

Bright sparks Answered prayers Colour bursts out in Eye Line 2016 drawing competition

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Nuns find a place of peace in FCBS' Stanbrook Abbey

Tudor revival All about Brexit Figure hugging Eve of destruction Countdown to Stirling Andrew Todd's French 'Globe' is its own show at the chateau Experts consider the possibilities, difficulties and options ahead One engineer's love of hand calculations Cultural genocide explored in a poignant and revealing film

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Stephen Cousins on the opportunity to walk on water at Lake Iseo: ribaj.com/culture/ floating-piers

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wandering the nuns of

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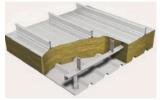
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Sheffield steal – envelope **28**

1: Buildings

'Poetry and Hums aren't things which you get, they're things which get you.' Winnie the Pooh might have been happy to be found by hums. But not all of us feel the same. Do you hear the wires buzzing? Does the sound of air conditioning bother you? Is the wood worm boring taking you to the edge? Are death watch beetles hammering away, unbearably noisily, alongside the beat of your heart? Normally filtered out, the shift of peripheral to centre stage can be distressing. Equally, when we are robbed of the best of peripheral – bird song, water flowing, rustling leaves – we feel the poorer for it. Design is about ordering and layering our experience, bringing the most important sensations to the fore, underlaid by the pleasant peripheral with the unpleasant hidden, as OMA's installation exposed at the 2014 Venice Architectural Biennale. We can't all live in Venice or the Hundred Acre Wood but, like Pooh, we should be able to enjoy the best of hums.

Ready for evensong: Stanbrook Abbey by Feilden Clegg Bradley Studios.



ONLY ON RIBAJ.COM

Huge lumps of concrete and piles crash down through the remains. But plenty survives – you get a feel for the shape and extent of the place Hugh Pearman joins the audience at the Curtain Theatre: ribaj.com/buildings/ the-curtain-theatre-

The intersection of stairs and exposed structure here makes for a small sculptural moment, a mini Frank Gehry of canted, whitepainted steel **David Theodore**

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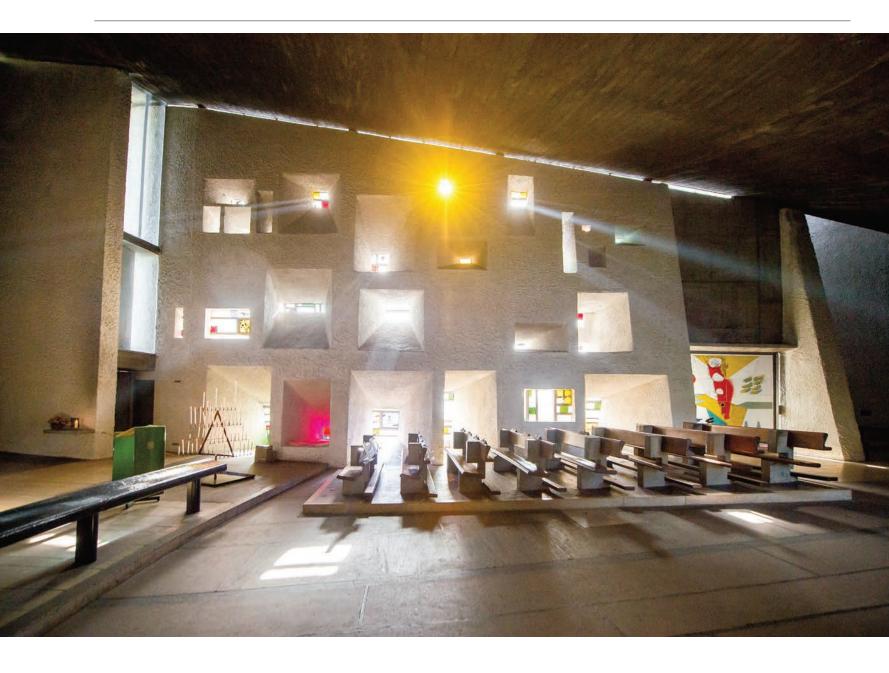
Ajay Chauhan, Senior Architect, CMPG

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Chapel of Notre Dame du Haut, Ronchamp Le Corbusier

Photograph Ed Tyler Words Jan-Carlos Kucharek

Having gone off-piste lately with the photographer page, it was almost shocking when Ed Tyler offered us a classic view of the recently UNESCO-listed Chapel of Notre Dame du Haut; but it turns out his choice of image was less of a comment on the timelessness of modernism and more one about modern transience.

