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January 2017

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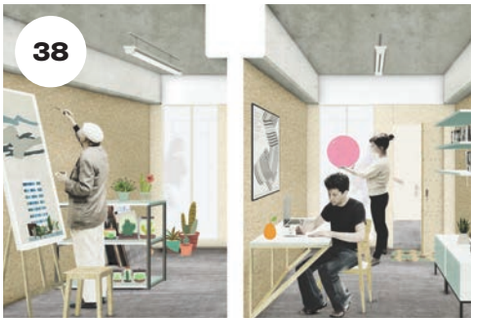

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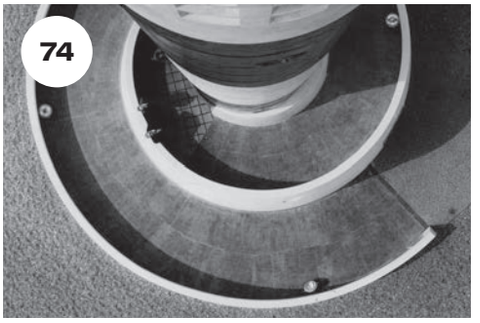

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1: Buildings

'It was like being back in the womb.' These primitive moments from the cave and the yurt – and occasionally something more modern – bring the atavistic tendency in the modern mind to the fore. Their power is unrelated to conservation or historic value. There is no nostalgia but an imprinted urge. The world outside becomes just a blur of shapes. It is about an imagined – or possibly remembered – singular experience of space, of warmth, safety and refuge. Surely the best thing architects can give their fellow man in this transient and dangerous world.

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'A domestic house drawn as a weird subterranean machine'

Pamela Buxton marvels at Jan Kaplicky's drawings: ribaj.com/culture/czech-modernism-meets-baroque

A piece of geology imposed upon its pivotal site, mirroring the organic curve of the landscape and accommodating itself in the city

Grafton's UTEC wins RIBA international award: ribaj.com/buildings/riba-international-award-winner

HÉLÈNE BINET

Left Peter Salter's Walmer Yard.

Thames Tunnel Access Shaft.
Brunel Museum, Rotherhithe, London
Photograph: Jack Hobhouse
Words: Jan-Carlos Kucharek

It seems a fitting irony that the 50ft cylindrical access shaft used to help construct the Brunels' pioneering 1825 Thames Tunnel – and which became part of a Victorian tourist trap – should have ended up as a rave venue; accessed by punters, Jack Hobhouse tells me, via its old steel access door cut into the earth beside the banks of the river. A concrete slab now separates it from trains running in the tunnel below: its acoustic damping qualities and subterranean nature would have made it a shoo-in for nefarious latterday antics much as the original tunnel did, once the initial thrill of the feat had waned.

Hobhouse's photo is a palimpsest; a modern, staged echo of that historical hedonism at an invite-only event to mark architect Tate Harmer's completion of its intervention on the shaft. This is a new black access stair, replete with dayglo orange handrail, guiding visitors to its floor. Like the engineering, the photo was meeting a technical challenge, simultaneously using a long exposure to register the depth and texture of its soot-stained circumference and a professional flash to freeze the architect guests' motion. Hobhouse was ultimately transfixed by the party-goer on the stair, the flash of his phone echoing his own; a visual Doppler effect augmenting his efforts to mark the rotunda's red and blue shifts.

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His dark materials

Walmer Yard is a fascinating realisation of Peter Salter's work, an exploration of light and dark, sound and touch

Words: Jan-Carlos Kucharek Photographs: Hélène Binet

The threshold to House A's yurt living space. The polygonal timber structure's darkness is relieved only by glass oculi and amber light bleeding through the copper mesh curtains.

Maybe it was because we needed to return to earth. In the 1980s, at a time when architecture was in thrall with the deconstructivist notion of not only untethering architecture from the yoke of modernism and its programme but releasing it to fly free of gravity, it's surprising the drawings of Chris Macdonald and Peter Salter weren't merely dismissed out of hand as the work of a pair of Luddites who'd missed the boat. But given concurrent work by Hadid, Tschumi, Eisenman and Libeskind, who were busy shunting architectural representation into new realms of abstraction; by contrast the allure of Macdonald and Salter's work was its sheer groundedness. Their designs, such as the 1983 proposal for Durham University's Oriental Museum extension, romantically grew out of the earth, their organic forms almost indistinguishable from the landscape in which it was set.

In a way, what Zaha did for 'The Peak', Macdonald and Salter did for the dale – but the trajectories of these former AA tutors would diverge as surely as the branches on one of Macdonald and Salter's exquisitely rendered oaks. Hadid's flying slabs would strangely pick up on a zeitgeist and send her into the design stratosphere. But, aside from a few small built projects abroad, the other two would remain steadfastly with their feet in the academic clay of Vancouver and Cardiff respectively, their hand drawn visions left to inspire a new generation of students; delicate follies that remained a counterpoint to the production line of fashionable biophilic design.

Above Salter's 'Twilight bedroom with the brass clock'. Window positions allude to possible human ones.

Below Oak shutters can virtually seal the building off from neighbours and the world.

This is Salter transmuting the dark, earthy influences alluded to in his drawn work

But back in 2007, on the edge of Notting Hill, developer Crispin Kelly offered a long-owned, low risk, high value brownfield site to his former teacher Salter to realise his first UK project. Now complete, Walmer Yard – four homes clasped around a small courtyard like a clenched fist – has been 10 years in gestation and construction, and is Salter transmuting the dark, earthy influences alluded to in his drawn work into three dimensions. And as happens with 'total' architecture, what's amazing is how true to the spirit of the drawing the built reality actually is.

In fact, to call the development 'four houses' is to suggest a physical distinction, which experientially doesn't seem to exist. In an uncanny way, Salter seems to have brought his palpably gothic fantasies to bear in all of them, the design ideologically drawn in the dust of spatial recollections, experiences, material memories. So the central courtyard is not just an entrance but a common nexus for Salter's experimentation in acoustics and light. As any visitor will discover, its bench-set concrete walls define, we're told, an 'outdoor room' – another surface being acted upon in his Möbius strip of a vision.

Salter claims its form derives from the desire to orientate the homes to the sun (the east house is set low to the ground) but the realisation dawns that if this is the case, it's according to philosophical, Goethean theories of light rather than any Newtonian one. The houses might crave the southern aspect but their walls jostle about each other, a 'push-mi-pullyu' arrangement trying to balance the need for privacy with one for light. Salter saw a solution in his mechanical array of vertical oak shutters that populate the facades like giant snob screens, covering the windows and controlled by manual levers occupants can throw should they feel the need.

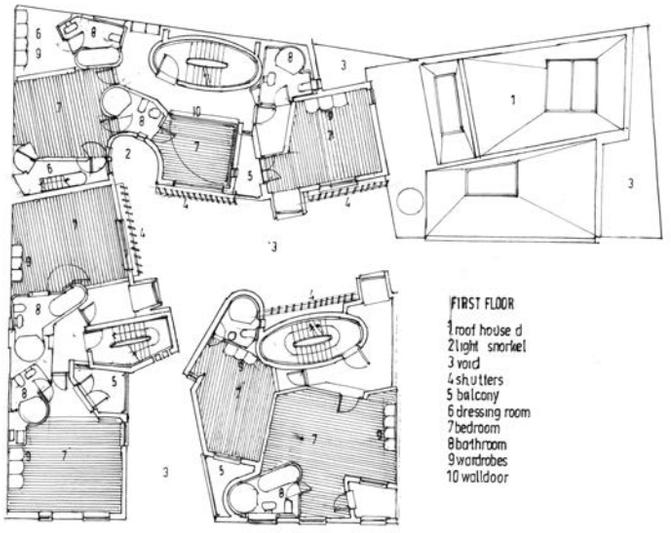
But it transpires the idea's bigger than that; those shutters will offer acoustic damping too, as does the render Salter specified from Tube tunnel walls; the court's woodblock floor too, he recalls, hushed the footfall of generations of Trinity College students in Dublin. The only conscious noise here is the one he induces from giant 'cornice' gutters; sculpted copper hoppers designed to gushingly warble to residents every time there's a downpour. And no trickle vents here; light tufa stone panels set next to windows let the building breathe while the general mass of insulated birch shuttered concrete keeps it warm.

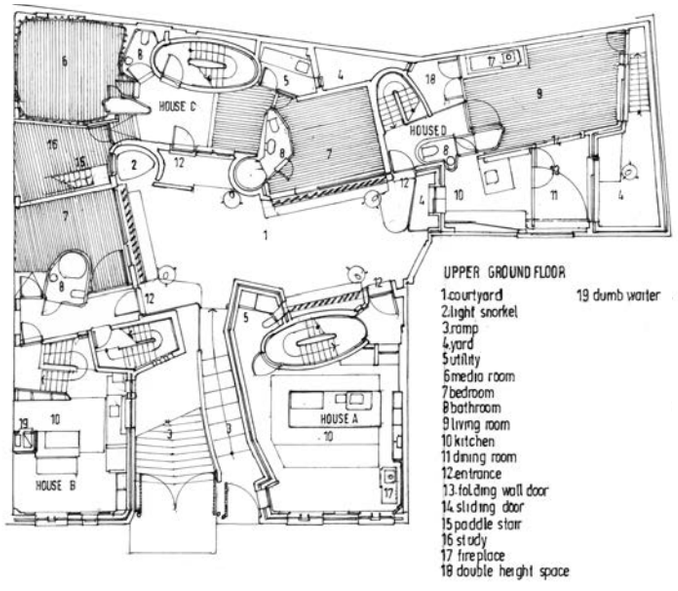
Once inside you discover, as with Goethe's theory, that gloom is being considered as qualitatively as sunlight; in each house Salter will draw you to the dark end of the homes' polished concrete interior party walls, only to turn you back around to address his concrete stair cores. Here you're insinuated up into the

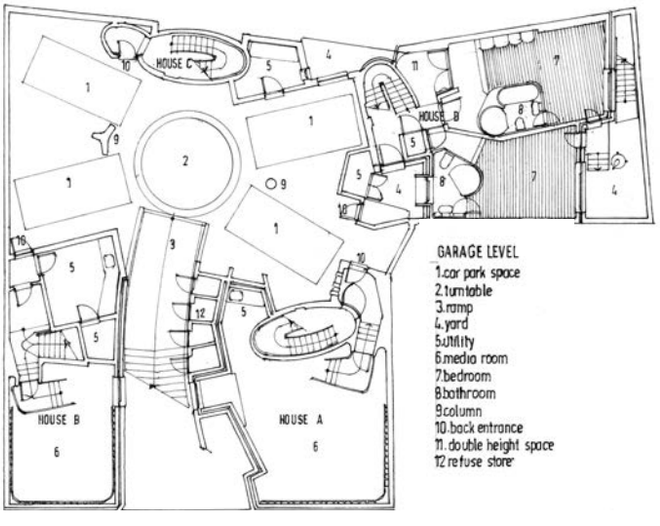
Above left The design and craft of bespoke kitchens suggests more a study space than a culinary one.
Above Elliptical staircases are the dark heart of the homes, drawing people up to the light.
Below Bathrooms are discrete pod 'mechanisms' formed of a cavity wall of sheet steel, painted in 'reactive colours' that respond immediately to light and dark.

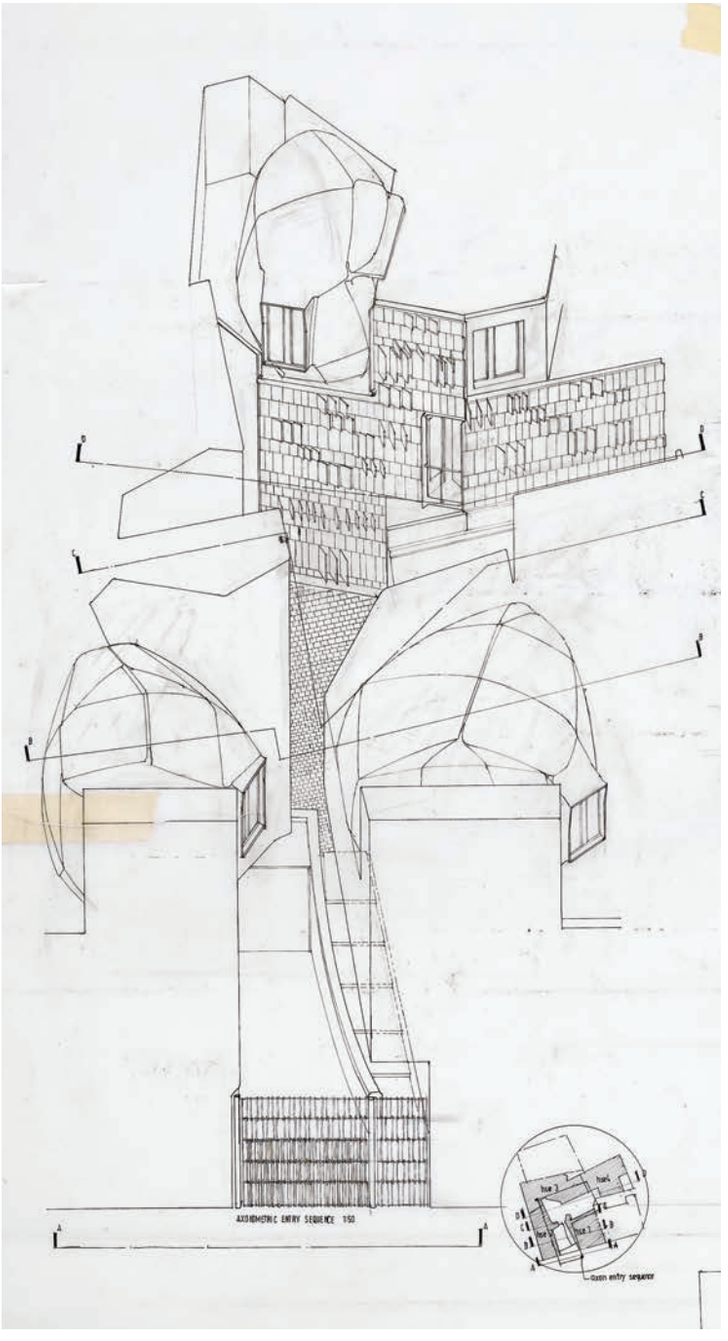
light via reflections stolen off the black carbonised steel of his elliptical staircases, leather bound rope handrails acting as a form of soft rigging. Hold on to them - they're guiding you through Salter's topsy-turvy world where sunken kitchens of crafted furniture take on the look of St Jerome's study and subterranean TV snugs are cossetted in weaved willow reeds. And fed by dumbwaiters, living and dining are two floors up in the gods, following the 16th century country house precedent of corpulent diners who'd supper looking past the roof's lead out to the estate. Clad in copper shingles, they'll do so here in a weird iteration; polygonal timber 'yurts' lined in short straw walls, their black soaking up any light gleaned from the cast glass oculi puncturing the soffits as the Pleiades do the constellation of Taurus.

More curious still is the central 'sleeping









Axonometric of entrance sequence from road to common courtyard.

It's a form Salter has conjured from the sheer intensity of his penwork; a thing dug up, stitched and bolted together like Mary Shelley's monster

Above The west elevation and entrance; a hard face and ravine leading to the more visceral courtyard within.

floor' where orthogonality is thrown to the winds beyond its amber copper mesh curtains. Raised timber bedroom floors and earth coloured walls reference Japan but its parquet is, apparently, inspired as much by the Eurostar terminal as Scarpa's Venice. Bathroom pods are amorphous, generated by plan position and the shapes of sanitary ware; their deep blue, green and red inner walls of painted steel offset by outer carbonised ones, heating pipes running between like 'veins' warming the metal skin. With shiny bluebottle green bespoke wardrobes set unsettlingly up from the floors and echoing the pods' steel modesty doors, the effect's as visceral and compelling as a butcher's shop window gone bad; a feral Maison de Verre.

Read as a £22 million spec development, Walmer Yard flies in the face of any conventional idea of 'buying into a lifestyle'; as an entity it's too idiosyncratic and strange, the product of its maker's febrile imagination. It's labyrinthine and disorientating; deliberate – such as the 22m dado line that's clung to throughout, forcing curved wired glass on the bathroom pods – but also contingent – any flawed concrete was just scabbled away and left, as was the bloom of welds. But with every element considered it is architecture that courts respect, and invariably reaction. Critically, it's also a form that Salter has conjured from the sheer intensity of his penwork; a thing dug up, stitched and bolted together like Mary Shelley's monster. It's unsettling but even in its darkest corners, – and there's a few – it's alive, and kicking.

Looking up from House D's basement hall space through the ground floor's rooflight.

Above Houses A, B & C are crowned with copper-clad timber yurts, creating a strange, complex roofscape.

Credits
Client Baylight Properties
Principal designer Peter Salter
Executive architect Mole Architects and John Comparelli Architects
Design collaborator Fenella Collingridge
Site architect Hugo Keene with Peter Salter & Fenella Collingridge
Structural engineer Tony Holdbrook, Chetan Palmer
Contractor Shaw Building Group
Approved building inspector MLM Services

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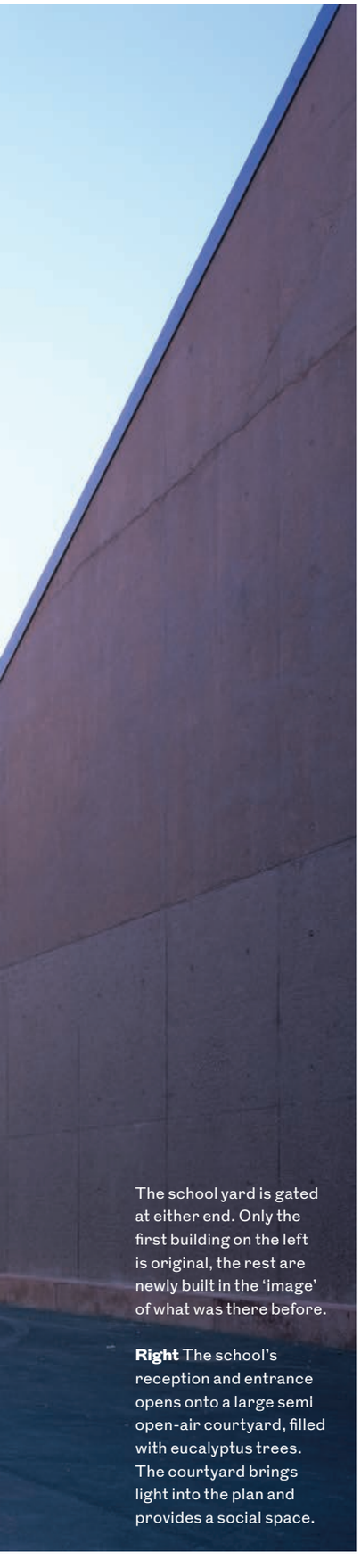


The school yard is gated at either end. Only the first building on the left is original, the rest are newly built in the 'image' of what was there before.

Right The school's reception and entrance opens onto a large semi open-air courtyard, filled with eucalyptus trees. The courtyard brings light into the plan and provides a social space.

How – and why

Adam Caruso's explanation made all the difference to the interpretation of his practice's hospitality school in Lille

Words: Isabelle Priest Photographs: Hélène Binet

Architects do need to sell their projects. It is amazing how a chat with one can transform the perspective of a building. It also helps explain how some architects end up with world-famous international practices and the best projects, and how others don't. It's the gift of the gab; you notice it in the first crits at university but assume its importance diminishes over time. It doesn't.

This is particularly true of the Lycée Hôtelier International de Lille (LHIL) in Fives, a suburb of Lille in northern France. I visited the project, by Caruso St John, three weeks before speaking to Adam Caruso. I had been shown around by two of the project architects over there, but in essence I was preparing to write an article about architectural disappointments. I'll leave piece that to another time.

Of course, one shouldn't be swayed too easily by what someone says, no matter how genuine. Gut reactions to a building and place still have a role. But I half grew up around Lille and didn't think it needed an intellectualised version of what was already there – when that has clearly not been working. Now I think the area got off lightly.

The back context is that the region is still recovering from post-industrialisation. The city centre is smart, charming new boutiques down streets that attracted kerb crawlers in the 1990s. It's great for a last minute shopping weekend – a hop over on Eurostar. But away from the

centre, outwardly little has changed and its people may appear less metropolitan than you thought.

This is red brick France, twinned with Leeds, likewise its nearby suburb of Roubaix with Bradford, a less confident sister of Rotterdam and probably not doing as well as either relation. Here, the EU and its benefits are advertised everywhere – not just on hoarding panels outside specifically funded projects, but on motorway billboards. We visited in the wake of the Brexit vote and I forget whether these signboards are a new phenomenon, but you get the sense there's a campaign to stop a similar protest here. Much of the development around Gare Lille Europe becomes superficial and meaningless when you explore further out.

