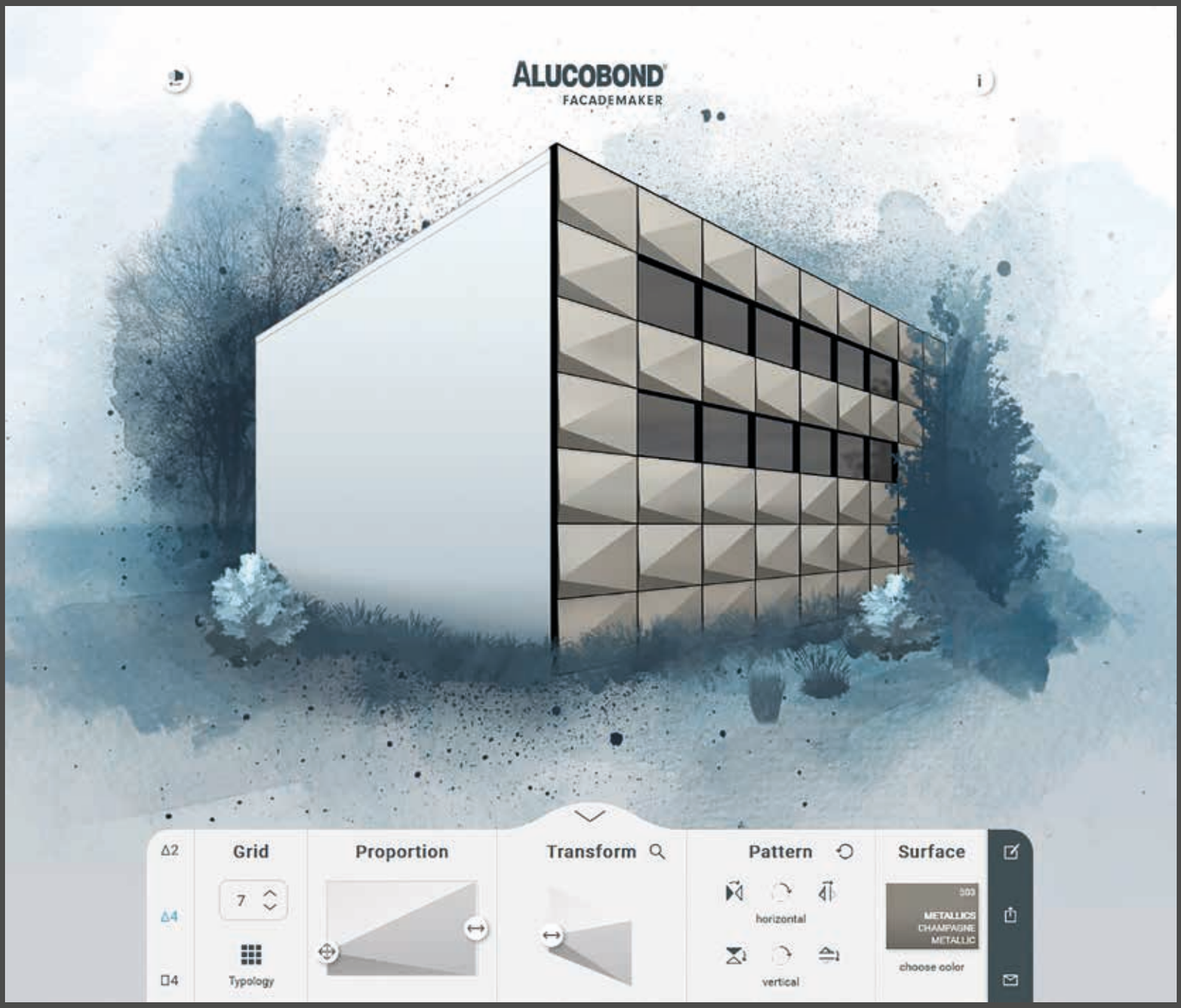

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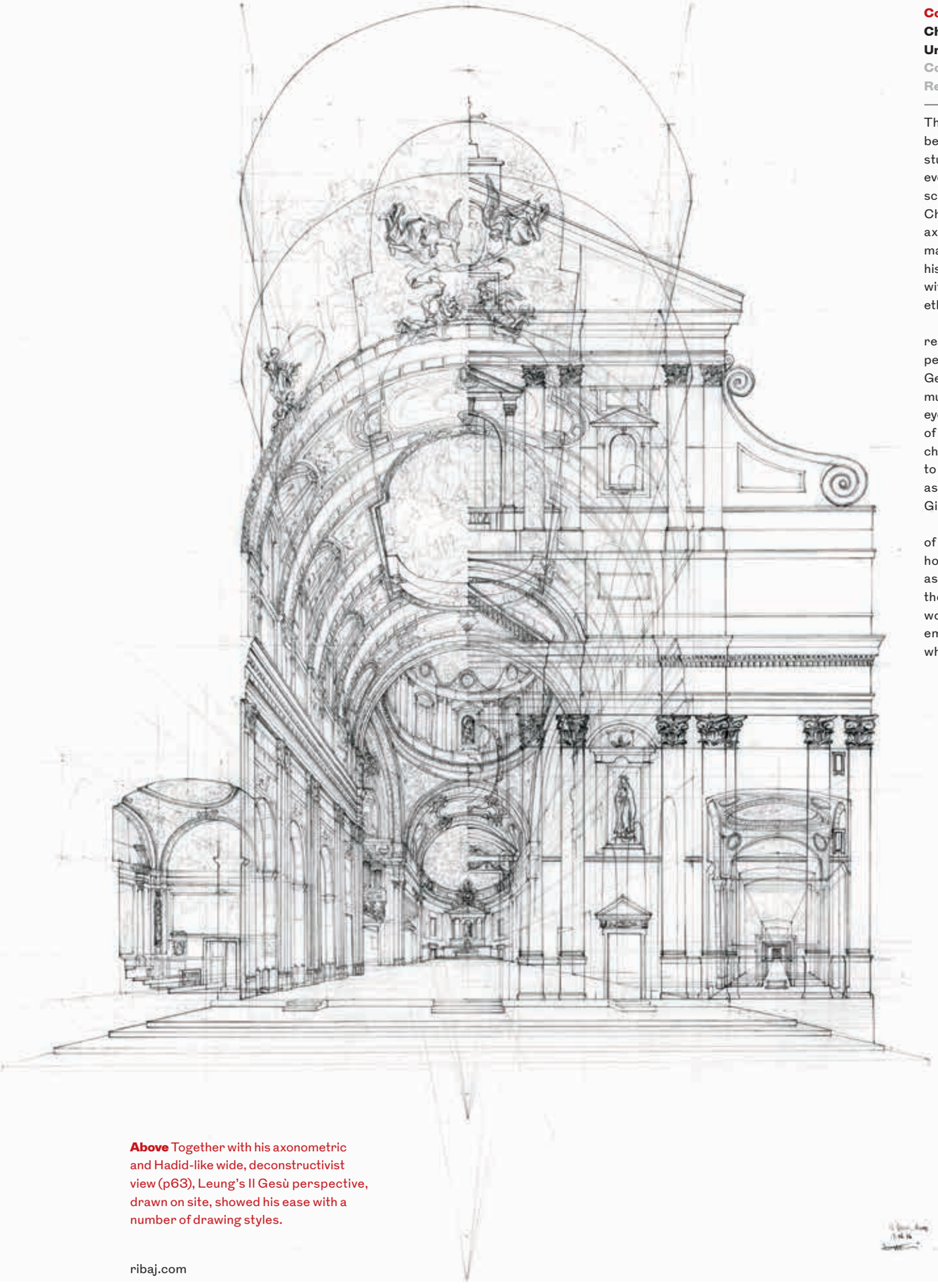


Commended
Christopher Haiman Leung, Yale University School of Architecture
Compact House, Decommission/ Recommission, Il Gesu Perspective

The view from the judges seemed to be that Yale University is producing students with a good range of skill sets, even if there is something decidedly 'old school' about this Ivy Leaguer's output. Christopher Leung's carefully delineated axonometric was beautiful to look at, but maybe only when counterpointed against his conceptual aerial panorama (p63), with its Hadid-like delicacy floating in an ethereal wash of blue.

But it was the third image, left, that really caught the attention: a seven-day perspectival study of Rome's 1584 Il Gesù church. 'The goal was to capture the multiple ways the architecture guides the eye,' said Leung, but with its transposition of elevation onto nave perspective, side chapels cut away, the composition seems to have as much drama and repose as Giacomo Barozzi da Vignola's and Giacomo Della Porta's design.