'Post Brexit and the overwhelming gloom of the referendum result, I felt that I needed

a little ray of sunshine,' he told me; and so he gave us one, courtesy of Corb.

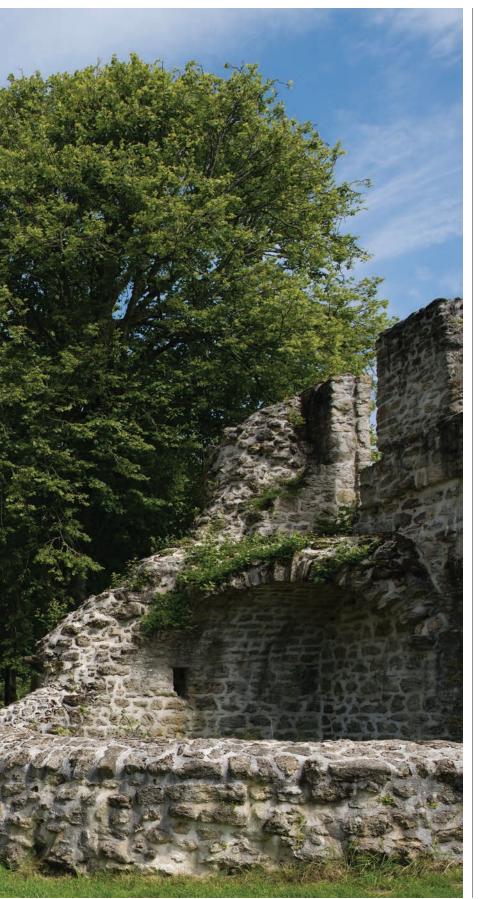
The image was taken while he was accompanying Ted Cullinan on the 'My Inspiration' series, covered in the pages of BD magazine, in which architects gave us a tour of the architecture that influenced their own aesthetic development. Tyler did 35 of them at the time; and while he felt privileged to be visiting some of Europe's finest modern buildings with people who had an encyclopaedic knowledge of and respect for them, he admits there was a certain contingency to the days, involving early starts, limited access and 'on the hoof' shoots. Yet note the grain of this high resolution image, the rendered texture of the chapel's famous south wall seeming to suffuse the image as if it were blotting paper; rays of warm autumnal sun bleaching the centre of the frame while a crimson light slowly bleeds into the cool dark of the space. Tyler recalls: 'It struck me that this was how the building should be seen – its architectural power.'

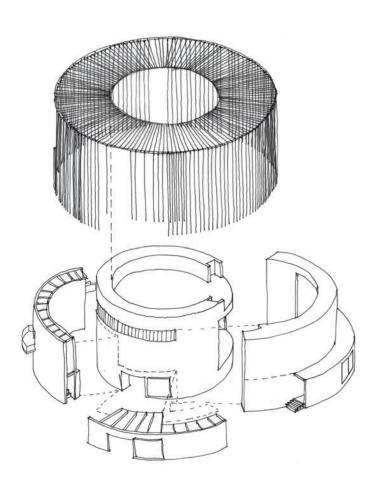
Does that account for his image's poetic granular nature? 'No it was just a very high ISO film to deal with hand-held shoots and the need for bigger apertures,' he matter-of-factly tells me: visual noise ironically conveying Ronchamp's epic silence.

Behind a bamboo curtain

An Elizabethan-style circular theatre in the grounds of a Norman chateau, by British architect Andrew Todd, speaks of cross channel links over which a veil is falling Words: Eleanor Young Photographs: Martin Argyrogio

5 . A.





Above Sketch of the volumes, like a Russian doll: auditorium at the centre, circulation plugged in and bamboo slotted over the top.

Left Set alongside Hardelot Castle, the theatre offers a counterpoint in material but sits equally naturally in the garden. If ever a building was destined to be a symbol it is the Elizabethan-style theatre at Château d'Hardelot, south of Calais, in northern France. Opening on the day of the UK's vote to leave the European Union, at the home of the Centre Culturel de l'Entente Cordiale which commemorates a series of agreements signed between France and England in 1904 - it is hardly surprising that the building has attracted political dispute. More recent is the physical manifestation of something more ugly in the angry words daubed alongside columns of bamboo: 'Irresponsible politicians - shame' and 'budget'. It came in at a relatively modest €4.3 million but the actual figure is less significant than the controversy it caused.