That brings us to Fives, 40 minutes by foot to the city centre. I confess, a tight schedule meant I got a taxi there, and walked around the area after. It's telling, though, not that the driver hadn't heard of the school – it's new to this part of the city having relocated in September – but that as we passed three institutional looking buildings with gable ends butting up to a tall perimeter wall and drew up to what had to be the right address, I wasn't sure what we saw was it and the driver refused to let me out. He insisted on spending another 5-10 minutes driving around all the other local lycées to see if it might be one of those instead.

Finally, we ended up where we began, at the head of a wide, treeless newly tarmacked concourse. That's where this story begins. One hundred metres in front is a huge wall of dilapidated red brick factory buildings, all of different ages and tagged onto each other as the factory expanded; to the left an empty car park and to the right a low overhanging multi-coloured panelled roofed building. Once the back of the factory for Fives-Cail-Babcock – a former civil engineering manufacturer of bridges, railway rolling stock and steel structures responsible for the first locomotives in France and the elevators for the Eiffel Tower – this is the new route into 150,000m^2 of workshops that finally wound up in 1998.

The avenue will form the main axis through Fives-Cail as it is transformed over 15 years. Masterplanned by AVC in 2005, the concept is on a grand scale and every effort is being made to make it a success. The new route breaks through the original perimeter wall to connect to the metro stop to the north-east, slicing a road through a rundown city block to make that journey even more efficient. It too is EU-funded.

Caruso St John's Lycée, a hospitality and catering college for 15-22 year-olds providing courses on floristry, baking, wine tasting and the hotel and restaurant trades, is one of the first projects to complete as part of this Fives-Cail redevelopment, and the first step toward recreating the area as a buzzing foodie district with a food hall in the manner of Mercado Da Ribeira in Lisbon.

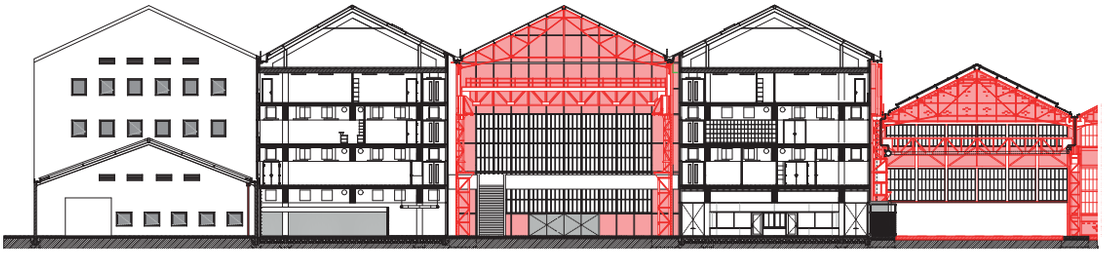
Closer inspection discloses that the first of these factory sheds has been restored. As one draws near, its new interior reveals itself as a huge public forum and circulation hall on an epic scale. The metalwork of the building retains its original factory language – blue for columns, red for beams, yellow for moving objects. For now the space is unoccupied, with most of its sides boarded off. On the immediate right however, running half way down the shed, is the public face of the relocated lycée; its restaurant, bakery and florist shop fronts facing into the circulation shed behind a new standardised glass and yellow frame facade slotted in after the refurbished metal structure. The activities of the school animate the internal street,

Above left Staff accommodation as it appears from a surrounding street.

Above right The newly opened avenue to the metro and entrance to the covered street.

This is the first step toward recreating the area as a buzzing foodie district with a food hall in the manner of Mercado Da Ribeira in Lisbon

Section through sheds



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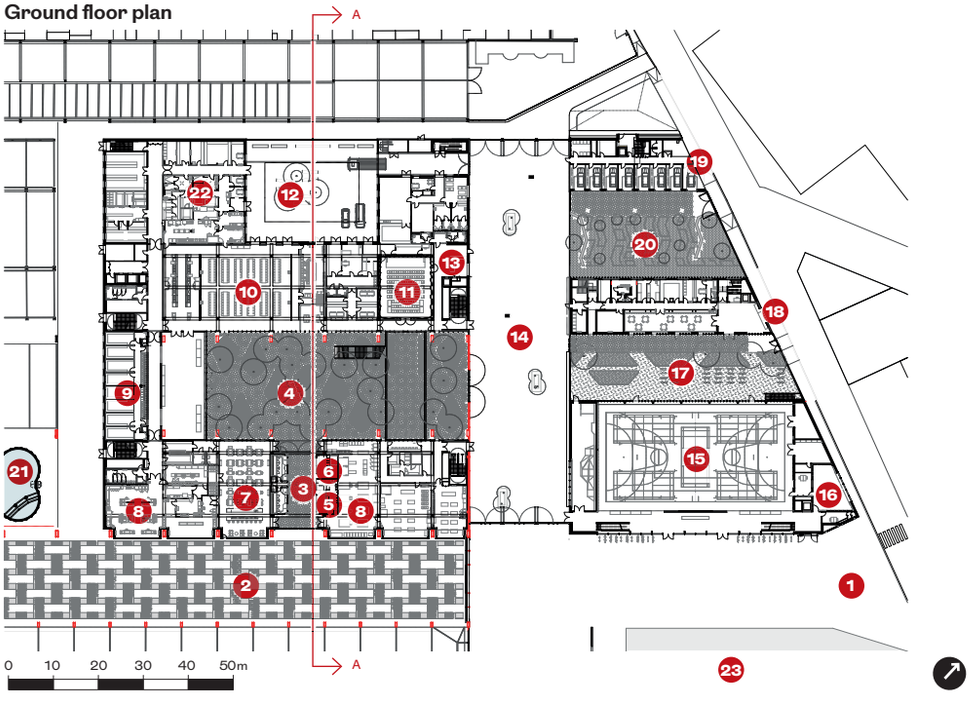
1 Site entrance
2 Covered public avenue
3 School entrance and reception
4 Central courtyard
5 School bakery shop
6 School florist shop
7 Restaurant
8 Kitchens
9 Changing rooms
10 Dining hall
11 Auditorium
12 Service yard
13 Hotel entrance and reception
14 Open air avenue (gated)
15 Mixed sports hall

Ground floor plan



Left The covered street will be the centrepiece in the masterplan for the 150,000m² factory site. Local people can visit the school's restaurant, bakery and florist.

IN NUMBERS

29,000m²
area

€47.2 m
budget

the students working in goldfish bowl kitchens with the words 'hôtellerie', 'restauration', 'boulangerie', 'pâtisserie' in large lettering above them.

Overall, the language of the architecture attempts to delineate the process. In total seven sheds make up the school, two retained, two rebuilt behind and three more to the side separated by another avenue, this time private to the school and gated at either end. Where these new sheds continue the image of the former factory, they are rebuilt in red concrete; where they come to an abrupt end to the rear where the other half of the sheds have been demolished, they are cut through clearly in white.

'It is a working class neighbourhood designed around the former factory,' explained Caruso. 'The image of small worker houses surrounding the factory is potent. Local politicians here were interested in how the image of industry could be incorporated into the scheme. Our design tries to amplify the qualities that are already there. Exploit the image and atmosphere as much as possible.'

From the internal street, the entrance to the school opens under a low passageway through four storeys of infilled building into a surprising full height courtyard excavated out of the roofless factory structure and planted with eucalyptus trees for their grey, graphic outline. Slightly corporate in nature, it is surrounded on three sides by the educational part of the site, providing teaching kitchens, changing rooms, lockers, a communal dining room, library, classrooms, plenty of service space and

'The image of small worker houses surrounding the factory is potent. Our design tries to amplify the qualities that are already there'

Above Most fittings have been designed by Caruso St John; here lockers line a corridor.

Left The multi-use sports hall can be used by the school or booked by the local community.

Credits
Client City of Lille and Region Hauts de France
Architect Caruso St John Architects
Assistant architect, Lille Coldefy & Associés Architectes et Urbanistes
Structural engineer Batiserf Services
Consultant Inex
Cost consultant Bureau Michel Forgue

storage, even a mock hotel with '1-5 star' rooms to the rear. This in turn opens onto the school's gated avenue, again a wide and stark factory-type concourse. The three new buildings on the other side of the street are mini versions – or 'kids' as Caruso suggests – with yellow facades between them, contain the staff and student accommodation and sports hall with its low overhanging roof, spaced apart along the perimeter wall by small garden yards.

The most unusual feature of the project, however, is for water. Aqueducts travel around the buildings at high level, taking advantage of the vast expanses of roof for collecting rainwater. Across the avenue, they appear as factory line conveyor belts. The water all heads towards a vast tank, also designed by Caruso St John in red concrete. It is a mesmerising structure and there is another on the way and is part of an effort to mark out the site, put in place by the masterplanner. The strict guidelines for the site, which include the tanks, and a concern for the monumentality of the site could be at the root of this austere but interesting architecture.

And within all this, it seems that Caruso St John persuaded the client – the left-wing Lille city government and right-wing regional government – to branch out intellectually further than it might have done otherwise. You can imagine that something more immediate and iconic could have been built in the pretence of renewal and modernisation. Instead, Caruso St John homed in on the qualities and beauty of the site that are easy to take for granted in a former industrial area, where old warehouses and factories were once two a penny and remind people – like an open wound – of how considerably and quickly life has changed.

That's what the real achievement is here. The hands of the city and regional governments are still heavy, the bureaucracy ferocious in the outdated catalogue dining hall furniture, standardised facade panels and windows, but Caruso St John should be respected for rallying against a typically French system that prescribes everything. On being invited to the project competition, for example, it was handed a dossier of four big binders outlining every room and every piece of equipment.

Above The water tank was specified as part of the brief from the masterplan to help make an eco quarter. It stores water for the site and a second will be constructed shortly.

Below The rear of the new school is constructed from white concrete to signify where the image of the factory has been cut and changed.

The success is that Caruso St John adapted. In contrast to its usual highly bespoke work, it put together standardised parts to make something original. In the roofs, three colours of industrialised corrugated sheeting are assembled into a giant textile pattern that lifts the buildings out of the ordinary. The same applies to the red aggregate added into the concrete walls and to the rear of the new staff accommodation building, windows wilfully vary in size to distinguish them from 1970s motorway budget hotels.

'Nothing on this project is expensive,' said Caruso, 'even though there are 30 kitchens. The €42.7m budget works out as just over €1,000/m^2.'

The client's bureaucracy and stamp is ever more evident in the plans for the rest of the site, which will see most of the existing factory buildings demolished, banished for locals to the nostalgia of books and Google image searches.

'It's the reality of getting developers to invest,' explained Caruso, 'but we felt a responsibility to preserve the memory of the place and site. To identify the lycée, the design keeps as much of the sheds as possible.'

So while I might have originally called for a bolder, more revolutionising architecture – MVRDV was in the competition shortlist – Caruso St John's scheme is sensitive to the identity of the place in ways that, knowingly or not, people cherish and need. For that, semi-born of this place, I can be grateful to Caruso St John for showing another way for these buildings in an area that as a whole hasn't yet really found one.

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Winter warmer

5th Studio's retrofit of Trinity College's New Court ups the temperature without raising heritage hackles

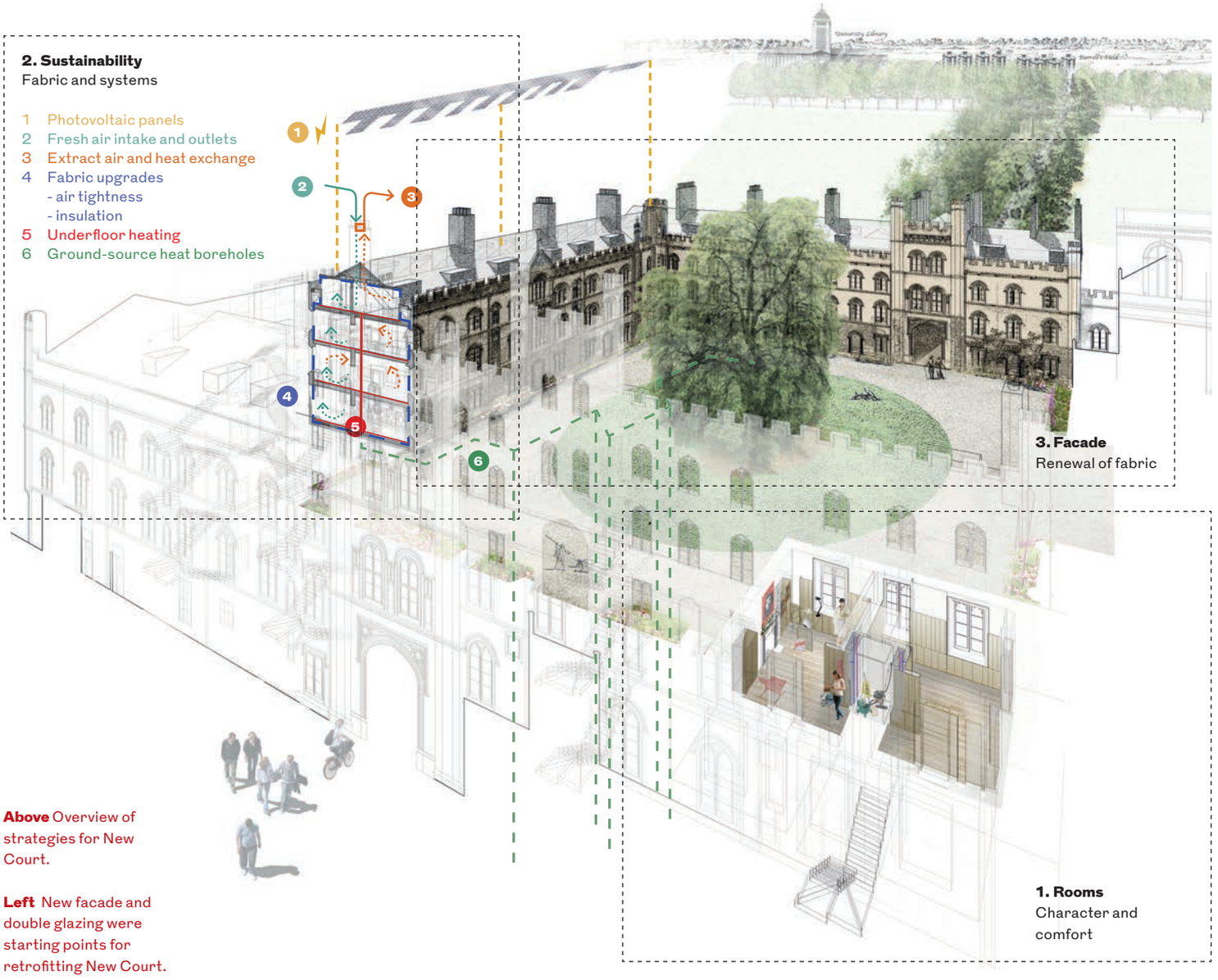
Words: Eleanor Young Photographs: Tim Soar

Standing in New Court Cambridge, the honey coloured walls enclosing you and the grand chestnut tree rising up in the centre, you can feel the weight of history, generations of Cambridge undergraduates, stretching back. Founded in 1546, Trinity is one of the richest Oxbridge colleges. The flow of bright young things continues but as these buildings get older, the expectations of undergraduates and the world around them increase. When these grade 1 William Wilkins buildings were done up in the seventies they didn't meet the then building regulations. The problem of pumping up the heating only to have students leaving windows open was perennial. Meanwhile facilities like kitchens – 'gyps' in Cambridge language – and bath-rooms were squeezed into some most inappropriate places, such at the top of stair wells. It was obviously time for a reworking.

The college naturally looked first to heritage architects, but then approached 5th Studio which had taken on its sixties Wolfson Building and with clear, deft moves and some extra glass, had lightened the character of the occasionally gloomy Architects Co-Partnership building. 'We thought long and hard about taking on New Court,' says 5th Studio director Oliver Smith. 'It was a fascinating challenge.' What caught the firm's imagination was not an opportunity to add something eye catching (it was clear such a move would make everything far more complicated) but the chance to untangle the building physics and design it to perform in a way that might be thought impossible for heritage buildings.

> The challenge was not just in retrofitting the building but in persuading English Heritage that it could be done

The challenge was not just in retrofitting the building but in persuading English Heritage that it could be done – and overcoming a problem common in historic buildings, in which solid insulated walls create cold damp areas where mould can flourish. An expert



Above Overview of strategies for New Court.

Left New facade and double glazing were starting points for retrofitting New Court.

team was assembled: including environmental engineer Max Fordham, which had recently run a knowledge transfer partnership developing and testing moisture modelling software; Archimetrics, which has led on research for SPAB into retrofitting older buildings; and some of those who forged a path on performance and sustainability, Bill Bordass, Bill Gething and Bill Watts. Smith says of that early period: 'For a few years it was almost a research project.'

The design started with modelling. No great surprises there. But the standard hygrothermal model, WUFI, was written with German standards as the norm. Not British – never mind 18th century walls and staircases. To ensure it was getting the most accurate predictions Archimetrics installed monitoring equipment to check temperature and relative humidity levels. This and data from an on-site weather station fed into the model to calibrate it for this building. 5th Studio needed to prove to itself that the model's predictions would be accurate. And once the assumptions on the weather settings had been changed the model started to prove itself in parallel with the live measurements. With a tool it could rely on, the strategy could be explored in more detail. The heat had to be kept inside but the team could not allow water vapour to be trapped anywhere. The building had to be breathable and insulated, but not so much that it retained moisture as well as heat.

At the same time the designs and performance had to convince English Heritage and ensure the plans secured listed building consent. The model, checked by BRE, was excellent in proving the larger case of the strategy. But individual elements also had to be justified. It took three years to win approval.

The first big move was to ensure that the external layer could breathe. The cracking and unreliable concrete render was already slated for renewal. 5th Studio decided to replace it with layers of lime, the oft-cited wonder product on heritage buildings for its breathability and its chemistry, which is distinctly unfriendly to mould growth. This was not a hard sell. With the facade's stripped back colour scheme (white window frames and grey transoms both renewed in black) it is

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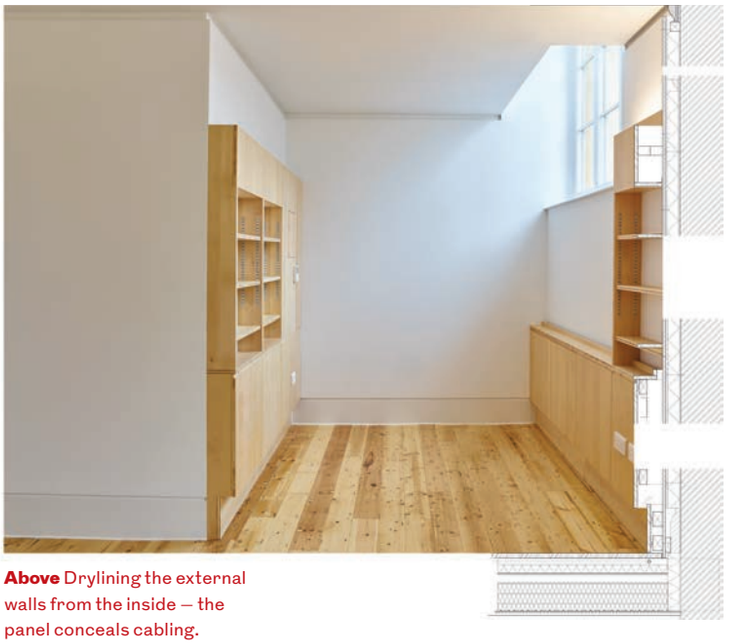


Above Drylining the external walls from the inside – the panel conceals cabling.

IN NUMBERS

5,340m²
gross internal area

£20m
gross cost

£119,000
cost per room

£3,745
cost per m²

not difficult to see why. It looks natural here.

Then the building had to up its U-value. The model had highlighted a better than expected performance from the existing building with its walls an unpredictable mixture, thick and thin, some rubble with concrete render onto the court, stone facing the river and brick on another facade. 5th Studio could have specified eight different depths of insulation, one to deal with each condition, but the risk of a mistake on site and resulting moisture issues was too high. 'No-one had dry lined a grade 1 listed building before,' says Smith. They chose a single 72mm wall insulation thickness, but where to put it? It had to go inside the student rooms. After hundreds of maquettes the practice set a datum below the cornice to protect the sense of the original space in the rooms – and tried it out on a full scale mock up. And there was more: vented panels concealing cabling, lighting and services to avoid chasing new services into the historic fabric every time there was a change in wiring. And the windows.