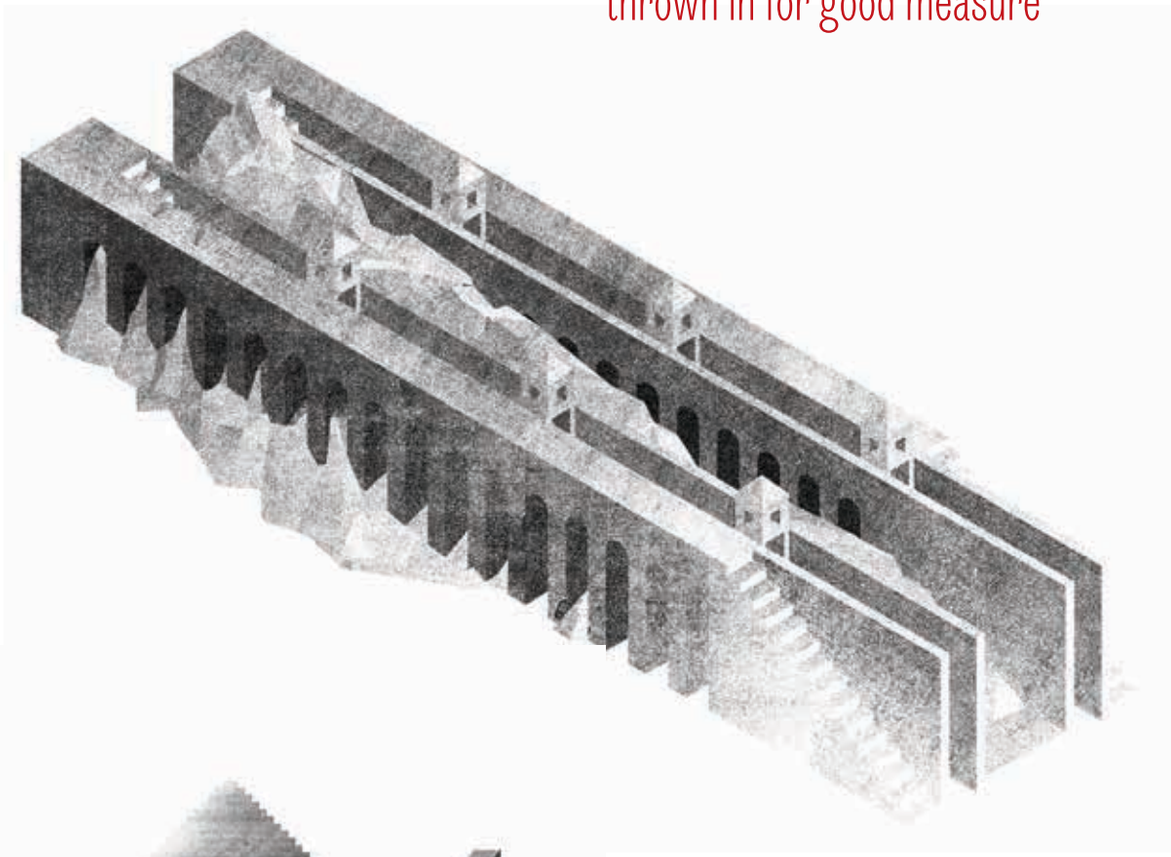
Robson was struck by the confidence of the drawing, saying: 'Circles are a horrible thing to draw in perspective as you have to break the rules to make them look right.' The fine, light pencil work might enclose whole swathes of empty space, but Spiller still called the whole effect 'Piranesian'.