The pleasant roads that lead to the château are dotted with the spacious weekend homes of city dwellers and the British who come here for the sea, the sand dunes and perhaps, on occasion, the Midsummer Festival at the castle. Temporary homes for theatre and festival concerts have been going up (and coming down) every year but the Conseil Départemental du Pas de Calais, which runs the Château, decided to make the venue permanent and issued a competition brief for a performance space.

For Andrew Todd, it was an exciting challenge. He had fallen into architecture through English literature, his undergraduate exploration of the spaces of theatre satisfied only by a shift to Cambridge University's architecture school. Through this and a desire to live abroad, he ended up in Paris, in a room and a conversation with legendary theatre director Peter Brook. The pair wrote a book, The Open Circle, that crystallised many of the ideas of this most spatially informed director. Since then Todd has worked closely with Haworth

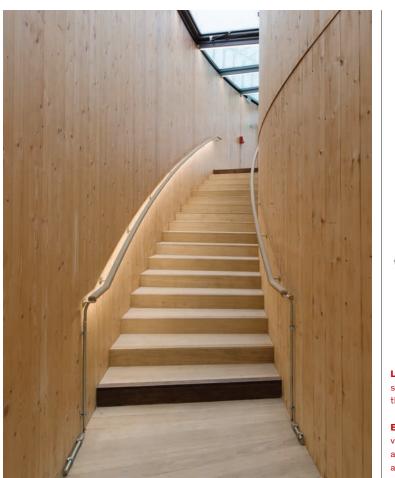
'I wanted the theatre to visually vibrate, to dematerialise against the castle'

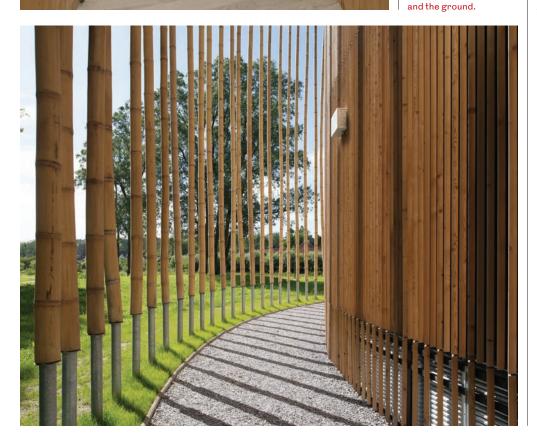
Below The actor is surrounded.

Tompkins on the Young Vic. More recently he designed the 300-seat theatre on the edge of the River Seine for Brook's director daughter, Irina. His original d'Hardelot client, now departed, wanted a French Glyndebourne. Todd thinks of it more as a French Globe Theatre and was delighted when he turned up a 1545 painting of Henry VIII the Field of the Cloth of Gold – when this area was under English dominion and talks were going on with King Francis I of France – with a large round 'banqueting tent' in the background.

The historic setting might be full of resonance and the 28m diameter of the theatre similar to the original Globe in London, but the cross laminated timber and bamboo which define this building imbue it with a quite different character. On a warm summer day, wandering across the newly seed-







IN NUMBERS 1233 m² net floor area €4.3m net construction cost €3,487 cost per m² 388 seats 200 tonnes wood used 100 tonnes captured carbon **28 kWh/m²** projected annual energy use Left Glulam lined stairs take you up to the balconies. Below The bamboo verticals are held at a distance, stepped away from the facade

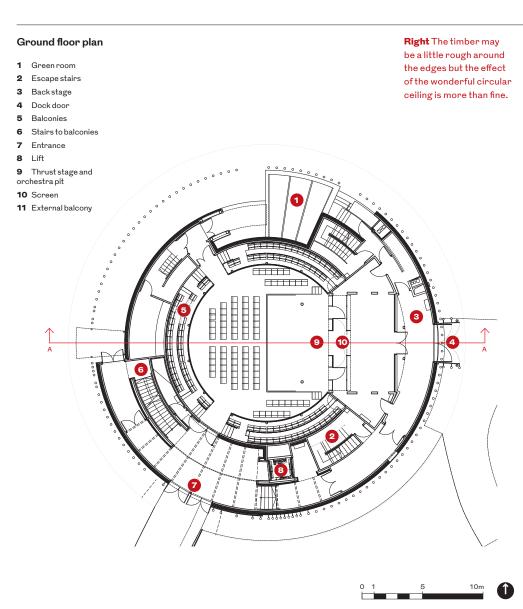
ed lawn under the cool of mature trees the thinking behind the benign cage of bamboo becomes obvious as it cloaks and contains the more solid elements with a veil of lightness, obscuring a certain lumpishness and blank awkwardness to the volumes inside. 'I wanted the theatre to visually vibrate,' explains Todd, 'to dematerialise against the castle.'