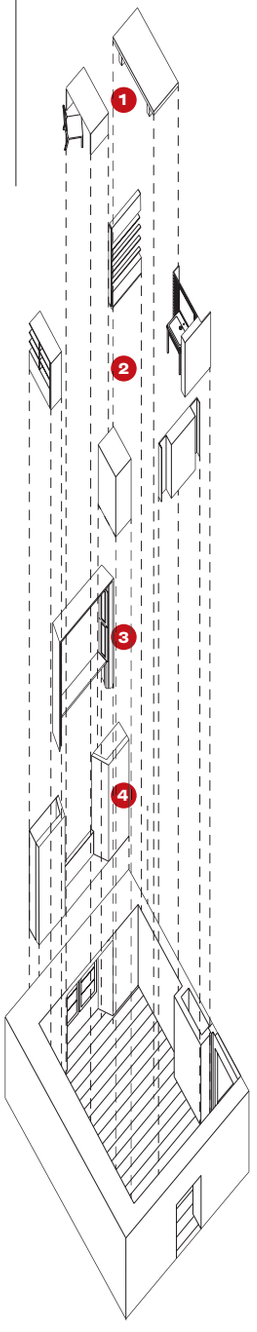
Windows are always sensitive. In 2011 English Heritage published Energy Efficiency and Historic Buildings, which makes much mention of heavy curtains and shutters in reducing heat loss from windows. Secondary glazing is also recommended while advice on installing double glazing is supplied with a heap of caveats. It was certainly not English Heritage's first choice for New Court. Nor was it 5th Studio's, whose early preference was for new triple-glazed windows. But repairing and refurbishing the existing windows with an extra layer of glass – and repairing extant timber shutters – was most compelling. To overcome concerns about quite how unpleasantly obvious that double layer would look, the team installed one of the new units and EH officers were invited to spot the difference. They couldn't – without close examination.

English Heritage's officers were concerned that the project was destroying the interiors. Though distinctly lacking twiddly bits and having been messed about with over the years, they were precious. 5th Studio and its consultant Beacon Planning argued that the building's main heritage asset was keeping it in use for its original purpose. And they used what was then the new National Planning Policy Framework's argument for other public benefits to offset heritage issues. Cambridge City Council gave consent despite a nine page letter of objection from EH, and then referred this decision to then minster Eric Pickles, who confirmed the approval.

Of course, the build itself wasn't straightforward. Techniques such as waiting for the layers of lime plaster to dry, ensuring a good level of air tightness, and working with lime parging rather than taping to seal joints, were new to the contractors, says Smith, which had to bring on more 'black hats', or managers, than they had expected. And 5th Studio came in every day from its Cambridge office. But walking around the college today, with the lime render dry, the glass of the windows rippling slightly (even where new), and the MVHR drawing out moisture from showers and kitchens in logical, safe, places, it is hard to see why anyone would object to these changes. The college of course footed the £20 million bill but it has the most to gain from a trouble-free building and the significant reduction in running costs. Looking out of the reconditioned windows, shutters alongside, cushioned by invisible insulation, pleasure in the old building seems very clear. And it is predicted to save 75% on heating. Will it all perform at the predicted level? The computer says yes and the monitoring will stay in place just to check. Happily the first readings seem to show that everything is in order. And even if students still prefer to inhabit their rooms at 25° in T-shirts, then at least when they open their windows the heating is now designed to turn off. ●

Axonometric

1 Loose furniture
2 Fitted furniture
3 Window cases
4 Insulation



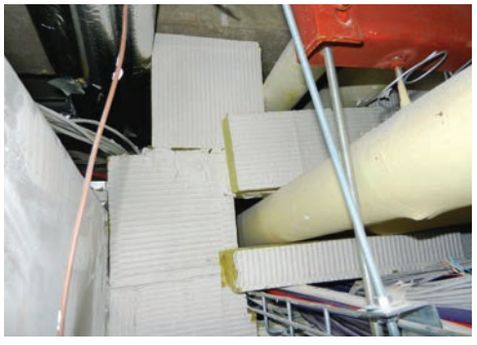
Suppliers
Client Trinity College Cambridge
Architect 5th Studio Darkroom
Planning and heritage consultant Beacon planning
Project manager Bidwells
MEP Max Fordham
Building physics modelling Bill Watts, James Freeman
Modelling Carl Brooks
Acoustics Anthony Chilton
Structural engineering Cambridge Architectural Research
Building physics monitoring ArchiMetrics
CDMC Gleeds
Cost consultancy (from Stage G) Richard Utting Associates
Archaeologist Cambridge Archaeology Unit

Mind the gap

Smoke, the primary killer in fires, can get through the smallest hole- so correct specification is critical. The Construction Products Association's Peter Caplehorn chaired Hilti's recent seminar offering architects some welcome guidance.

Above Hilti's CFS-CID firestop cast-in device as an alternative to traditional boxed out services penetrations in slabs, requiring filling in with fire stopping later.

Below Alex Double of ADDC highlighted worrying examples of poor installation and workmanship-problems that cannot be rectified through the mis-use of PU foams.



The relevance of passive fire protection, as for insurance, is only truly clear after the event. Out of sight, and sometimes out of mind, the subject hardly sets the designer's pulse racing – until, of course, it's needed.

At Hilti's CPD seminar 'From design to build – taking control of fire safety', held with RIBAJ in November, architects were presented with case studies from fire protection consultants and installers showing that the sector can supply well designed and tested products which, correctly specified and installed, will do the job they're designed for. But some presentations showed that there are still too many examples of the wrong design, wrong products, or the right products badly specified and installed; so the seminar also offered guidance on how to avoid bad practice and spot bad workmanship.

Wilf Butcher, chief executive at the Association for Specialist Fire Protection (ASFP), led on the importance of choosing the right product and specification for sealing services junctions with compartment walls. As he worryingly demonstrated, closer inspection often reveals the use of the wrong product, or a badly installed botch-up. The use of PU foams to remedy bad installation cannot be considered a solution; and as he showed in a sobering video, misuse of ill-specified PU foam is plain dangerous: a gap sealer rated for 280 minutes for a 10mm by 10mm hole will only last 11 minutes on a 50mm by 50mm one. Use of the wrong PU foam is too common, often ignored or not identified, with a sample of inspections revealing an endemic problem. The message here was that PU foams do not replace a robustly designed and installed firestop approach.

Following this, AHMM architect and consultant Paul Bussey considered the implications of Construction, Design and Management (CDM 2015) in relation to fire design. A chartered RIBA member and fire, health and safety expert, he pointed out the need for designers to balance risks with other aspects of design. CDM duties ensure all designers consider the risks in a proportionate and intelligent way. Applying 'as far as reasonably practicable', experience and full use of technical guidance is what is needed. It's also, he explained, about holistic approaches and treating risk management as something that to be considered, not just at design, but through all Plan of Work stages as part of a broader fire prevention strategy.

Alex Double of fire consultancy ADDC made clear the consequences of a lack of joined up thinking, presenting several examples of badly installed firestopping.

He reminded the audience that smoke is the biggest killer in fires, and produced the shocking statistic that a hole the size of a pencil can fill a 36m² room with smoke in

less than three minutes. He ran through a list of firestopping golden rules, including avoiding 'mix and match' systems, making allowances for movement and deflection and considering the size and proximity of other services when specifying. But Double emphasised the need to objectively interrogate any manufacturer's fire test data claims regarding material and substrate compatibility and product life expectancy.

Double also recommended that delegates read the more onerous RISC Authority version of Approved Document B for design. Featuring guidance for asset protection and life safety, it's an interpretation of AD B that the Department for Communities & Local Government could perhaps take on board.

Hilti head of business unit – BU fire protection, Dr Paul Langford, explained that some answers can be easily identified if a leading manufacturer is consulted early enough. He demonstrated Hilti's commitment to providing a range of products and clear advice. This includes typical drawings for designers to put in their specifications and drawings and documentation software. Langford said most firestopping scenarios could be addressed with a few key details; resulting in the firm developing its 'Standard Details' to offer architects clear and simple guidance when specifying, such as firestopping sleeve and collar details for typical walls (left).

Hilti's CFS-WB Firestop joint spray, sealing perimeter gaps between floor slabs and curtain walling systems or wall junctions with soffits of concrete or composite slabs.

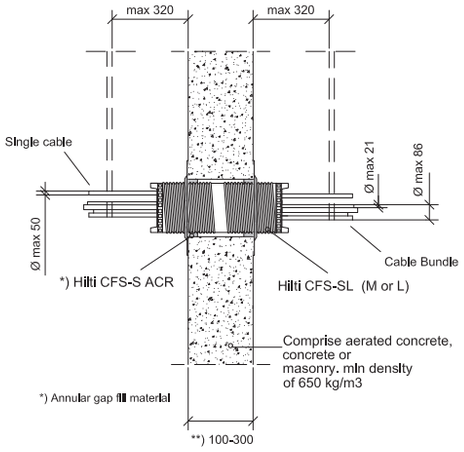
Engineer Wayne Early, associate at Buro Happold, demonstrated fire protection adopted at its Harbour Central development for Galliard Homes in London's Docklands. He highlighted its use of Hilti pre-formed cast-in place devices to firestop plastic pipes going through slabs- traditionally done by boxing out a hole before casting and infilling later– a labour intensive and time-consuming process. While innovative and neat, of more interest to the audience was Early's comparative cost appraisal, which saw significant cost benefits associated with the use of cast-in devices over traditional methods. The only caveat was that those savings are realised just as long as late design changes on site are the exception and not the norm – again hearkening back to Bussey's idea of a project as a holistic rather than compartmentalised endeavour – and definitely a boon for the arguments driving BIM implementation in the industry.

By way of illustration, Richard Bellefontaine from architect KDS showcased his experiences from the firm's recent commercial development in the capital, Chelsea Waterfront; where, despite the use of BIM design tools and site management, things still did not go entirely to plan, leading to the inevitable late on-site changes. Co-ordination of mechanical services through fire compartments was key; the whole project being a lesson in how the sector needs far greater levels of BIM implementation and site co-ordination.

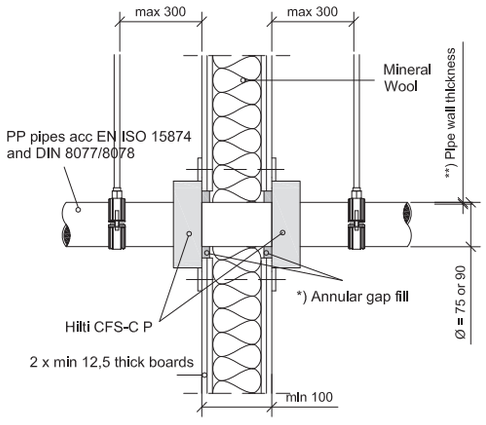
In conclusion, the speakers engaged in a lively Q&A session focusing on how to ultimately deliver quality. Procurement sequence and contract rules were blamed for many examples of bad practice, along with time and money pressures and lack of supervision. As the presentations showed, these are lapses that can only truly be overcome with the whole procurement chain adopting more robust working methods; better adherence to technical guidance and avoidance of stop-gap remedies like PU foams, adopting risk mitigation strategies that run across all work stages and, looking ahead, fully integrated collaborative design management driven by BIM. Watch this space.

Article produced in association with Hilti

Firestop sleeve for cable bundles in a rigid wall



Firestop collar for plastic pipe in a flexible wall



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Designing & building It

Liz Davidson

One month into the official start of the restoration of Mackintosh's Glasgow School of Art we ask GSA senior project manager Liz Davidson about the state of the building, what's salvageable and about the future of that lost library

How did you get to be project managing the restoration of Mackintosh's masterpiece?

It's a more holistic than conventional understanding of the 'project manager' role. My academic qualification is in architectural conservation and then I cut my teeth working for a building preservation trust. My project manager role here is a much broader in scope; I've been dealing with community consultation, stakeholder engagement, fundraising, feasibility, and options appraisals and enjoying them all!

So how has the start of the restoration been?

We're still in the consolidation phase of this two stage procurement. At the moment we are putting a roof deck on and starting to install the main roof's new timber and steelwork to get the building properly sealed. The challenge is ascertaining the damage to the Giffnock sandstone structure – especially to the west gable lancet window piers. Some of the stones weigh 300kg and are each being removed and analysed on a microscopic level. We've got geologists and materials experts trained in traumatic stress like bomb, seismic and water damage.

And what about damage to the glazing?

A lot of the facade was blown out during the fire and very little of that is reusable; the good thing is we know the chemical makeup of it and can reproduce it new. There's a happier story in the library with Mackintosh's lights. In the fire as the solder melted, the glass folded back on itself and we found a lot of it 'flatpacked'. Some is intact, and what isn't we can invisibly silicon bond.

And what about the library?

We discovered that the Tulipwood they built the library out of came from America rather than Europe – it's denser. In contrast to the softwood fir and pine he used everywhere else Mackintosh wanted the library to be oak, much as he wanted the roof to be lead. But money ran out and he got Tulipwood and asphalt. I think people will be shocked seeing its new iteration. 1910 pictures show the library much lighter, as the stained wood was. Its dark look was down to a century of bad stain choice every time it was repainted.

Do you feel more optimistic about the success of the project now?

The fire was a tragedy, but I never felt pessimistic about the project. Only two weeks after the event I felt that the bones of the building were still there. Seeing new steels and timber going in finally and things moving again it's like the building's coming round, recovering its memory. I'm confident we'll be handing it back in the state that Mackintosh did to the original governors.

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However accurate these forecast may prove, the picture they paint is of a Europe with better mid-term opportunities than appear to lie in the UK

Brian Green sifts the economic data: ribaj.com/intelligence/hungary-for-work

Hawkins admitted to swerving the seemingly radical recommendations of a colleague some time back

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Procurement & contracts

External management

Designing & building It

We love you but...

The RIBA Client Liaison Group's extensive survey uncovers a relationship that architects need to work a bit – possibly a lot – harder at

Illustrations: Roderick Mills

Matt Thompson

There is a power imbalance in the client-architect relationship. Whereas architects need clients, clients technically do not need architects. Clients are under no obligation to stand by their architects.

With no pre-nup in place and plenty of other fish in the sea, should it ever come to divorce the party worse off is the architect. It pays, therefore, to stop clients running off with younger, savvier or merely different business models.

A few years back, the RIBA's Client Liaison Group, relationship therapist to the profession, stepped in to investigate. Whether its ministrations are nicely pre-emptive or far too late is moot. However, its phase one Client & Architect report was very well received. It demonstrated that there is plenty of love left in the relationship, although it's not all a bed of roses. Clients complained too often that 'my architect doesn't understand me'.

An instructive finding, but tantalisingly short on detail. Did it merely reveal an easily resolved marital tiff about how to bring up the buildings, as it were, or was it symptomatic of a wider unhappiness?

Cue the group's phase two research, the inaugural Working with Architects client satisfaction survey. This invited clients to lie back on the couch and spill it all out. The liaison group hoped to quantify more precisely what niggles clients had and thus how architects could fix them.

The results are in and, as you would hope,

Clients appear to love the end-product of the design process overall

they are challenging. It is never comfortable to be on the receiving end of one-sided criticism. But, as group chair Nigel Ostime puts it in the survey report, you can't make an omelette without breaking a few eggs.

First, the good news. Clients are highly satisfied with the results of architects' design performance. They appear to love the end-product of the design process overall, specifically rating it very highly for the things we associate most closely with architects: superb aesthetic quality, meeting the brief well, and being clever with functional design. Architects are also great at developing the brief and communicating their designs.

Now the less good but in some ways more useful news, about architects' process management skills. As abundantly foreshadowed in the previous report, architects are rated mediocre in the way they go about their work. The critical measures – commercial understanding, keeping to the programme, managing their work, admin, collaboration, technical design spec, BIM – are all significantly less good than those for design performance. This can be interpreted as showing a lack of business savvy and a poor understanding of risk.

While this is not catastrophic, it's a bit more than mere niggles. A 70-year itch, perhaps? An over-familiarity that strains civility and makes it hard for clients to appreciate all the good in the relationship? You could say so. The mismatch between how clients rate the end product compared with how they

rate the process indicates that they've lost sight of the bigger picture.

Standing out in all of this like a red line in clash-detection software were contractors. Their scores were consistently and significantly worse than all others', often below the group's self-imposed minimum baseline.

This is the survey's first truly extraordinary result. We've known for years that when architects and contractors tie the knot, it's often at the business end of a novation shotgun. But we'd never before seen the depth of dissatisfaction quantified in this way.

So what's going on? The survey report publishes a diptych of opinion pieces from opposite viewpoints. One is by Dale Sinclair, architect with AECOM and author of the guides to the RIBA Plan of Work.

The mismatch between how clients rate the end product compared with how they rate the process indicates that they've lost sight of the bigger picture

For him, it's all about expectations, quality of information exchange and procedure, with architects shouldering much of the blame.

The opposing view is by CIOB president Paul Nash, keeper of contractors. His take is more balanced, acknowledging that in contractors' minds the value architects create is overshadowed by the need to preserve that same value during delivery.

He particularly accuses architects of not understanding that risk management underpins contractors' profit. He diagnoses a forgiveable inability in architects to quit iterating and (bleep)ing well freeze the design. Their fluid creative bull-momentum thrashes around the neatly stacked china shop of calculated risks. They don't appreciate that the project will only yield a profit for

the contractor if the teacups stay intact.

In the grand scheme of things, contractors are still a minority client for architects according to the RIBA's Business Benchmark. Nonetheless, they are important. With commercial clients increasingly drawn to one-stop-shop procurement solutions, architects are likely to have far more contractor clients in the future. Architects should stir from any cosy complacency they may feel on this front.

The survey's second truly extraordinary result is about follow-up. It's a bit of an exaggeration to say it, but clients love it when architects follow up even when they are not contracted to do so. The effect is disproportionate to clients' overall satisfaction with architects' work. The opposite is true, too. Clients hate it disproportionately when architects do not follow up.

Why is this a big deal? Well, because it validates what many have been saying for decades. Turns out that all that customer service mumbo jumbo about seeking feedback or carrying out post-occupancy evaluations of various kinds really is a good idea. It pays dividends, especially when so much work depends on word-of-mouth recommendations and repeat business.

This will please the loop-closing saviours of the construction industry whose promised land lies between Stage 7 and Stage 0. For them, this result is the holy grail, a cascade of win-wins: it makes clients happy. Hallelujah! And if clients are happy, architects' reputations are boosted, architects will get more work, architects can learn from their past mistakes, and architects can command higher fees because they know what works and what doesn't, thereby managing clients' risks, protecting the environment, improving health and safety, and so on ad nauseam.

The mantra is picked up in the results report by RIBA president-elect Ben Derbyshire. He's an optimistic convert, and quick to zoom in on architects' usual grumbles about cost and resources. For him, the implication of this result is a no-brainer: even if it's a net cost, follow-up should be built into the service as standard. The effect on satisfaction ratings – on leaving a good taste in the mouth – is that clear. He advocates building in a minimal option as standard and offering bolt-on extras of increasing sophistication for clients to opt into.

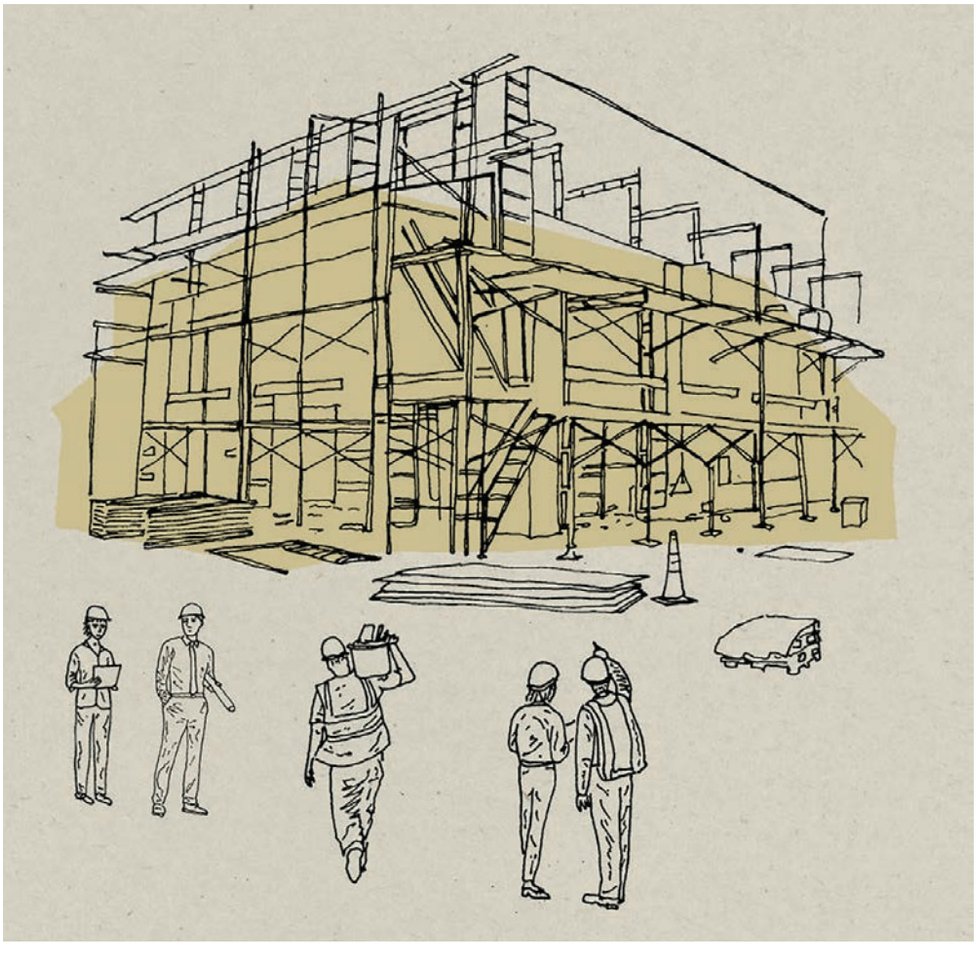
Clients love it when architects follow up, even if not contracted to do so. The opposite is also true

Overall, this report is a treasure trove of market intelligence. Aside from its many intriguing wrinkles, it confirms previously held beliefs (for example clients are more satisfied with architects than non-architects), and sets a quantified benchmark against which the future profession can be measured. Frankly, it smacks of quality assurance, its themes and conclusions pointing at ISO 9001-shaped solutions that other industries have relied on and enjoyed for decades.