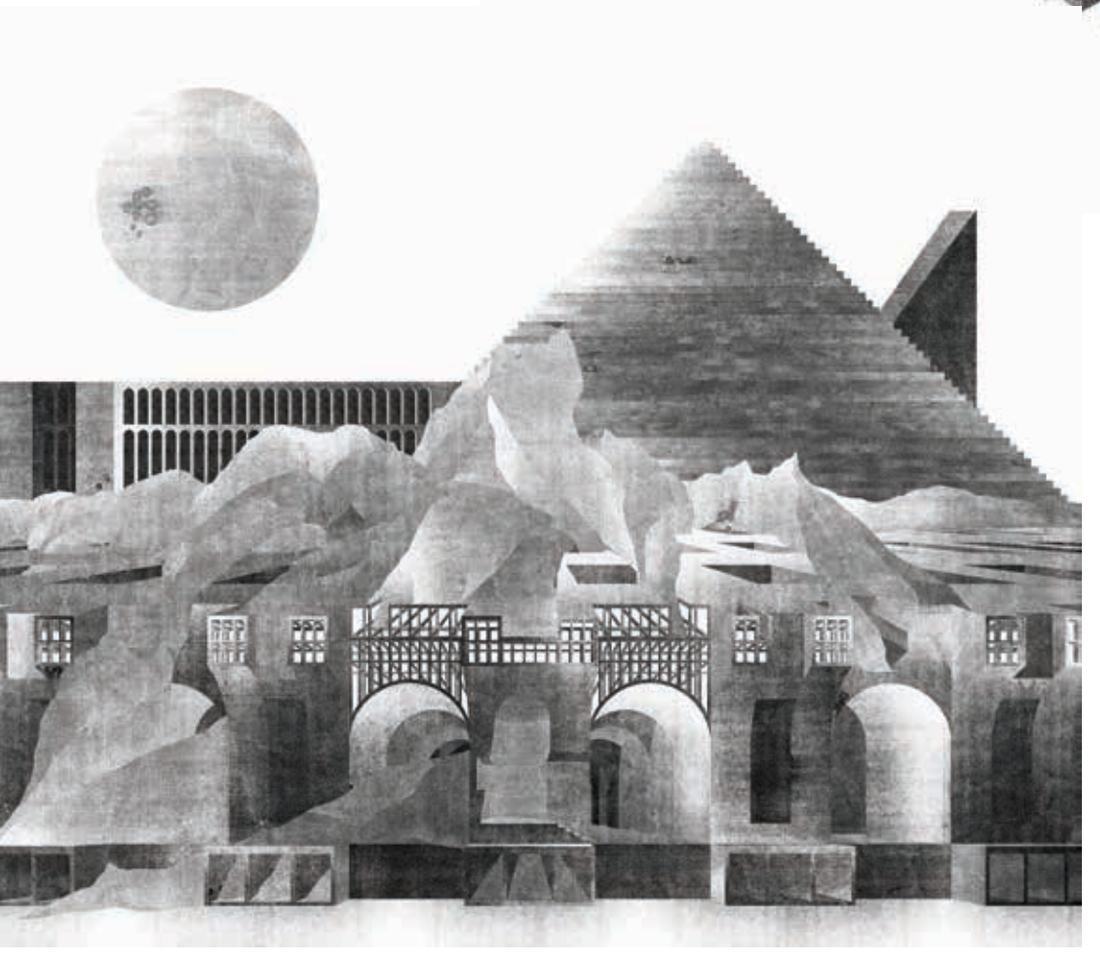
Above Together with his axonometric and Hadid-like wide, deconstructivist view (p63), Leung's Il Gesù perspective, drawn on site, showed his ease with a number of drawing styles.

Right The Garden of Free Waters' mechanical and hydraulic operations merge the building into the landscape.

Below Inhabited ruins create a second life for architecture, activated with new and hybrid functions.

'Abstracted like Rossi, but with a bit of Hugh Ferriss thrown in for good measure'





Commended
Hamed Khosravi, Hamed Khosravi Studio, Delft, Netherlands
Archaeology of Inhabited Ruins, The Garden of Free Waters

Khosravi, a previous first prize winner of Eye Line, exhibits the kind of boldness in his imagery that can only be the preserve of a consummate practitioner. Both the images here were exhibited at the 2016 Venice Biennale and Lisbon Triennale; one deals with the idea of an inhabited ruin, the other with a complex water transference mechanism that becomes merged with the landscape in which it sits.

Spiller saw references to Rodrigo Perez de Arce's work 'but abstracted like Rossi with a bit of Hugh Ferriss thrown in for good measure'. Despite its being the antithesis of her and Pearson's work, Youkhana appreciated the images' stripped-back nature: 'It's good to see work that isn't about overloading the image,' she said, adding wryly: 'Rich, coming from us.'

Pearman felt that, while the combined works weren't as strong as the previous winning entry, their resoluteness merited commendation, saying: 'This is the city stripped back to its barest forms.'

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Lucienne Day would have been 100 this year yet her designs for fabric and furnishings seem as fresh today as when she conceived them in the 1950s and 60s. Day studied at the Royal College of Art in the 1930s, where she met her husband and collaborator Robin and developed her interest in printed textiles.

A career breakthrough came with the Festival of Britain in 1951, for which she supplied fabrics and wallpapers for the Homes and Gardens Pavilion. Her design Calyx, featuring abstract plant-like motifs rendered in spindly lines, was inspired by the work of modernist painters such as Miró and Klee. It was commissioned by Heal's and used to furnish a room in the pavilion designed by her husband.

Although Heal's was initially dubious about the unconventional pattern, the fabric sold in large quantities and cemented Day's relationship with the brand. She would go on to design more than 70 textiles for it over the next 25 years, including the Dandelion Clocks curtain fabric shown here at the Heal and Sons stand at the Ideal Home exhibition in 1953. ●

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Executive editor
Eleanor Young

Senior editor
Jan-Carlos Kucharek

Assistant editor
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Design
Linda Byrne

Advertisement manager
Richard Tomlin
+44 20 7496 8329

Business development manager
Midge Myatt
+44 1902 851 645

Advertisement executive
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Digital operations manager
Pete Songi

Digital assistant
Alexandra Kiss

Director
Declan Gough

Director of commercial development
Steven Cross

Telephone
+44 20 7496 8300
Fax +44 207 374 8500
firstname.surname
@ribaj.com

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