At a time when clients are flirting with BIM-fangled procurement routes and having their heads turned by project managers, the honeymoon days of the client-architect relationship are distant memories.

Let's hope, as Jane Duncan urges in her foreword to the report, that the RIBA does indeed monitor progress, that individual practices do use this survey data strategically, and most of all that it is the start of a new era in the dealings between architects and their clients. ●

Download a full copy of the report at https://is.gd/gu7KwK



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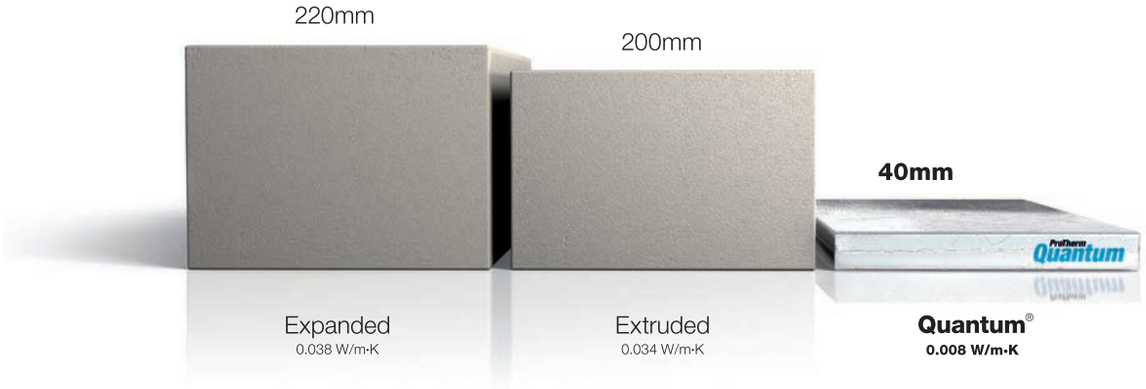

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In an ever-changing world, the profession is turning to its business skills to widen earning potential. It's paying off

Helen Castle

Is entrepreneurism the new panacea in architecture? The cure-all remedy for all current architectural complaints: decreasing fees, more work for less money and other professionals encroaching on our space. Certainly, the notion that a vigorous start-up mentality could provide a much-needed antidote to present ills is gaining ground. In the summer of 2014, German architect-developer Tobias Maescher launched the online magazine Archipreneur, exploring the intersection between architecture and entrepreneurship; the same year, the 'Archi-Preneurs' Guerrilla Tactics conference, under creative director Will Hunter, took place in November 2014 at the RIBA in London, providing 'Smart Strategies for Small Practices'. In 2015, Eric Reinholdt used the direct experience of starting his own studio – 30x40 Design Workshop in Maine, New England – to bring out two successful Architect+Entrepreneur volumes, which combine a first-person narrative with practical tips on setting up your own practice, brand building, marketing and strategy. In July this year, French architect Odile Decq – founder of the Confluence Institute for Innovation and Creative Strategies in Architecture in Lyon – when lecturing in London, put out a clear and widely reported call for entrepreneurial skills to be taught in architecture schools since graduates can no longer count on an entry level job in a firm.

From owner to entrepreneur

So what separates the practice owner from the architect-entrepreneur? Certainly, the Oxford English Dictionary's baseline definition could fit any practice owner: 'A person who sets up a business or businesses, taking on financial risk in the hope of profit.' The deep-seated desire to lead your own practice is strong among architects. Though running a practice always entails a level of financial risk, particularly in periods of economic uncertainty, practitioners tend to prioritise design output. Architecture firms gain recognition for the quality of their built designs, not the management of their bottom line.

What we perhaps forget is what game changers the UK's high-tech practices – such as those of Farrell, Foster, Grimshaw, Hopkins and Rogers – were in the 1960s, with their 'deep commitment to marketing and the financial side of the business' says Terry Farrell. That approach perhaps goes some way to explaining their phenomenal success and longevity. Farrell explains: 'Two linked

> He describes the studio 'as a chassis upon which a series of income-earning products are positioned'

Housing a video suite and workshop space for clients, as well as a design studio, 30x40 Design Workshop's Long Studio reflects the diversified business model of the architect-entrepreneur

ERIC REINHOLDT

Right This modest pro-bono project, creating a studio out of a recycled shipping container for Hackney City Farm, provided Carl Turner Architects with an essential starting point for a series of self-initiated projects.

TIM CROCKER.

factors underpinned the success of these practices. First, we enthusiastically embraced the private sector, and made a complete break from the then current generation of leading practices that were almost solely reliant on the state and related cultures of the post-war Welfare State era. This influenced not only the kind of clients and projects we all undertook (warehouses, factories, offices, private houses and developer's housing), but also our approach to internal organisation, marketing, publicity and so forth. Secondly, the link to construction and the design of building components was also part of this new attitude. Cladding, mechanical engineering, structural-steel systems and off-site component fabrication and part assembly got all of us into the industrial design of building elements and thoroughly engaged in doing so with the private sector construction industry. And so design became paramount.'

So how does the approach of today's architect-entrepreneur differ from that of some of the premier commercial design practices? For Reinholdt it comes down to mindset: 'The architect-entrepreneur differs from a practice owner in the way each approaches their formative business model and in their willingness to explore a diversity of revenue streams,' he says. When he set up his own studio in a remote area of Maine, he knew he could not rely on a local client base and the typical standard architect services business model in which design consultancy is provided for fees. Heavily influenced by start-up thinking he turned to the internet to widen his customer base and diversify his business models and revenue lines. He cites Eric Ries' The Lean Start Up and Tim Ferris' The 4-Hour Workweek as influences – and describes how he rigorously applied Ries' Minimum Viable Product (MVP) methodology, in which a minimum viable product is launched so that an iterative process of measuring and learning can happen at the earliest stage possible. This has led to successes and failures and a business model that 'sells digital and physical products, earns advertising revenue and secures affiliate commissions from a variety of sources'.

To some extent, Reinholdt's experience of setting up a practice has become the product itself through the books he has written and vlogging on YouTube. When at the end of last year, he set out to build a new home for his studio, its construction became a 'physical avatar for my business and design principles'. By videoing the process step by step, he built up a following of over 10,000 loyal subscribers and funded the whole construction through passive income generated by the products, advertising and affiliate revenue. Like other purpose-built architect's studios, it is intended to showcase the design and technical capabilities of the practice, but the facilities reflect the diversified business model of the architect-entrepreneur. It houses a video suite, and is a place to show clients materials and to run workshops. Now that it is complete and photographed, he has worked up the details into plan sets to be sold online. As he says, nothing gets 'underused in my practice'. He describes the studio 'as a chassis upon which a series of income-earning products are positioned'.

A means to an end

If Reinholdt's approach epitomises that of the millennial start up, then the most outstandingly successful examples of architect-entrepreneurs to date are perhaps the designers and initiators of the London Eye, David Marks and Julia Barfield of Marks Barfield Architects. They famously came away with millions when they sold their one-third stake in the Eye in 2006 to the Tussauds Group. Their entrepreneurial activities were, however, triggered by the more conventional route taken by architects winning work – a design competition. They entered a giant ferris wheel for a landmark project for the millennium, but when it became apparent that the wheel would never be realised, they set about initiating the project themselves. Providing the keynote at the 2016 RIBA Guerrilla Tactics conference, 'Super Models: business models with the power to transform practice', Marks described how the practice has accrued business knowledge over time – the basic building block being the business plan for individual projects and the practice. In terms of taking on the responsibility of the

business side of a project, it is a matter of expanding architects' skills at problem-solving and co-ordination to take on more reports and expert consultants to cover marketing and financing. It is nothing to be scared of in terms of services, but does require a lot of legal advice and the capacity to scrutinise hundreds of contracts. Rather than using the sale of their share in the London Eye and to buy a chateau in the south of France, Marks Barfield has continued investing in projects it wants as a practice to undertake. Most conspicuously it invested £6 million towards the financing of the BAi360 observation tower in Brighton, which opened in August 2016.

Carl Turner, also a speaker at 2016 Guerrilla Tactics, is another who has used entrepreneurialism to simultaneously develop his practice and pursue projects. Marks calls this a 'triple bottom line' for having threefold benefits – environmental, social and financial. Turner has a particular interest in brownfield solutions, housing and social responsibility, and the issues created by the displacement of communities through regeneration. His foray into the use of shipping containers started with Hackney City Farm in 2011, a pro-bono project in which he was given an £8,000 grant to create a studio for Magnificent Revolution, a charity teaching children about energy use with bike-powered generators. When he won a competition to revitalise the site of a temporary ice rink, organised by Lambeth Council in collaboration with Brixton Market Traders' Federation, he notched up his use of shipping containers to an urban scale. Opened in 2015, Pop Brixton is 'a little city' of recycled shipping containers accommodating an event venue and independent retailers, restaurants, street-food start-ups and social enterprises. The skills Turner has developed through this process have led to feasibility studies and paid consultancy work for social enterprises. At the end of 2015, he also won the competition to convert Peckham Levels, a multi-storey car park, in south London into a community project. This time around, though, he has offered the council a 20 per cent cut rather than the 50 per cent that he received at Pop Brixton. More importantly, perhaps for Turner these projects have transformed his practice and shifted him up the ladder in terms of building types. Within five years, he had gone from a tiny pro-bono project to mixed-used developments and a significant commission to design Mountview Academy of Theatre Arts, a new school of performing arts in Peckham.

Carl Turner's competition-winning designs for Peckham Levels will transform a 1980s' multi-storey car park in south London into a creative hub.

What is at stake?

With the shift from a knowledge to a digital-based economy, the problem-solving skills of architects are increasingly valuable to wider industry. These, as outlined by Rob Hyde, principal lecturer at the Manchester School of Architecture, encompass: the appraisal and communication of complex, non-linear ideas to diverse stakeholders; the ability to digest and analyse a large amount of data; speculation and scenario-testing; and strategic and design-thinking that leads to innovative digital and material solutions. Hyde describes how this has led Part I and Part II graduates to be attracted to the periphery of property and construction, working for clients, developers, contractors, house-builders and engineering and project managed multi-disciplinary firms in both traditional and diverse roles, where they are paid more than in traditional practices. They also increasingly go beyond this into manufacturing and digital/creative industries (where they are likely to be paid even more). This provides further food for thought for conventional practices, which Hyde anticipates needs 'to be adapting and looking at new ways of doing things to be able to compete for talent in future – perhaps looking at how other working cultures and industries operate and get paid, ie lean thinking from manufacturing, agile thinking from digital/tech industry, ability to productise etc'. Just as in the 1960s, Farrell and his contemporaries successfully revitalised architectural practice through their emphasis on business and new building systems, it seems that, in order not to lose ground to adjacent professionals and industries, a new wave of practitioners needs to be fully primed to embrace current entrepreneurial thinking and the possibilities of new digital and manufacturing technologies. ●

Helen Castle is head of professional programmes at the RIBA and consultant editor of Architectural Design (AD). With thanks to Rob Hyde with the help of Tom Jeffries and John Hickey at the Manchester School of Architecture

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What's the question?

SIG's seminar uncovered the sorts of questions you'll need to refer to experts when it comes to putting the roof on

How do you ensure that your flat roof doesn't leak? The audience at the latest SIG roofing seminar probably expected to receive a lot of technical advice, and they weren't disappointed. What they didn't expect was to hear about the disgruntled workman who went on site on a Saturday and attacked less-visible parts of the roof with a Stanley knife. No roofing membrane, however tough, could withstand that!

This was revealed in the presentation by Stephen Clamp, a consultant building surveyor with TGA Building Consultancy. He was setting the scene by explaining what can go wrong. Although there are now excellent materials available, there are still lots of problem roofs, which Clamp attributed to people rather than products.

The current organisation of projects means, he said, that 'everybody is a subcontractor', from the architect to the materials manufacturer, and it can be hard to work out who is taking responsibility. The design of a roof may be too complex, with too many penetrations, posing at the very least a challenge to the installation team. And, he said, 'workmen are damaging roofs' during installation, after installation and during maintenance. Few are as deliberately destructive as the menace with the Stanley knife, but all demand improvement ranging from training to imposition of good practice.

When practice is good, however, it can be outstanding. Stephen Ashton, engineering director of transportation at Atkins, gave a fascinating insight into one of the most complex projects, the roof of the new Birmingham New Street railway station. This enormous terminus, which dwarfs London's Euston, had to interface with a number of existing buildings. Some of the roof forms were of an exuberant geometry, and the solution turned out to be to use seven different waterproofing materials. Working with SIG Design & Technology materials was ideal because the company is 'product neutral' – it supplies a range of materials and so can advise dispassionately on which is the most suitable.

Dave Maginnis, managing director of roofing contractor Briggs Amasco, ran through some of the technical challenges and the choice of materials. 'Where you get problems it is often because the wrong material has been used,' he says. Every detail on this roof was thought out with great care.

One problem that Briggs did not have to cope with at Birmingham was the smell of the material that was used. This was an issue for developer Barratt at their 70 Horseferry Road scheme in London. The high-end apartment blocks were already nearing completion, and some were occupied, when a problem was discovered with a detail of the balconies, and some remedial work was needed. This included resurfacing the balconies with a new waterproof layer, with access coming through the apartments. The most suitable product was going to be a liquid membrane and, unusually, the developer was forced to ask itself 'how does it smell'? Some waterproofing solutions, although fit for purpose in every other way, had an odour that residents disliked penetrating their living spaces.

The solution, said Barratt Technical Director Phil Hayden, was Hydrostop AH-25, a product that fulfils all the technical requirements, as well as being odourless. The material was demonstrated during the coffee break, which led to the unusual sight of construction professionals sniffing pots of liquid waterproofing.

SIG also took the opportunity during the break to hand out copies of a checklist that

it has produced, guiding architects through the initial thinking they should use when specifying a flat roof. Rather than take the place of specialist advice, this is intended to give them at least an idea of what they need and of what questions to ask.

Ross Finnie, sales director at SIG Design and Technology, took the audience through the 14 questions that they should address, divided into employer's requirements, design and buildability factors. He took the opportunity to show some of the things that can go wrong when the design team does not make the correct decisions, with photos of flooded roofs and bad detailing – just how do you waterproof under the threshold, once the door has been installed?

Mike Crook, trading director of SIG Design & Technology, and a former president of the Single Ply Roofing Association, explained how SPRA is trying to raise standards and ensure quality. And finally, Mark Jackson of Building and Land Guarantees, guided delegates through the minefield of insurance-backed guarantees. He subtitled his talk 'Confused? You will be!' and then set out to clarify this tricky area. Delegates learnt a lot, with one overriding conclusion – seek advice from an expert.

This could summarise the whole seminar. There is a lot to understand in roofing and a lot of pitfalls to avoid. There is also plenty of knowledge available. Nobody who is not a roofing expert can expect to know it all. For architects and other specifiers the essential is to know enough to ask the right questions, to seek the best advice and, it is to be hoped, avoid the worst pitfalls. ●

www.singleply.co.uk/perfectroof

Left The roof at Birmingham New Street station by Atkins.

This page Barratt London's 70 Horseferry Road.

Procurement & contracts

What the contract says, goes

Common sense isn't enough to overturn a straightforward bad bargain

Douglas Wass

Payment terms continue to be fertile ground for debate. A recent Court of Appeal case, in which I acted for the successful developer, Grove Developments Ltd (Grove), has provided a reminder on the care needed when drafting, advising on and administering the payment provisions in building contracts.

Grove had engaged Balfour Beatty Regional Construction Ltd (Balfour) to carry out the design and construction of a hotel and serviced apartments in south east London. Grove and Balfour changed the payment provisions in the JCT Design and Build 2011 edition to include a payment schedule which set out details of 23 monthly interim payments up to July 2015 (the anticipated completion date). The project did not, in fact, achieve practical completion until July 2016.

After July 2015 the parties tried but failed to agree an extended payment schedule, though Balfour continued to apply for payment. In November 2015, it claimed £23 million on the basis that Grove had failed to serve certain payment notices under the building contract on time during August 2015.

Grove, therefore, sought a declaration from the Technology & Construction Court (TCC) that Balfour was not entitled to further interim payments after July 2015 as the schedule did not provide for payments after that date. The judge agreed. Balfour was not entitled to further payments until the final account – some three years away at that stage. Unsurprisingly, Balfour appealed to the Court of Appeal. It argued that, first, the payment schedule only included dates for payment up until July 2015 because that was the anticipated practical completion date, and therefore should be interpreted as requiring monthly payments to be made until practical completion rather than July 2015. Secondly, the payment schedule breached the requirement of the Construction Act that a party to a construction contract be entitled to be paid by 'instalments, stage payments or other periodic payments' if it did not allow Balfour to claim interim payments for work carried out after July 2015.

Although divided, the Court of Appeal dismissed those arguments. While this may seem harsh, the majority of the judges found that the payment schedule was clear and unambiguous. Given this, the court was not able to '… rescue one party from the consequences of what …. [it] had clearly agreed…' in what one of the judges called a 'classic case of one party making a bad bargain'. They further held that the Construction Act was not breached because it provides that the 'parties are free to agree the amounts of the [interim] payments and the intervals at which, or the circumstances in which, they become due.' So it was open to the parties to agree no interim payments would made after July 2015.

This decision shows that, where a contract is unambiguous, the courts will be extremely reluctant to save parties from a bad bargain by applying their own view of commercial common sense, and that the Construction Act imposes few limits on the interim payment regime which can be agreed by parties.

However, employers should not see this decision as encouragement to seek to impose harsh interim payment regimes on contractors because the court said any interim payment regime should be agreed in 'good faith'. A payment regime consisting of one interim payment of an insignificant amount probably would not comply with the Construction Act as it would constitute a 'cynical device' designed to undermine the aims of the act.

A great deal of care should be taken when negotiating payment provisions to ensure the parties have common intentions which are properly reflected in the wording. Expensive and time consuming litigation can result from any lack of clarity. ●

Doug Wass is a partner at Macfarlanes LLP

The courts will be extremely reluctant to save parties from a bad bargain by applying their own view of commercial common sense

IN PLAIN ENGLISH: CONTRACT SUM

The contract sum is the amount of money the contractor agrees to carry out the works for. In the JCT forms of contract, the figure is set out in the articles. It is generally VAT exclusive. It is not fixed and so the employer may pay more or less than the figure originally agreed with the contractor. Reasons why the contract sum may change include variations or changes instructed by an employer; contractor claims for loss and expense; fluctuations and the instruction of provisional sums. The Construction Act sets out minimum requirements with which employers and contractors have to comply when agreeing how the contract sum will be paid.

External management

Architecture — the musical

The profession needs to retune its principles

HOLLY EXLEY

Maria Smith

The government recently announced that spending on music education would not be cut in the coming years. For my father, a man three years away from retirement who has spent his entire career cleverly arranging meagre budgets in order to offer as many young people as possible the opportunity to learn a musical instrument, this was a concluding vindication. He texted me: the government has announced that spending on music education is safe until I retire.

Earlier in his career, my dad undertook a mammoth piece of research to prove that young people who learnt a musical instrument did better in their exams despite taking time out of 'academic' classes to do so. This was measured as an uplift in GCSE results compared with SATS scores and controlled for socioeconomic factors etc. What he wanted to prove was that if you take two 11 year olds with the same opportunities in life and exhibiting the same academic potential but give only one violin lessons, then that child's academic performance will improve simply by virtue of their brain benefiting from their participation in music. All this was to help defend public spending on music education.

Shortly after gathering all the evidence and carrying out the statistical analysis, he shut down the study. He never published. He had become disillusioned with the notion that spending on music education – on arts education generally – should need to be justified by a demonstrable, quantitative impact on what were considered more important achievements. This, he realised, was an admission of inferiority. Lashing music to academic utilitarianism would not only leave music vulnerable to a potential loss of buoyancy over which it had no control, but also evade endowing music education itself with any value. What had at first seemed a very clever way of beating them at their own game, would likely be tantamount to digging music education's own grave. He spent the next 20 years arguing for the value of music on its own merits. This culminated in his term as chair of Music Mark, the UK association for music education that advocates quality music education and influences government policy. It is a victory indeed then that in this environment, spend has held.

So why am I talking about this in the RIBAJ? Because architecture is falling into the same trap and needs a similar sense check. Read any design and access statement and you will find evidence of our contemporary methods of justification. My contention is that these fall into three categories: utility, history, and modesty. It's OK to build something that is absolutely necessary, or that echoes the past in some way. It's OK to build something provided that you're building it as apologetically as possible. But if you can't meet these criteria, our planning and other systems of acquiescence will not allow it.

The year 2016 has been a doozy and we're all exhausted and brow beaten. The biggest mistake Patrik Schumacher made when taking to the stage in Berlin to deliver that incendiary lecture (see p60) was failing to read the room. He purposefully provoked, hoping to incite a formidable debate, playing devil's advocate and fancying himself a weirdly incombustible straw man. But we were in no mood. The media hysterically cherry picked the most inflammatory titbits, and the architecture community rallied against a perceived common enemy. Unfortunately all this buried the valid points he raised, for example that of over-regulation.

Beyond the extraordinary number of standards that turn arbitrary minimums into the only thing available, and force us all to live in a state endorsed manifestation of heteronormativity, an insidious victim of over-regulation is the poisonous language of justification that regulation demands. Our pathetic begging to permit the realisation of lowest common denominator area schedules wrapped in faux-any-old-thing cladding is embarrassing, and deeply damaging.

It's ok to build something that is absolutely necessary, or that echoes the past in some way. It's ok to build something provided you're building it as apologetically as possible

With every design statement that obeys the utility-history-modesty dogma, we admit our inferiority, we concede that architecture is an unfortunate necessary evil that we must endure for its services to acceptable endeavours. You know, like finance. It's no wonder that fees are squeezed and value engineering abounds. We've set ourselves up to fail. The measures of success we're adhering to are inherently anaemic. Unless we can find a way to justify architecture on its own merits, we're slowly cannibalising ourselves.

My friend has a rule about shopping: he is only allowed to buy something if he desperately needs it, or it's reduced in price. This is endemic in architecture's culture. My dad would not approve. This is not a culture that composes great symphonies. ●

Maria Smith is a director of architecture and engineering at Interrobang

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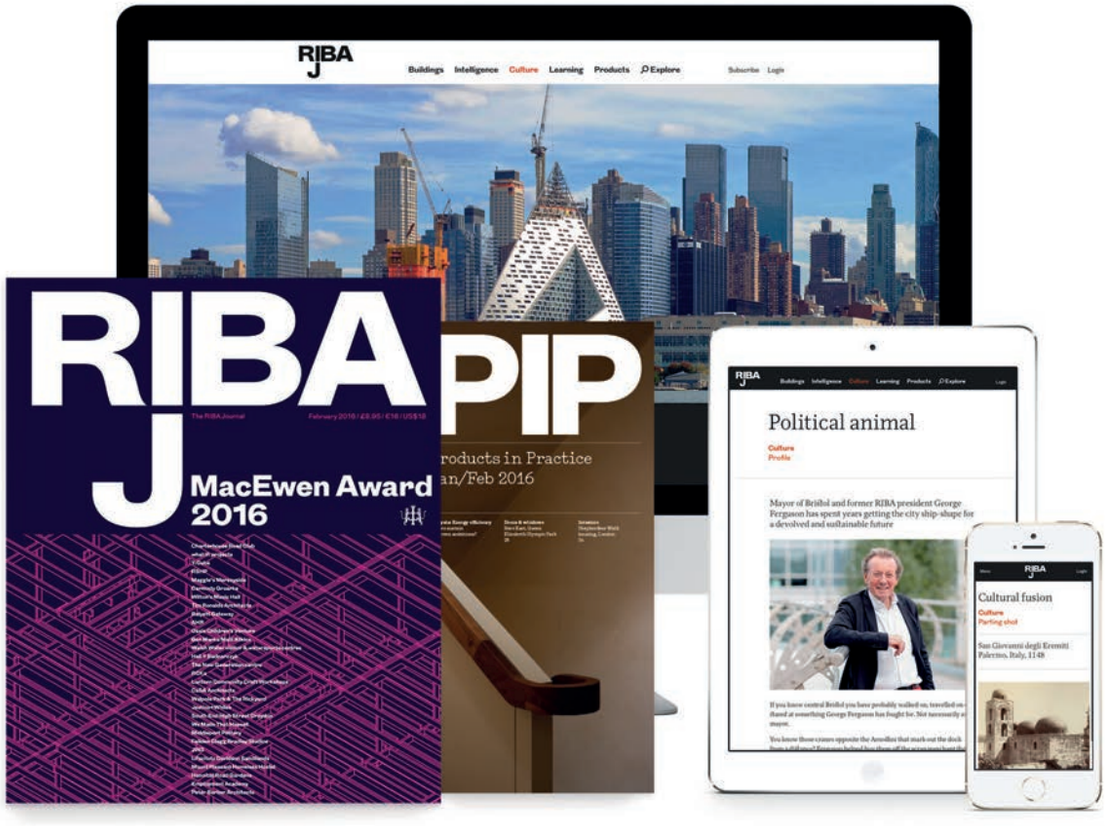

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NICK HARRISON

What can be done to encourage the reuse of steel as the construction industry starts to engage with circular economy processes? In the latest Steel Intelligence supplement we look at the plethora of initiatives and research under way, from creating a market portal to the introduction of materials passports (p51-52). Reuse is also the theme of our building study on Ashton Old Baths in Ashton-under-Lyne, now reborn as offices with the insertion of a new steel structure within the former pool hall (p48-50 and above). Meanwhile in Cambridge, Marks Barfield's new primary school for the University of Cambridge is designed to be future-proof with flexibility to change both within and beyond its current footprint (p53-55). We finish with SOM's Exchange House, nominated by Maria Smith as a fine example of integrated architectural and engineering thinking (p56).

Pamela Buxton, editor, Steel Intelligence

RIBA J

NICK HARRISON

New ship in old bottle

Extensive use of steel enabled the insertion of a dramatic timber pod into a grand old swimming baths while protecting the listed structure itself

Words Pamela Buxton

One of the oldest and largest municipal swimming baths in England has been saved from dereliction and reborn as offices with the help of a lightweight structural steel solution.

Ashton Old Baths, in Ashton-under-Lyne, was built around 1870 in an Italian Romanesque style with a 37m high chimney tower and a grand pool hall. The grade II* listed structure had been out of use for 40 years and was on the Buildings at Risk register before the £2.7 million conversion project, designed for client Tameside Borough Council in partnership with PlaceFirst.

This conversion follows many unrealised attempts to find a new use for the landmark building, including a proposal to fill it with shipping containers that could function as offices. The final project presented multiple challenges for the design team. Not only was there considerable damage to the 2100m^2 building due to water ingress, but any new structure had to be constructed via a limited access opening just 3m wide by 2.7m high.

The architect, Modern City Architecture and Urbanism, favoured the idea of an independent structure within the pool hall that would leave the original building fabric as untouched as possible, according to director Neil Brown. Crucially this approach would allow circulation around the new curving structure and enable greater appreciation of the internal views of the historic pool hall, as well as being easier to construct.

The result is a timber-clad, pod-like form about 30m long and 11.5m wide. It provides three storeys of office accommodation topped by a roof terrace, and is located on the site of the pool, which was filled in several decades ago.

'We wanted to do something quite bold that was fitting to its context,' says Brown. 'We felt something more organic would be more appropriate than a blocky shape. By curving the envelope, it dramatically enhanced the views.'

Steel was utilised both to stabilise the water-damaged structure and to create the new office intervention. A timber frame was considered but rejected because of the cost and the difficulty of fitting the components through the relatively small access door.

'We proposed a lightweight solution that would deal with the constrained access and minimise the interventions in a cost-effective way,' says Kevin Gilsenan, director of structural engineer Renaissance.

Another option, a steel frame with a concrete floor deck, was also rejected because of cost and the deeper floor build-up, which would have compromised the desire to maintain space between the pod's roof terrace and the old roof. Instead, a simpler all-steel solution delivered by steelwork contractor BD Structures, combined with a lightweight plywood floor, gave a structural zone of 200mm compared with the 300-400mm of the composite solution, enabling more generous headroom of 2.6m.

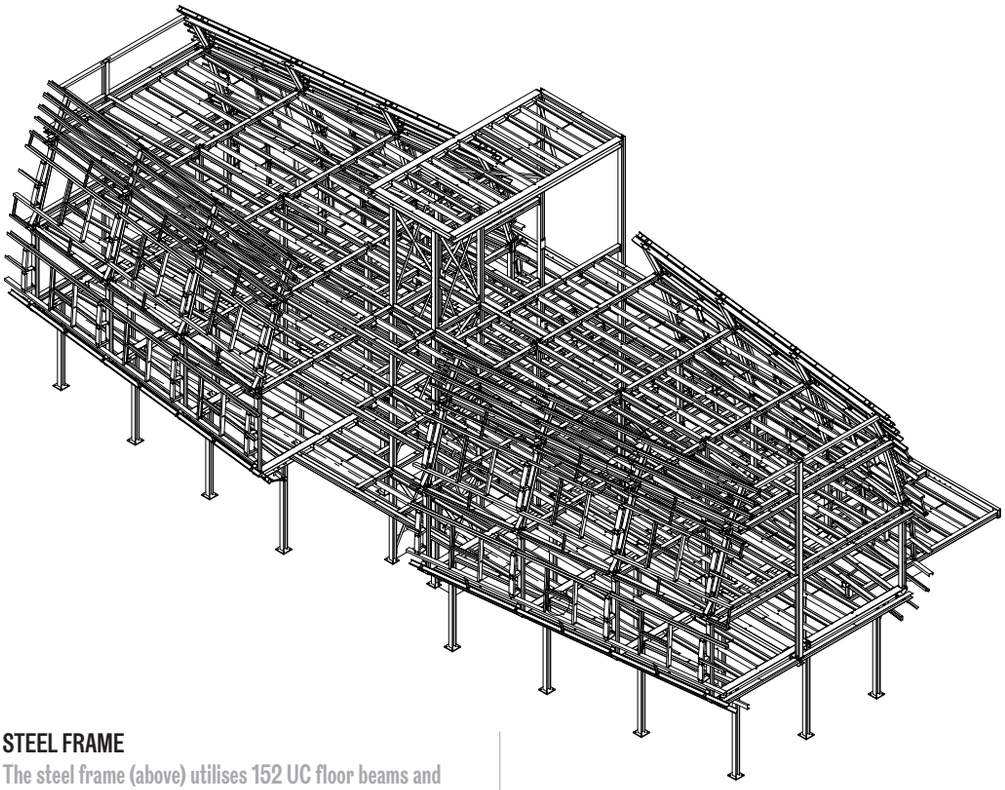
'If it had been any bigger it would have swamped the original building... We were keen that the intervention sat as an object in the space,' says Gilsenan. 'We worked with the architect so that it tapers on plan and you can look up and appreciate the original fabric.'

The pod is glazed at ground floor level to maximise daylight from the upper windows and give the appearance that it is 'almost floating in the space', says Brown. Above this, the structure is clad in plywood and western red cedar, swelling out into a barrel-shape

JAMES MADDOX (2)

Opposite A new steel structure enabled the conversion of the Victorian pool hall for office use.
Above The pod-like intervention is clad in plywood and western red cedar.
Left Exterior, showing the neo-Italian Romanesque building's distinctive tower.

We proposed a lightweight solution that would deal with the constrained access and minimise the interventions in a cost-effective way



BD STRUCTURES

STEEL FRAME

The steel frame (above) utilises 152 UC floor beams and columns within a 3.6m x 6m grid that ties in with the spacing of the original roof structure and supports. These are designed with minimal thickness to reduce the impact on the main hall, assisted by two rows of internal columns, which avoided the need for heavier beams. The structure rises above the top storey to form a 1100mm high balustrade for the roof terrace.

Structural engineer Renaissance wanted to keep the new foundations within the footprint of the infilled swimming pool to minimise intervention to the existing building fabric. Piled foundations were inserted beneath the columns through the infill and into the sandstone under the building to a depth of 15m. A transfer structure was created at first floor level to support the cantilevering upper levels.

'Every piece of steel is different because it follows a curve on plan and in section. Each connection had a different angle and geometry,' says Chris Heys, managing director of steelwork contractor BD Structures.

Constructed with bolted connections throughout, the pod was erected in six weeks with the help of a mini-crane. The process was slowed by the logistics of feeding 831 fabricated items – a total of 65 tons of steel – plus associated construction equipment through the narrow access point. The substructure and superstructure packages cost less than 15% of the overall pod building cost.

with the aid of cantilevered facetted columns. Brown feels it enhances the cathedral-like space. 'As you walk around you get different views and vantage points and the sense of volume is always maintained,' he says.

The new office pod was only possible because the cost-effective steel repairs to the historic fabric minimised the interventions required. Years of steam rising up from the pool and condensing meant water ingress had caused widespread rotting of the beams and support posts of the roof trusses, potentially leading to the need for propping and extensive replacements.

Renaissance created a 3D model to analyse the implications of the damage and discovered that only members with greater than 30% loss of section required strengthening. The firm then developed a steel flitch plate that took the load off the timber. Not only was this reversible, but it avoided the need for temporary works or the removal of the existing building fabric.

Steel was also used to strengthen the pool annex structure, which had a heavily corroded steel filler joist floor, also due to prolonged water ingress. Renaissance's surveys found that many of the joists had corroded with 30-50% loss of cross section. To avoid intervention to the slabs themselves, it was decided to insert new intermediary steel beams where needed at mid span to strengthen the filler joists concrete slab. This effectively broke the span down from 3.5-4m to 2m.

'This meant we didn't have to do repairs to the existing slab,' says Gilsenan.
This new structure carries the new imposed and super dead loads only, leaving all existing loads to be carried with the existing structure. This use of additional steel insertions avoided lengthy and more expensive repairs that might have used up too much of the project budget.

In total, 605m^2 of new office accommodation has been incorporated in the building.

Credits
Client: PlaceFirst in partnership with Tameside Borough Council
Architect: Modern City Architecture and Urbanism (MCAU)
Heritage consultant: Heritage Architecture
Structural engineer: Renaissance
Contractor: HH Smith & Sons
Steelwork contractor: BD Structures Ltd

Encore, encore

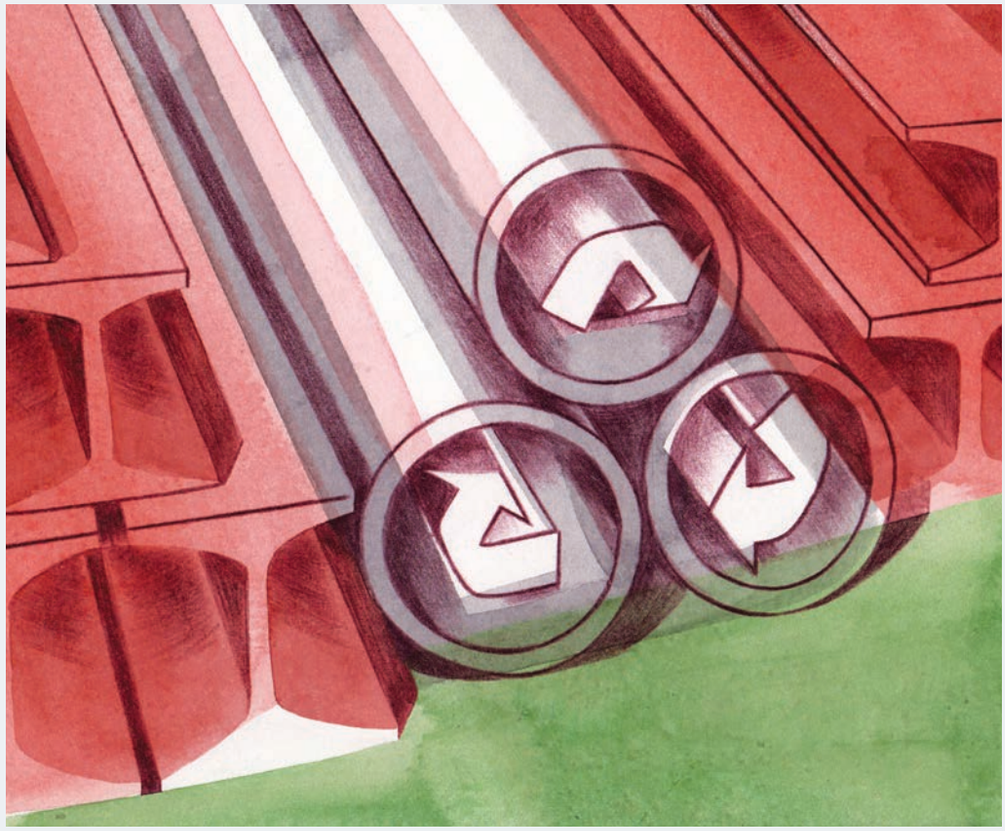
What can be done to encourage steel reuse? Pamela Buxton looks at the potential of integrating steel into a circular economy

Words Pamela Buxton **Illustration** Toby Morison

As construction begins to engage with the circular economy principles of promoting resource productivity and reducing waste, what are the implications for steel?

Steel recycling, as distinct from reuse, is well-established, with some 95% of steel sections currently recycled into products of equivalent or higher quality. Reuse, however, optimises whole life resource efficiency further by exploiting steel's inherent ability to be reused. But what are the barriers to this? And what can be done to encourage all participants, from steel producer and architect through to developer and end-user, to embrace this way forward?

The Steel Construction Institute (SCI) and Cambridge University are exploring the development of a portal for steel reuse as one of a number of ongoing research projects tackling the reuse of this and other construction materials. Last summer the Circular Building, built from steel and other fully reusable components (see overleaf) was showcased at the London Design Festival as a prototype for reusable buildings.



Designing for deconstruction

'The circular economy agenda is coming to the fore now and has given steel reuse impetus,' says Dr Michael Sansom, associate director of the SCI, which is also leading the EU research project REDUCE (Reuse and demountability using steel structures and the circular economy). This three and a half year initiative aims to encourage steel reuse by promoting design for deconstruction with advice on connection systems and greater standardisation of design.

According to Dr Sansom, while the environmental case for reuse is very clear, SCI research found that currently just 5% of steel sections are reused compared with the remainder of sections that are traditionally recycled. Both options, however, avoid the downcycling or incineration fate of many other construction materials.

'The idea of reclamation and reuse is not common practice and many organisations don't have the experience and skills to do it,' he says.

The SCI/Cambridge University research analysed the barriers to greater steel reuse such as access to the right type and amount of certifiable steel when required, and the cost, quality and programme implications of reusing steel. It found that there was often a disconnect between the perceived problems and reality.

'There's sometimes a perception that reused steel is somehow inferior,' says Sansom. 'As long as steelwork isn't severely damaged by fire, there's absolutely no reason why it couldn't be reused.'

A portal for reusing steel could tackle many of the issues around accessing reused steel. Demolition contractors could post details of steelwork from buildings they're working on for interested designers, contractors and developers to view and ultimately buy.

'It's very challenging for designers,' says Sansom. 'If they want to reuse steel they have to find the right section sizes in the right volumes and at the right location. This would be much easier if there were a bigger market with better availability.'

As well as providing access to reused steel, the portal could also make provision for

ARUP

CIRCULAR BUILDING
The Circular Building was erected in the forecourt of the Building Centre in London recently to demonstrate the potential for reusing building products. Delivered by a team including BAM Construct UK, Arup and the Building Environment Trust, the steel-framed prototype uses digital technology to tag all items with a code containing the necessary information to allow it to be reused.

future use by building a database of BIM structural steel models of new buildings, with each piece of steel and its CE marking identifiable. While this information is already available for CE marked buildings, a database would ensure it was available to future owners. This would make reuse more economically viable by removing the need for testing, since the model can provide the necessary data to ensure that those sourcing reused steel could be confident that it had the properties they require.

Several other initiatives are looking at this important issue of information, which is key to boosting steel reuse from the thousands of buildings that are demolished each year in the UK.

One of these is the Buildings as Materials Banks (BAMB) pan-European project, led in the UK led by BRE and BAM Group. This initiative proposes a Design Protocol for Dynamic & Circular Buildings to make sure buildings are designed to be easy to deconstruct. It is also exploring electronic materials passports as a one-stop shop for capturing material and performance information that will make it easier for developers, managers and renovators to choose circular building materials.

'If that's captured in a model or a passport, then in 20, 60 or even 100 years' time an engineer or architect will be able to look at that steel and know what stresses it's been under and have full confidence in knowing how it can be used in the future,' says Nitesh Magdani, group sustainability director at Royal BAM Group, who hopes this will help address the current hesitancy to consider reused materials.

BAM has explored circular economy approaches on several projects, including the Circular Building designed with Arup and constructed last year at the Building Centre in London (see above). It is currently setting up a database as a platform to assist circular building processes.

Incentives needed

'Hopefully in 20 years' time we'll have a marketplace ready to deliver products that have been used already,' says Magdani, adding that more needs to be done to incentivise CE practices.

These issues are just part of a complex picture according to Arup principal consultant Kristian Steele, who has been looking into steel reuse as part of the firm's engagement with the circular economy.

'Circular economy is an area of strategic importance to Arup. It's something we need to be at the sharp end of,' he says, adding that at the moment the market doesn't have all the solutions for that agenda.

'Over time these things will come forward. Reuse is a useful strategy – although just one among many for achieving greater circularity – and in particular applications I think it has the potential to be applied more,' he says. 'The research shows that designing for reuse is a potential solution for reducing carbon emissions.'

According to Steele, reuse starts with enabling easy and cost-effective deconstruction. This requires a minimum number of fixings which can be removed mechanically. A simple, standardised structure would also help, as well as a tagging system that identifies steelwork properties both virtually through the BIM Model and physically – a method already embraced by some in the shipping industry. Steele also suggests that disassembly plans should be mandatory for all buildings as an easy way of recording the necessary information to enable a circular economy approach.

The creation of a steel reuse portal and the outcomes of other research such as advances in information tracking will undoubtedly make reuse more practical. But without carbon taxation or legal requirements there isn't a simple way of making it widespread – yet – according to SCI's Dr Sansom.

He suspects that a major step change in business model – as radical as that delivered by Uber and Airbnb in their industries – will also be needed to make this happen.

'All technical barriers are surmountable. It's just a case of whether there's sufficient drive, economic or otherwise, to make it happen.'

By exploring the BIM-spurred potential for information tagging and the feasibility of a steel reuse portal, he is hopeful the steel industry will be in a good place when reuse does become viable on a larger scale.

'Its time will come. It makes sense for us to do the right thing and plan for it now,' says Sansom. 'Steel's doing brilliantly in the recycling loop. We're now trying to go to the next level.'

Radiating flexibility

A new primary school in Cambridge uses a lightweight steel structure to ensure it can adapt with the changing demands of the coming decades

Words Pamela Buxton **Photographs** Morley von Sternberg

Future-proof may be an overused claim these days, but Marks Barfield's University of Cambridge Primary School makes a very convincing case for being just that.

With built-in capability for internal reconfiguration, extra ventilation provision for 2050 climate conditions and an expansion strategy, this highly unusual school is well prepared for all kinds of change.

This flexibility is due in no small part to a lightweight steel structure chosen to suit both the need for reconfiguration and the soft ground conditions of the former farmland site on the outskirts of Cambridge.

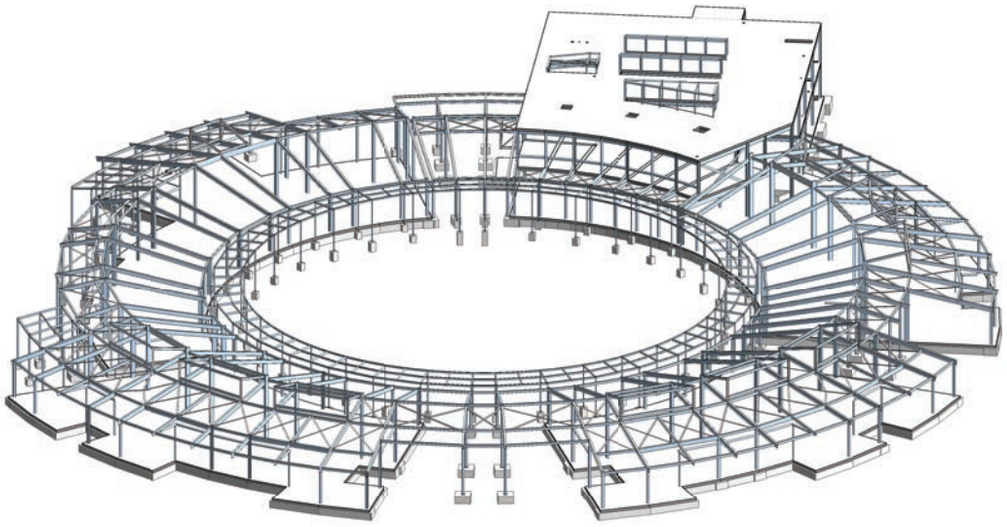
'We wanted the minimum weight of building and didn't want to spend a lot of money in the ground,' says Marks Barfield managing director Julia Barfield.

'Steelwork helps in that respect, as well as making sure the school had future flexibility. A steel frame enables walls to be moved to create new learning layouts independent of the structure.'

Unusually, the school was built not by a local authority or academy chain but by the University of Cambridge as part of its North West Cambridge Development of affordable housing and community facilities for staff and students. The first primary university training school in the UK, it is also the first piece of the masterplan to be completed.

The links to the university education department influenced the design of the school, along with a set of core educational principles including the need to create an open, inclusive pedagogy with democratic and non-hierarchical space which could be divided into smaller school communities as well as containing a variety of learning and

Left Steel cloister within Marks Barfield's University of Cambridge Primary School.



Above The radial steel structure provides a highly flexible internal layout.
Left Exterior view through the classroom clusters towards the interior courtyard.

PARMARBROOK

play spaces. The design was also informed by the school's desire for all classrooms to have level access to outside space, and by a Forest School-type approach to the outdoors.

Marks Barfield wanted its design to align with this educational ethos. It researched historic and contemporary examples from around the world, including the democratic organisation of Finnish schools as well as the Cambridge 'village colleges' pioneered by Henry Morris from 1922-54 and school designs by Herman Hertzberger.

The result is a circular ring of accommodation with a single storey of classrooms having access to either a 50m diameter inner courtyard – inspired by Cambridge college quads – or the perimeter outside space. Classrooms are arranged in three clusters of six classes plus an early years cluster. The outer radius stretches about 46m with an inner radius of 24.5m. Covered spaces between the buildings create sheltered play areas and routes between the two outdoor spaces.

The design team considered cross laminated timber (CLT) for the main structural frame, but felt steel had the advantage of allowing easier configuration of internal walls. Its light weight also reduced foundation costs, with the engineers using Vibro rather than traditional piling.

'The steel frame enabled us to articulate a radial grid and achieve a long span, open plan structure without any solid walls in the layout,' says Vishal Borhara, project director of structural engineer Parmarbrook.

Without bracing or shear walls, lateral stability was achieved through the fixed connections, and the challenge was to achieve this elegantly. 'The architect was keen on expressing a lot of these so we needed to keep them quite sleek,' he says.

The double-portal frame allows spans of up to 12m. The structure is arranged in three rows of columns spaced on a 5m grid on the inner radius, and 8m on the outer radius. Columns are a combination of universal column H sections and rectangular hollow section columns. According to Steve Worner, project manager at steelwork contractor William Haley Engineering, the biggest challenge was connecting the rectangular columns. This was achieved by pre-welding a stub onto the top of the column – concealed in the ceiling – which enabled a bolted connection to the beam sections to be made on site.

The inner courtyard is ringed by an elegant cloister (see left), providing more covered space and circulation as well as containing the artist Ruth Proctor's work We Are All Under the Same Sky within its glazed roof.

'We worked very closely with the structural engineers and steelwork contractors to make the structure as light and slender as possible,' says Barfield, adding that they were particularly inspired by a simple, glazed Arne Jacobsen canopy at a school in Denmark.

The only two-storey structure is the 35m x 26m communal block and entrance, which contains all the common parts and, as the civic face of the school, addresses the key approach road of Turing Way. Transfer structures enable a column-free main hall.

Internally, the circular plan means there are no dead end corridors, and provides for easier circulation. This is achieved via an internal, double-sided 'learning street' with library areas, storage and toilets. This 4.5m wide space can also accommodate university staff and students, with unobtrusive observation made easier by the decision to have no doors on the classrooms – they have wide openings onto the street. A number of rooms with doors are provided for occasions when more seclusion is required. The street also enables natural ventilation of the school through vents in the roof.

Classrooms average 60m^2 in compliance with BB99, significantly larger than the BB103 standards introduced subsequently, which stipulate 55m^2 as general and 50m^2 when there is a shared learning area. The university training function gave an extra 4m^2 per class, which was used to make a dining room in the communal block where pupils eat in mixed age groups.

While the architects describe the atmosphere as 'very serene and calm', it's early days yet for the three-form entry school, which won't be at full, 708 pupil capacity until 2019.

If more accommodation is needed for four-form entry, Marks Barfield has a strategy to create six more classrooms by pushing the art room, nursery and reception classes from the inner to the outer ring of the radius. ●

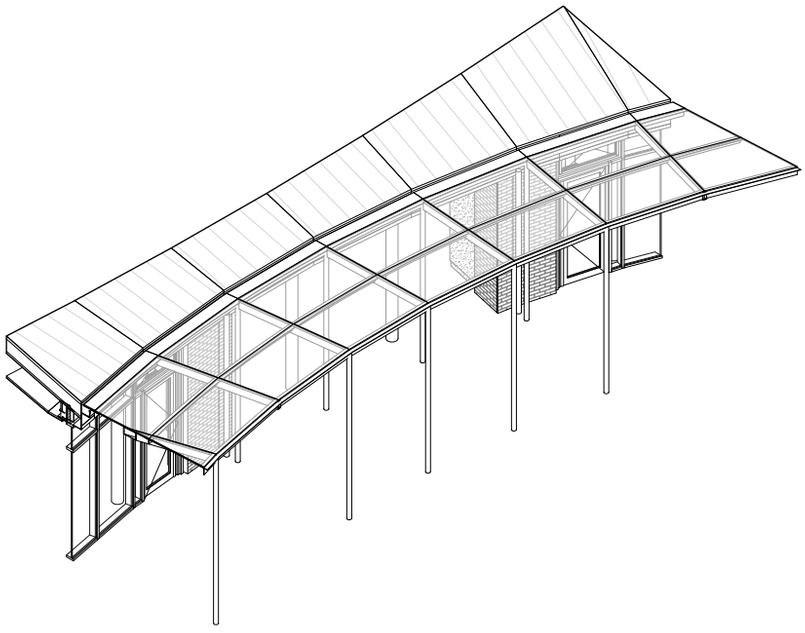
Left A transfer structure enables a column-free sports hall within the two-storey communal component of the radial school.

GLAZED CLOISTER

A 2.7m wide, circular glazed canopy (right) forms the inner ring of the school around the courtyard. The steel structure, which is independent from the main school frame, needed to be particularly sleek and elegant in design with unobtrusive connections so as not to overwhelm the integral artwork of 67 images of skies from around the world. These are laminated as digital screenprints into the canopy glazing units, and the structure was specially designed to cater for the tolerance of the glass, according to structural engineer Parmarbrook's Vishal Borhara. The canopy rises from 3.7m high closest to the main building to approximately 3.9m on the inner edge of the ring.

The structural steelwork was devised following close collaboration between steelwork contractor William Haley Engineering and the design team. It was formed using circular hollow section columns spaced approximately 4.07m (inner radius) and 4.57m (outer radius) and with rectangular hollow section rafters. Facetted T-sections span between the rafters to support the canopy. All connections are bolted.

MARKS BARFIELD



Credits
Client: University of Cambridge
Architect: Marks Barfield Architects
Structural engineer: Parmarbrook
Main contractor: Willmott Dixon Construction Ltd
Steelwork contractor: William Haley Engineering Ltd

Architecture meets engineering

Maria Smith, architect and founding director of transdisciplinary architecture and engineering practice Interrobang, on SOM's Exchange House in the City of London

PORTRAIT: MORLEYVONSTERNBERG

ALAN WILLIAMS

I've had a soft spot for SOM's Exchange House in Broadgate since I studied it at the University of Bath, where architecture and engineering are taught together. It's an excellent example of a truly integrated architecture and engineering team working to create something ingenious and beautiful.

This is a building that's a bridge and a bridge that's a building. It's a fabulous example of an onerous constraint generating something wonderful; here the requirement to build over the railway tracks outside Liverpool Street Station allowed the creation of something unique that might otherwise never have been conceived.

It's one of those difficult sites where you need an engineering-led solution that's also beautiful and considers the city fabric around it, and this might well not have been possible without such a close integration of architecture and engineering. As well as creating brilliant architecture, the building design enables a very large public space that ties into the masterplan for the whole area.

It's great that the design team was able to express the steel structure so strongly, which makes it very clear how the building works. There are four enormous tied arches – one on each of the key facades and two within the building. That the building was nestled in the centre of a masterplan of new buildings meant the planners didn't insist on stone cladding, allowing SOM to achieve a more Chicago aesthetic and express the structure.

The building recently won the American Institute of Architects' 25-Year Award for architectural excellence. It's still worth its salt after 25 years, and that's something to be proud of.

RICHARD WAITE

Left Detail of tied arch at SOM's Exchange House.
Above Overtly expressed steel structure.

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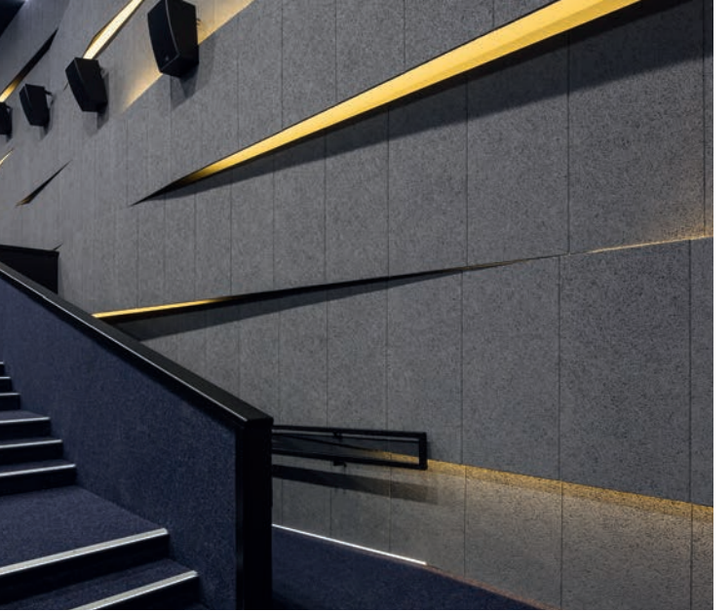

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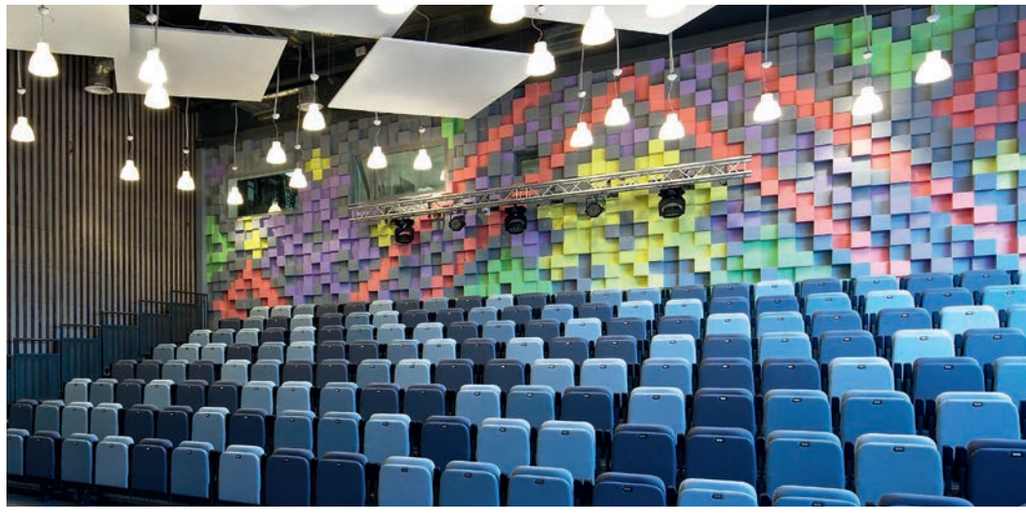

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3: Culture

PoMo's back in fashion

It was worth the wait for No 1 Poultry to be listed

HOLLY EXLEY

Hugh Pearman Editor

'It's frenetic, composed of equal sized blocks of stripe, glass and stone with their hierarchy all jumbled up and restacked like pieces of a child's toy. In stark contrast to its neighbours, there's no small-scale detail: nothing narrower than a curtain-wall mullion. And it's a banal curtain wall. Hard to believe it had the same designer as Stuttgart did, let alone Leicester.'

'It is a good and interesting building, publicly permeable, multi-layered, the antidote to most commercial speculations of the time. But it is also 1980s post-modern (PoMo) in style. The style is not yet old enough to have come back into favour. So the big fat Pharaonic hen of Poultry – look, you can see the folded wings, and its beak, and it sits on a circular nest – must bide its time. It is generally regarded as a late aberration by a once-great architect. Besides, the design replaced an unbuilt slab by Mies van der Rohe, an architect openly worshipped by devotees. No, it is just not done, to like Number One Poultry.'

'An unsurpassed example of commercial post-modernism, on a monumental scale, intricate in its planning and rigorously scrutinised and executed… a striking symmetrical composition on a tightly constrained site, exemplifying Stirling's work in its exploration of space and movement through interlocking geometrical volumes and its use of materials, colour and motifs, and exceptionally carrying this through to a dynamic interior space.'

We are now on PoMo version 4 or thereabouts. It's not going to go away, it is not somehow ideologically incorrect, and like all movements it will continue to evolve

That first quote is by an architect amicably disagreeing with me about Stirling and Wilford's Number One Poultry on Facebook, the day after it was listed. The second is from a piece I wrote in 2009, 'The dark knights return: four profoundly unfashionable buildings in London'. The others being Sir Terry Farrell's MI6 building, Sir Michael Hopkins' Portcullis House and Sir Colin St John Wilson's British Library.

And the third quote? That's from the official listing notice, issued on 29 November, 2016, announcing that the Poultry block – having been rejected for listing a year ago – was henceforth listed grade II*. Meanwhile in 2015 the British Library was listed grade I. Two up, two to go. I can wait.

Today PoMo, being associated in the UK with the commercial tat, Mockintosh and the like, of the later 1980s, is still the style that dare not speak its name – despite all the work done in the interim by architects from Piers Gough's CZWG through the members of FAT to younger practices such as AOC and DK:CM. Since its origins as a movement can be traced back to (shall we say, since Pevsner did) the 1950s, then we are now on version four or thereabouts. It's not going to go away, it is not somehow ideologically incorrect, and like all movements it will continue to evolve.

But right now we are at one of those architectural moments. Just as raw-concrete brutalism, having been in the depths for decades, suddenly became ultra-fashionable, so now it is the turn of PoMo. Too late for some good examples: John Outram's magnificent brick-temple 1985 Harp Heating HQ in Kent was recently demolished. But at least Poultry – which itself controversially replaced some pretty decent listed buildings – is now unlikely to follow it. ●

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Left-field publicity

Are architects really left wing or just marketing wise?

HOLLY EXLEY

Will Wiles

Is architecture in the grip of left-liberal groupthink? When Patrik Schumacher let rip with a series of pungent views on the magic of unregulated capitalism back in November, this was the claim made by some of his defenders: that the profession is mired in unexamined leftist ideas and immured from criticism.

It's not true, at least not to the unanimous and authoritarian degree that these defenders claim – their very prominence suggests otherwise. While there's undeniably a vocal and prolific left wing within architecture, the lords and knights that constitute its topmost tier are only left-ish at best. Lord Foster's thoughts on the London housing crisis a year ago were pretty laissez-faire, even if they lacked the ideological ruthlessness of Schumacher's call to clear central London of social housing and build on the treasured open spaces of Hyde Park.

But when the claim was made, the massed shout of 'NO IT ISN'T' wasn't entirely convincing. I don't want to get bogged down in the rights and wrongs of the Schumachifesto, which will have been much discussed by the time this column appears. (With the conclusion that he's wrong.) Nor do I want to get too deeply into the exact political complexion of the profession as a whole. If British architecture was a person, how would it vote? The question is as bottomless as it is pointless.

Nevertheless, it would be hard to deny that architecture's image leans to the left – that, alongside red trousers and a polo-neck, the generic architect of the imagination has a copy of the Guardian tucked under his arm. Or the Independent on the iPhone, at least. But I wonder why that might be. Assuming there to be a grain of truth to the stereotype, the architect could be either a beacon of social concern and empathy, or the bourgeois output of an insulated liberal education system.

If British architecture was a person, how would it vote? The question is as bottomless as it is pointless

But I think neither of these explanations is quite right – or entirely right, anyway. One of the criticisms levelled at Schumacher after his bout of polemic was that he was just trying to flatter plutocratic clients. But if fat-walleted oligarchs could be buttered up this way, why aren't Schumacher's libertarian views noisily shared by more architects? If this was a ploy to drum up trade – I don't believe it was – it might prove a misguided one.

Compared with the rest of the population, architecture's individual clients are mostly wealthy and influential, even if only a few of them are actual oligarchs or autocrats. This doesn't necessarily mean 'right wing' of course, although statistically they'll lean that way. The question is whether they want their architects to be politically sympatico, as they might want from their newspapers and their elected representatives, and I'm not convinced that's the case.

Underlying this is the question of whether a client hires a designer or an individual. Of course the architect's work matters a good deal. But the architect-client relationship can also involve a degree of patronage, which is more culturally and psychologically complicated than simply retaining a service provider. Commissioning architecture is a fairly potent act of civilisation and humanity, even on a small scale. A statement is being made, one that the client naturally tunes to flatter themselves – and so, without necessarily thinking about it, a particular kind of architect is preferred, like a status-symbol, gesturing towards conscience and wider concern.

Could it be that architecture's left-leaning image is really part of its professional marketing strategy? Far from being out of step with super-rich clients, is it in fact what they want? Even the autocrats – especially the autocrats. Faceless engineers for the prisons, thoughtful British liberals for the cultural centre. Which would make Schumacher's evict-the-poor, party-with-the-rich pronouncement a disastrous misstep – it might pick up some jobs in Tennessee, less so in Chelsea. ●

Will Wiles is a journalist and author. Read him here every other month and at ribaj.com

LIBERAL LEANING

There are the exceptions, of course – the Philip Johnsons and Leon Kriers. However, I wonder how happy they would be in their heresy if it wasn't for architecture's general liberal backdrop. Without that milieu to differentiate from, all the fun and marketing value goes from 'rebellion'. Arguably that kind of figure depends more on a left-liberal consensus than anyone else.

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An honest debate?

Let's start thinking – and talking – about what matters

HOLLY EXLEY

Jane Duncan

'It is better to debate a question without settling it than to settle a question without debating it' – Joseph Joubert

I must admit I am excited about my last eight months in office. There are many really important issues that affect architecture and architects that still need to be openly reviewed, mulled over, researched and actioned.

Debate is the activity that brings the knowledge, thinking and speaking together in one place. Establishing the curriculum in the world's first universities, medieval scholars considered three liberal arts essential for leadership and promotion of the best ideas: grammar, logic, and rhetoric (reading, thinking, speaking). To test the depth to which these skills had sunk in, medieval faculty demanded students participate not in exams or papers, but in disputations – or debates.

Although much has changed since the 9th century, the artium baccalaureus laid out these basic elements, the ability to conceive, articulate, and evaluate arguments. These remain not only the lifeblood of democracy and society, but essential to the development of an engaged and ethical individual, living in contemporary technological democratic society.

Intellectual progress has been linked to some spectacular clashes, starting with Socrates vs. The Gods: Triumph of Reason, the outcome of which changed the world. The honing of the intellectual tools of reason and logic thus started long ago, but have we somehow lost this ability, and can we reclaim it?

Debate is without doubt both a theatrical and an intellectual sport. As with any sport, the thrill of competition and the uncertainty of the outcome should energize everyone. Debaters are judged on the skill evident in their performances, as much as on the content.

What's the point of pushing for gender equality in the office when pay parity is 80 years away?

We're all familiar with the usual architectural panel debates, but in practice few are really worth watching, as they rarely deal fully with the issues that really matter to most people, or provide an arena for passionately held opposite and challenging views. Journalist Catherine Slessor says that architectural debate 'in all its forms has become increasingly stultified and stunted'. Architectural panels are 'not even reliably despicable' and are unlikely to get the architectural world on its feet.

Can intellectually honest debate about the subjects which matter to us as architects exist today? I watched the US presidential election debates with real concern and the 'honesty' analysis which followed. There was a lot at stake of course, but are we capable of following the rules and restricting debates to pointing out errors or omissions in one's opponent's facts and logic? Or is this just plain boring to today's reality TV educated audiences?

I plan to see. I have decided to run a monthly President's debate series. I am hoping an in-the-round format and some controversial debaters will create the energy and excitement to extract a truly dynamic participatory process, building the energy and contribution of both the audience and the panel.

The subjects are developing as I write, and will be visible on architecture.com. I am considering six themes: First, gender: what's the point of pushing for gender equality in the office when pay parity is 80 years away? Secondly, fees: will architects ever be paid a decent living when they always offer (spec) work sprats to catch an unlikely mackerel? Housing: has the industry got the skills, capacity and will to build a mix of social and speculative homes quickly, cheaply, sustainably and well? Professional futures: if we are to be replaced by robots is there much point in educating more architects? Wellbeing: will governments ever insist on buildings being designed for health when social care and health seems stretched beyond breaking point? Finally, climate change: If the USA takes a denial stance, is it worth fighting to reduce carbon use here? Other ideas welcome.

There's an old saying:' When everyone is thinking the same thing, no one is thinking very much'. ●

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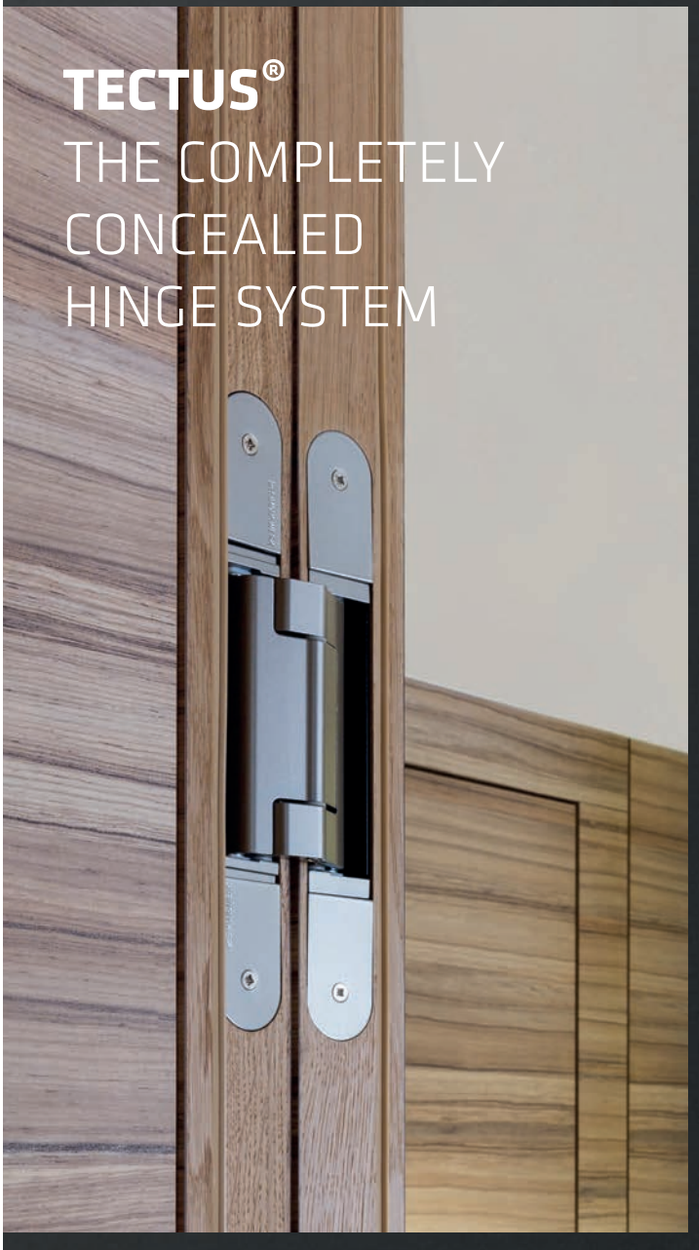

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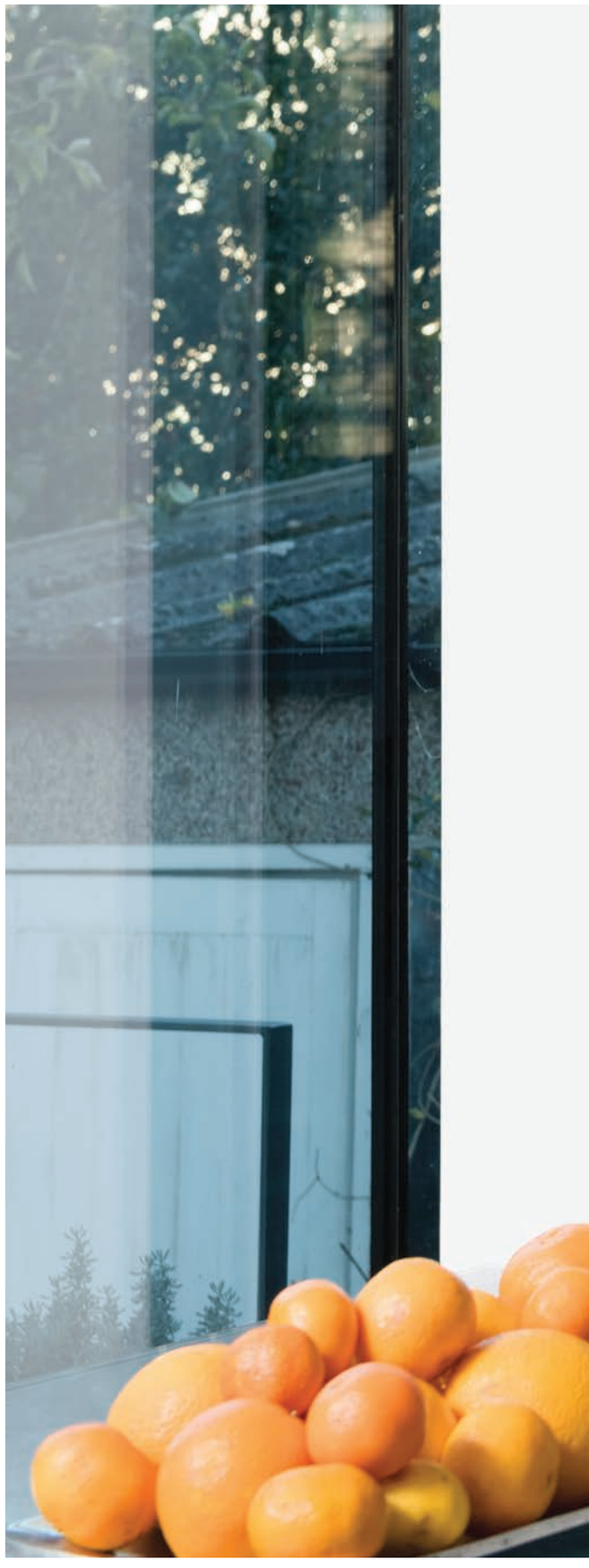
Christine Hawley excels at finding and drawing out people's talent. She didn't plan on teaching, but her skill has pushed her to one educational success after another

Words: Eleanor Young Portrait: Ivan Jones

Talent spotter



'I imagined my life as drawing, drawing, drawing,' says Christine Hawley. 'But I was dean for 11 years and became more politicised than I thought possible.' Hawley has just been awarded the RIBA Annie Spink Award for Excellence in Architectural Education. She has a strong record, she brought the University of East London's architecture school (UEL) back to life after it had been closed and turned the Bartlett from a rather stuffy modest school into a top institution and packed with exciting, energetic teachers before becoming head of the faculty of the built environment at UCL – where she oversaw its transition to the highest ranking in the 2008 Research Assessment Exercise. She stepped down in 2010 and went back to teaching undergraduates. She has personally taught six RIBA Silver Medal winners and three shortlisted for the top student prize. And you should see her in a crit. In support of her Annie Spink nomination, Wolf D Prix of Coop Himmelb(l)au identified her 'introspection' and 'empathy' in a crit. Collaborator and colleague Peter Cook wrote: 'She is a wizard… with a sixth sense of the objectives of a project and response that generates a plethora of ideas – that the student himself or herself feels to be self-generated.'

The girl who picked up her pencil, experimenting with lines and shapes and their meanings and inflexions, would be surprised

Left At home in south London, her own drawings behind her and, to the side, the garage site of her new project and future home using some of those ideas that she sidelined for teaching and academia.

'When you are teaching you are not the author. Your relationship is advisory, it's a discursive exercise and you don't know where the discussions will go'

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View the case study video at:

www.thisisconcrete.co.uk

This is Concrete is a campaign to promote a sustainable built environment, supported by MPA The Concrete Centre

this is concrete

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mpa The Concrete Centre

at what she ended up doing, and at 67 Hawley certainly is. She describes it all as quite 'circumstantial'. And it is clear she often went along with things quite unwillingly, not wanting the bigger job or the extra responsibility but, asked nicely, or repeatedly, she has said yes and taken things on. She wasn't convinced about applying to be head of UEL, but was persuaded. She said no to moving to the Bartlett but then dean Pat O'Sullivan turned up unexpectedly at a restaurant in Frankfurt and put her on the spot in public. She was embarrassed: 'I cringed and said "Yes".' She more successfully resisted a move to a regional school, just too aware that she would have neither her network nor the rich architectural skills of London on her doorstep to tap into.

Those people have made the schools. 'People crop up in extraordinary ways,' she says. The appointments were not all sure things: 'there were some unbelievable clangers'. Other appointments crept up on her as good things when she was expecting little. Were there any really great discoveries? CJ Lim 'is the obvious one' she says. 'He has probably had the biggest influence of any teacher I know,' she says confidently. Hawley taught him, then he came to East London and eventually to the Bartlett. His students come out with beautiful work indelibly stamped with his trademark high energy look and methods. Hawley also taught as unit master with him for many years. 'CJ is quite autocratic,' she says. 'Or maybe that is not the right word, he would be more emphatic, I would be more exploratory,' she explains. 'We blended.' She has an attractively humble way of describing teaching. 'When you are teaching you are not the author. Your relationship is advisory, it's a discursive exercise and you don't know where the discussions will go.'

The submission for the Annie Spink Award, put together by Lim, details how Hawley was the first female head of a UK architecture school (UEL), first female professor and head of the Bartlett, first female dean. Is that so remarkable? It helps put it into perspective to know that the first time round she was ruled out of the running for head of school at UEL because she was a woman: one interviewer argued that she would not be able to command the respect of male colleagues. But she doesn't do outrage. 'I am not one to tub thump,' she says. Though there is a perhaps regret. The arrival of her first grandchild has

Hawley's teaching had a human, exploratory, approach.

brought back memories of taking tiny babies to work with her, crits with her mother pacing them around outside, waving when they needed a feed, Hawley tucking her daughter under her arm on field trips or the Berlin lecture where Peter Cook on baby minding duty was impressed how quiet her son was, until Hawley arrived to discover he was being dangled upside-down, blue-faced, despite the baby-holding tutorial. Not only was maternity leave unavailable but it was not certain the job would stay open if you weren't back at work sharpish. And that Hawley couldn't afford. 'It was grim actually.' She is gaining now what she missed with her children in those early months, and is enjoying more involvement both in her grandchild and in her daughter's property business.

Hawley has an unassuming artlessness that has endeared her to generations of students, but at home the precise lines of her art reassert themselves. Around Hawley's listed Victorian house in Peckham are her drawings – angles and dynamic perspectives bringing the walls to life. Padding about in striped socks she gestures at them. 'I'm tired of them,' she says. 'Some are 30 years old.' There will be new pieces to replace them. But on her marble mantlepiece sit four tiny hermetic forms, as delicate as urchin shells, parts of a larger model printed in the early days of 3D printing. These will come to life next door, if she can get it past the planners. It is her new project. The pebble dash double garage is going to give way to a new house, digging down and reaching up and she is enormously excited about the prospect of living in something she and her husband have designed for themselves. Perhaps populated with large-scale 3D-printed shells – at this point one might remember that the late Kathryn Findlay, known for her shell-like homes, was one of Hawley's first students. 'One of my regrets is that I didn't build more than I did, that's why I am looking forward to my house so much,' she says.

Hawley has built major projects including social housing for the International Bau Austellung in Berlin with Peter Cook in the 1980s and a larger social housing project in Gifu City, Japan, in the 90s. But at the same time she was dean, which inevitably took up much of her time. Part of that was spent wrangling with government dictats. 'I become more aware of the government creating policies that change what you can do. It is fascinating and horrifying in equal measure and a lot is politically driven,' she explains. 'Someone remote from teaching can do something that completely changes your life.' It has changed the European landscape too: while English universities charge thousands a year, those such as Copenhagen, Stuttgart and ETH Zurich are free of fees and in recent years have delivered courses in English. Hawley predicts an exodus: 'British students are discerning and I wouldn't under-estimate what's going on. UK schools will become a privilege of a small number who can afford it. That saddens me.'

She has deliberately stepped away from these political frustrations, though continuing to advise many other schools. She has been happier at the coalface of teaching, not an academic but a 'teaching opportunist' as she dubs herself when pressed. One student submission describes the 'magnetism of concentration' she brings. While she might let her students go free they are still keen to win her approval. Her favourite blue, that drops an intensity into her home, often appears in students' drawings. A kind of friendly tribute to a humble but rather talented teacher and educator. As this award should also be read.

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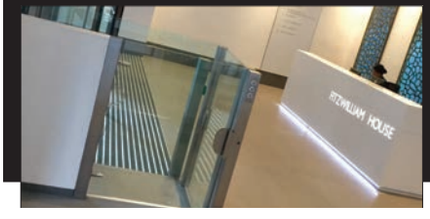

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Financial management: how to run a profitable business (Excellence in Galvanizing WEDGE)	5 Dec	23 Feb	15 Jun	4 May	9 Feb	30 Mar	9 Mar	12 Jul	5 Oct	6 Jun	18 May	4 Oct	13 Sep	4 Jul
An essential guide to public procurement: better prospects and more opportunities	6 Jun	26 Apr	22 Mar	11 Oct	14 Jun	13 Jul	1 Feb	1 Mar	29 Nov	7 Feb	8 Nov	28 Nov	1 Nov	3 Oct
A common sense guide to contract administration and contracts for domestic and minor works	17 Oct	7 Sep	2 Feb	9 Nov	25 May	2 Mar	14 Sep	29 Nov	2 Nov	3 Oct	23 Feb	1 Nov	11 Oct	8 Feb
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A planning update: planning policy issues for practitioners	18 Jan	30 Mar	2 Nov	8 Jun	7 Sep	30 Nov	11 May	17 May	14 Sep	21 Nov	16 Mar	13 Sep	26 Apr	13 Jun
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Who's going to clean it?

Hilary Sample joins the battle against the damage of poor maintenance – but her armoury needs honing

Isabelle Priest

Isn't it satisfying shouting rhetorical questions to express dissatisfaction? It happens in architecture too. Just last month one disgruntled reader tweeted in response to an interior in Acme's Victoria Gate shopping centre in Leeds: '@RIBAJ who's going to dust it?'

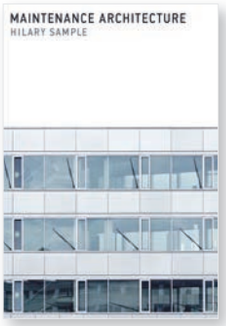
What such comments take issue with are the design; that it is too complicated and fiddly, and how 'they' that designed it don't care about 'us' that must maintain it – we who truly understand how buildings work.

It's the populist response. But actually it is a better question than the passive aggression it displays on the surface.

For a start, it conflates intricate detail with dirt; colour with unclean and texture with labour. Which means the commentator is fundamentally a modernist, knowingly or not. Hurrah! Whoever they are, they have bought into the whole thing. Corb would be proud.

It's nonsense of course that architects don't think about these things. But the subject has been largely left out of architectural discourse, which may account for the assumption.

And so Hilary Sample's new book Maintenance Architecture comes not a moment too soon. Finally, a response to these lumpen questions – who cleans, who maintains, who dusts. Sample's argument is that maintenance has been cast aside, that its disciplinary disaffection is underserved and that maintenance has been dismissed as irrelevant to form-making and design. Her mission is to show it isn't; maintenance is needed if the beauty of the creation on completion is to endure, and labour should be understood as skilled – especially when it involves large-scale buildings. A quick scan online reveals the book really is one of the first of its kind. Until now maintenance in architecture has mainly been dealt with in books about conservation – not at a historical and theoretical level. Sample's objective is to broaden the conversation. She does what is necessary, setting the groundwork in a kind of literature review by bringing an extraordinary collection of references from private houses, pavilions and high-rise buildings together for the first time.



Maintenance Architecture
Hilary Sample, MIT Press, out 10 February 2017, £19.95

Across five chapters, the book looks at buildings built with novel and developing materials, technologies and detailing, treating examples as individual objects of study with descriptions like extended captions. There are all manner of treasures – Ettore Steccone's patent drawings for the first squeegee, Jeff Wall's photograph of a cleaner in the Barcelona Pavilion, the 'White Wings' street cleaners of 1930s New York, SOM's Lever House facade – designed to accommodate a motorised window washing rig and stainless steel mullions with built-in tracks, and Vanessa van Dam's idea for facade windscreen washers.

Yet in structure and content, the book is confused. So many artists and artworks frame the discussion that ultimately it reads as a niche topic in the history of art rather than architecture. It is more concerned by the image itself than using the building as evidence. Examples chop and change, then struggle to amount to a larger discourse. The social agendas Sample occasionally slips in lack conviction too.

Nevertheless, there is critical thinking. 'Maintenance and urban image' deals with the iconography of skyscrapers in the city; 'Cleaning and the politics of labour' tackles public and private maintenance through the workforce. Analysis, although light, provides food for thought: the distinction between maintenance and cleaning for instance.

Where the subject really lifts off is how maintenance is deeply connected to photography. Within that, the way modernism sought to minimise the spectacle of maintenance through technology to create a fixed post-construction image is particularly compelling. Sample writes: 'Over the course of the 20th century, as new technologies emerged and cleaning processes became more streamlined, dreams of eliminating the labour of cleaning took hold... Technological advances have yet to completely eliminate manual labour, but the legacy of 'maintenance free' visions has been important in contemporary discourse.'

We could, of course, be misreading 'who's going to dust it?', but it doesn't matter – at least we have the beginnings of some answers.

Maintenance has been cast aside... its disciplinary disaffection is underserved and maintenance has been dismissed as irrelevant to form-making and design

Boost your margin

CAMP-er-VAN from Samuel Douek's thesis Never Say Die.

A new book finds fertile ground in the periphery of the profession for the recognition of gender issues in architecture

Phillipa Longson

A Gendered Profession
Eds Ruth Morrow, Harriet Harriss, James Benedict Brown and James Soane, 256pp, PB £35. Available from RIBA Bookshops

I have to admit that I opened this book with a measure of trepidation. Having just finished my undergraduate degree in an architecture school that boasted a female head of school, deputy head, and BA course leader plus a full set of unisex toilets, I had rather hoped that my future battles in the field of architecture would not be related to my gender or sexuality.

Here we are in 2016: five years after the first AJ Women in Architecture survey, 11 years on from Building Design's 50/50 charter, and 32 years since the first copy of Making Space: Women and the Man Made Environment by the Matrix Feminist Design Co-operative rolled off the press. Yet on my desk was this book entitled A Gendered Profession; the question of representation in space making.

It has four editors – James Benedict Brown, Harriet Harriss, Ruth Morrow and James Soane (gratifyingly 50/50), who share a background in live-project pedagogies – hardly the stuff of disconnected malcontents. Clearly they, and the 33 contributors (who come from a range of roles within architecture education and practice) felt that this topic was relevant and vital. In short, I sensed that I was about to be smacked in the face with a fistful of sour truths about the industry I am on the brink of entering. The idealistic glint in my eye lost a little of its shine.

I sensed that I was about to be smacked in the face with a fistful of sour truths about the industry I am on the brink of entering

Cracks in the system

My fears were not unjustified. By the end of page one the book had admitted that despite efforts by feminist cohorts in the industry, and the general (if often incremental) uptake of equality-focused initiatives in other fields, architecture as a whole was not so much dragging its heels on feminist issues, as utterly quagmired. Not only this, but some of the issues being raised – the infamous long-hours culture, a lack of working flexibility, and concerns about architecture's ability to meet social and environmental needs in the current socio-political climate – spoke directly to concerns that had been quietly brewing during my studies, but which I had not associated with gendered practice.

Just as the gloom began to set in, the editors took a surprising and refreshing turn. By linking non-binary gender with the wider issue of identity, they promised to show the

cracks (chasms?) in the current system. They also use this marginalised perspective to explore possible alternatives to the status quo that might not only meet the bare requisites for women to attain equality within the industry, but could prove highly beneficial and transformative for the entire field of architecture. The margin becomes a vantage point.

This works because a marginal perspective is a politically potent position, in that its outsider status often offers a critical clarity about the mainstream, but can simultaneously supply precedents for mainstream change (and what architect doesn't love a precedent?). These precedents are twofold in form, since the margin is both a site of direct rebellion or resistance against oppression and deprivation – as recorded within this text by Vauxhall is Burning by Alexis Kalli, and Lucía C Pérez-Moreno's chapter on the impact of Franco's regime in Spain among others – and is also a space of freedom from hegemony and 'counter-language'.

Working in the margins

Here things are done differently, radically even, in a manner that supports or accommodates the marginalised and refutes the coloniser. For example, several chapters note that women often actively choose the margins of architecture as a place to practise – perhaps forgoing large-scale or high-profile projects to start their own business, with flexible working hours the norm and little chance of knocking one's noggin on a well-polished glass ceiling.

Thus A Gendered Profession uses the perspective of marginality, spoken through a purposely diverse host of narratives, to paint two vivid but distinct portraits. The first is a well-defined picture of the status quo and all that festers within it, and although it's understandable that each contributor would feel the need to bolster their argument with generous examples of insidious gender bias, it is perhaps inevitable that with so many contributors the reader will repeatedly come across lists of similar statistics and the perpetual haranguing of neoliberalism, capitalism and the patriarchy at large. However the resulting illustration of the problems at hand do effectively galvanize the reader into paying close attention to the second portrait, which is far more multifarious and sibylline.

Rather than depicting, as one might expect, a fully-realised alternative universe in which all things are equal, the variety of voices in this case come together instead to sketch out a plethora of potential paths forward. Some, such as the guidelines produced by Australia-based advocacy group Parlour, Lesley Lokko's chapter on her experiences in South Africa, and Joe Kerr's call for unionisation, provide exemplary and tactical advice; others are highly experimental and imaginative, for example Cany Ash and Robert Sakula's open investigation into their own practice, and Gem Barton's engaging parable Architecture 2.0. Few chapters are emphatic about a particular stance, allowing an invigoratingly innovative and investigative response to the complexities faced.

Women often actively choose the margins of architecture as a place to practise, with little chance of knocking one's noggin on a well-polished glass ceiling

This second image not only counters a foreboding sense of futility in the face of women's seemingly endless marginalisation, but also provides the opportunity for fresh, stimulating discussion (and hopefully action) based on insights found within this very marginalisation. Apparently we might rescue architecture from its inflexible, workaholic, white, middle-class, Western-centric stagnation yet. Which is much to my relief, as I go back to applying for placements – this time with the words of Bell Hooks resonating in my head.

'This is an intervention. A message from that space in the margin that is a site of creativity and power, that inclusive space where we recover ourselves, where we move in solidarity to erase the category colonized/colonizer. Marginality as a site of resistance. Enter that space. Let us meet there. Enter that space. We greet you as liberators.' ●

Phillipa Longson's dissertation was commended in this year's RIBA President's Medals

Sophie Hamer's meditations on age and how one might grow through architecture

George Hall 1926 – 2016

Disciple of Alvar Aalto, gentlemanly co-founder of Hall, O'Donahue and Wilson, who worked extensively in the Middle East and on RIBA committees

The Liverpool and North West architectural profession has lost one of its most respected characters with the passing of George Hall – co-founder of Hall, O'Donahue & Wilson architects.

At its height, the practice employed more than 40 staff working principally across the north-west, with significant buildings including the award-winning extension to the Liverpool Playhouse theatre, Canning Place Fire Station and Storrington Avenue Fire Training Centre all epitomising the brutalist architecture which the practice championed.

George was well known for his own distinctive personal style and his gentlemanly business manner.

His love of architecture stemmed from his first job, working in Liverpool's town planning office, which he joined straight from school.

An ability – gained through the job – to interpret maps, led to wartime service in the Royal Engineers where he used aerial photographs to help choreograph bombing raids during the latter stages of the conflict.

On his return, he applied to the Liverpool University School of Architecture in 1948 and was allowed to join the second year – having demonstrated relevant experience through his time with the local authority. His contemporaries at university included Sir James Stirling.

While a student, George won the Holt Travelling Scholarship in 1950 and used the prize money to visit Europe and expand his knowledge, including a stay with the noted Finnish architect and designer Alvar Aalto, who would remain a lasting influence on his work.

Having gained a first class degree, he left Liverpool University in 1952 with a diploma with distinction in architecture, and then added a second degree in civic design, also from Liverpool. He became an RIBA associate in 1954 and went on to become a fellow of the institute in 1968. His first architectural job was with the Liverpool practice of Stephenson, Young and Partners. Here he struck up a friendship with Colin Wilson which ultimately led them to open their own practice together with Jim O'Donahue, based for 30 years in the city's Bluecoat Chambers.

As well as his work in Liverpool, George also carried out numerous commissions abroad – particularly in the Middle and Far East, where he travelled extensively to Saudi Arabia, India, Dubai, Qatar and Brunei, where he designed the Sultan's heliport and Royal Brunei Polo Club. Also notable among his works in the region were the officers' mess in Risail, Oman, and the ambassador's residence in Dubai.

He latterly served as president of the Liverpool Architectural Society and was a North West RIBA council member for the Architects Benevolent Society. He was also a former president of the Liverpool Racket Club and a member of the Liverpool Artists Club.

George's interests away from architecture included Formula One motor racing which he attended around Europe and St Helens rugby league club. He was also a great fan of Frank Sinatra who he had seen perform at the Liverpool Empire in 1953.

His architectural legacy has been continued by his son, Adam, who is managing director of the Liverpool-based Falconer Chester Hall practice. This is overseeing numerous projects around the city, across the UK and abroad.

George is survived by his wife of 50 years, Evelyn, and by his sons Adam and Oliver. ●

IN MEMORIAM

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GEORGE RODNEY VAUGHAN-ELLIS
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GEORGE STEPHEN BAMFORD
ELECTED 1950, MACCLESFIELD

WILLIAM DEMPSTER
ELECTED 1950, HENFIELD

ANN DE COURCY BATES
ELECTED 1951, CROWBOROUGH

JAMES FREW
ELECTED 1953, STRATHAVEN

WALTER VANNET HAIN
ELECTED 1956, PONTWALBY

ROBERT BAIN ROBERTS
ELECTED 1959, AUSTRALIA

HARRY MCDONALD-SMITH
ELECTED 1962, PENICUIK

ANTHONY THOMAS NORMAN TEAGUE
ELECTED 1966, LICHFIELD

JOHN TRISTAN YORK
ELECTED 1968, NORWICH

WILLIAM EDWIN BULLEY
ELECTED 1969, TWICKENHAM

KENNETH CARLETON MACLEAN
ELECTED 1971, ISLE OF MULL

IGAL YAWETZ
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ELECTED 1950, GOSPORT

ANTHONY BECKLES
ELECTED 1954, TWICKENHAM

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ELECTED 1974, HENLEY-ON-THAMES

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Exchange

Design deflation

This Sunday I made my way with great anticipation to the new Design Museum (RIBAJ, December 2016, P26) but left somewhat deflated.

The good news is that there were lots of people curious enough, just as I was, to see this substantial addition to the museum world of London. The central space is most impressive in its size and scope, looking down from the upper level the visitor can peruse several floors and take in the circulation. This spaciousness is somewhat misleading when exploring the exhibition spaces, which were crowded on my visit.

The comment about being deflated comes from the lack of focus on anything in particular under the great parabolic roof. The original roof panels made of Stramit, compressed straw bound in cement, were the only references to the original construction. The space somehow, in spite of its size, seems to lack drama, the light timber surfaces blend into each other without a break. The great volume just cries out for some spectacular object placed or suspended to bring the whole place alive. The architect has provided the space, let us see what the curator can do with it.

Sandor Vaci , London

Premium Poultry

There are very few post modern buildings in Britain worthy of listing (see P59), but No 1 Poultry is certainly one of them.

One of the last projects by an architect who, throughout his career, was preoccupied with the influence of history, typology and context on modernity, the thinking behind this building can be traced back to the Florey building in Oxford, and earlier – via Stirling's German competition entries in the 1970's.

The building also demonstrates a dry wit, most notably in the decision to use external stone cladding as a form of rain screen, leaving the joints in the stone open and so providing the passerby with an unnerving view of the insulation behind the stone, a subtle undermining of the whole rationale behind the building's design.

Alan Power, London

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Fee philosophy

Why would someone take such a strong line on such a sensitive issue (Maria Smith on the inevitability of low fees, November 2016, P73)? Perhaps it is the current political climate, which seems to see progress through opposition to established thinking. If achieving recognition for architects is the aim then progress toward this goal certainly does need some shaking up. All the points made about the lack of appreciation in the wider culture, the desperation to show off ideas, and so on, are all well made. The reader's heart swells with the realisation of a shared understanding expressed on a prominent platform, then finds it dashed into the gutter and trodden underfoot by the conclusion. Why does it sting so to hear a status quo of undercutting implicitly supported? Why does the invocation to suck it up and get on with the new reality seem harsh?

If no one likes it why would anyone advocate it? Perhaps it's the current political climate; action from reaction. Aside from questioning the motivation to express these sentiments the question remains: can the profession improve the conditions of its professionals?

Perhaps if architects start offering services in a new way, adopt different approaches and offerings to each work stage, ask question after question, and so on we will make our value manifest and eventually broaden our appeal and increase our market. I can see how to design a house, and I can see how I might design a practice. But because I'm at the bottom utterly lacking influence or any awareness of how to get a professional body to represent a profession, I can only suggest that if the architects change with the times the profession will change.

Anna Sullivan, by email

Tweetback

Gender in architecture came in for a fair bit of discussion this month following our book review on the subject (see P70) and the announcement of the first new RIBA Fellows…

Fionn Stevenson
@fionnstevenson 5d
@RIBA Not impressed by only 4 women and 26 men RIBA Fellows. Yet another glass ceiling that we have to break @RIBAJ @ FloraArchitect

T Parsons @_TParsons_
@fionnstevenson @ AlanJones2008 @RIBA @ RIBAJ @FloraArchitect :) I dont believe this list is evidence of glass ceiling tho, its a wider issue

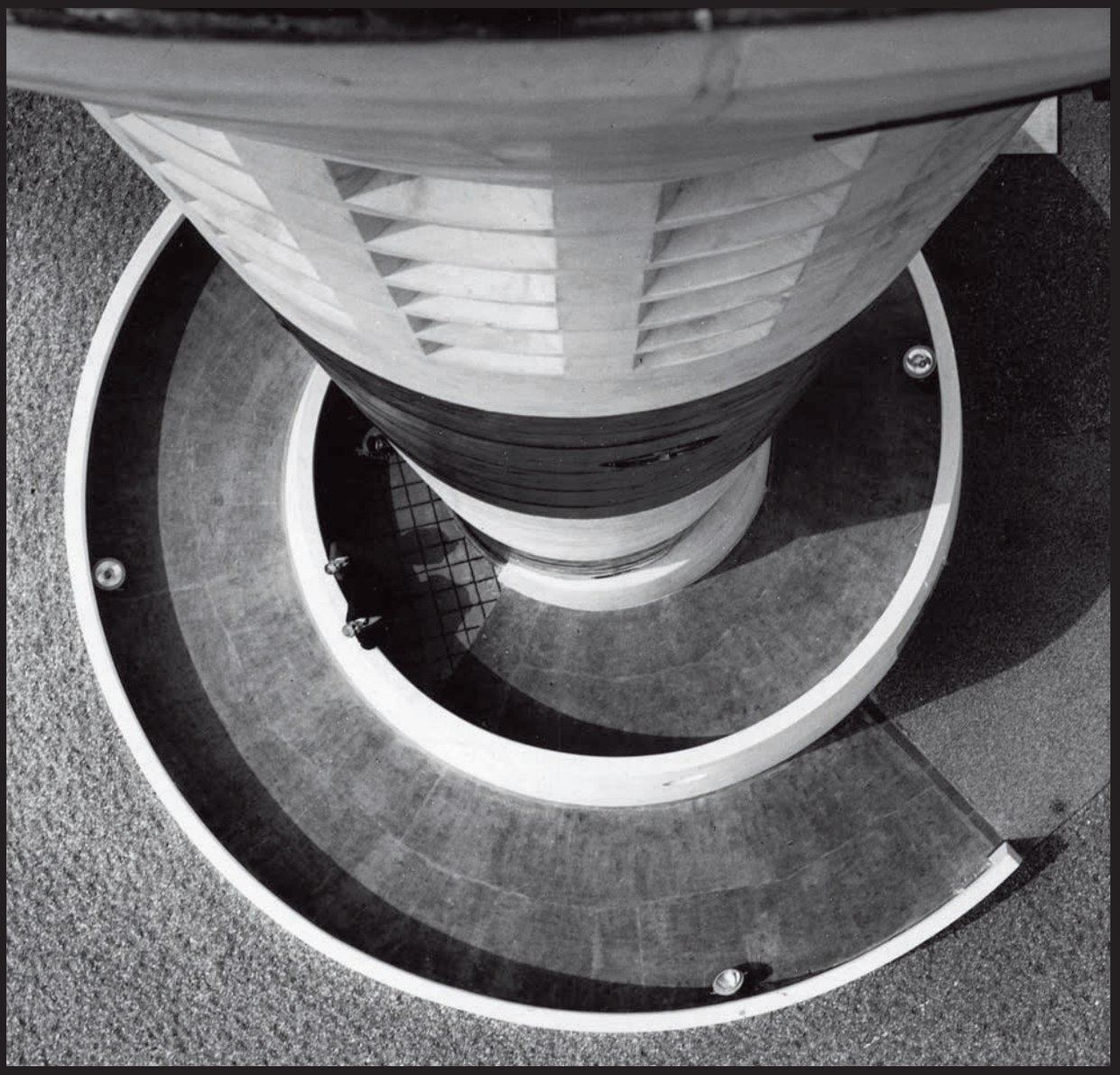
Alan Jones-Architect
@AlanJones2008
Membership expecting more to apply next year – Fionn & Flora lead the way?

Our 'Rising Stars' initiative got a huge amount of traffic and comments such as this:

Fresh Projects
@ukfreshprojects
Congratulations to winning 2016 #risingstars, fantastic work by @RIBAJ to recognise unique talent and inspire great #architecture

…while one architect who wrote an online piece (see ribaj.com) about having no office and publishing her fee rates was admired.

Elrond Burrell
@ElrondBurrell
Inspiring approach to the business of architecture from @ClareNashArch in the @ RIBAJ



ARCHITECTURAL PRESS ARCHIVE / RIBA COLLECTIONS

New Lighthouse
Dungeness, 1961

The New Lighthouse at Dungeness was the fifth to be built on the strange shingle promontory on the Kent coast. The previous structure, which opened in 1904, had been obscured from the sea by the nuclear power station since the 1950s so a new, fully automated version was built closer to the shore. It began operating in 1961.

Like its predecessor, the new lighthouse was banded with black and white for easy visibility and recognition but this time the pigment was impregnated into the concrete using coloured aggregates so there was no need for repainting. Additional decoration was provided by the six rings of acoustic apertures through which the fog-horn sounded. The use of innovative pre-stressing techniques allowed the architect Ronald Ward & Partners to design a stable tower without the need for an external taper, setting it apart visually and structurally, from its ancestors.

The Architectural Review, appraising the building in September 1961, enthusiastically noted that the lighthouse was the embodiment of the journal's campaign to demonstrate the link between vernacular or functional architecture and contemporary design. ●

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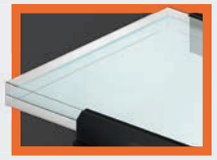

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