This is a tight site. Todd, determined not to waste an inch, has not allowed any volume to go beyond its necessary bounds. The rotunda of the auditorium has green room and back stage plugged in, so too the foyer and staircase up to the balconies. On some buildings the articulation of these elements might have been part of the delight, here they are clearly controlled but it is the bamboo that makes the building sing. Todd has form with bamboo, he used it on Irina's Brook's theatre. He is fascinated by its strength and, as Hardelot Theatre finished, spent two months in Japan looking at the way bamboo is used in construction. Looking out from the external balconies, the length of bamboo is also remarkable, these pieces are 12m high, held off away from main volumes on galvanised feet and visibly flexing at times; Todd certainly has vibration.

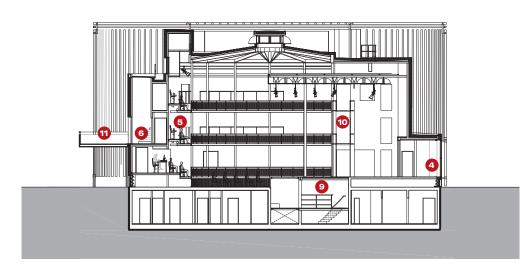
But back to the entrance under the trees. As you go inside you are enveloped in a timber fragrance that will hopefully persist for at least a few performances. But there is no generous foyer in which to enjoy it, in the pursuit of shrinkage the front of house functions are dealt with at the visitors' centre with its generous tea rooms. Instead you are immediately confronted with the curved CLT face of the auditorium. Once this is broached you are inside both a work of theatre and an architectural ecosystem. Let us first climb up and take our seat in the narrow balconies that line this rotunda. You are only a stone's throw from the stage, so is rest of the audience. You can see truly see the player's expressions. As at the Globe, the audience is part of the show too.

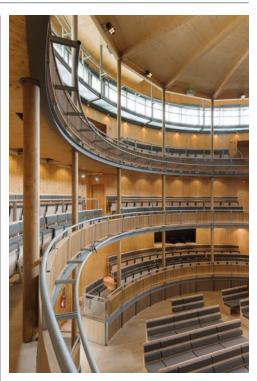
But for Todd there was also the important technical challenge of making this sustainable. 'I can't think of doing it at any other way,' he says. He worked closely with a young engineer from LM Ingénieur, who took on the challenge of a naturally ventilated theatre with enthusiasm. The supply of cold air itself from the plenum took a study in itself, concrete being constructed as part of the basement to ensure there is cool air to draw in, even on the warmest of days. The auditorium

Buildings Theatre



Section AA





acts as a chimney for warm air, cool supplied neatly under the seats, warm vented at the centre and sides of the roof. The roof itself is beautiful, panels radiating out from the centrepoint and light filtering in around the sides. Despite a roughness to the edges this is a building in which one would expect special experiences, even when it is empty.

Leaving the soothing château and theatre behind I return to the bleak Eurostar Station at Calais, populated by desultory returnees to the UK and a straggle of Syrian migrants asking for the camp, Calais Jungle. From here an Entente Cordiale seems a long way off and the theatre not so much a symbol of unity but a memorial to it.

Credits Client Conseil Départemental du Pas de Calais Architect Studio Andrew Todd Engineer (structure and natural ventilation) LM Engineers (M+E) Atelux **Theatre consultant** (technical): Charcoalblue Acoustician Byron Harrison, Charcoalblue Fire engineering and accessibility consultant Cabinet Casso Cost consultant Bureau **Michel Forgue**

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Long walk to peace

For the nuns of Stanbrook Abbey, it's been a long journey to find a place to settle. In the remote North Yorkshire Moors, FCBS has built the Conventus a serene home in a spiritual location

Words: Isabelle Priest Photographs: Peter Cook

Deeply emotional and raw responses to aesthetic objects and experiences are rare. In his BBC documentary on Matisse in 2010, presenter Alistair Sooke was moved to tears while visiting the Chapel of the Rosary in France, designed by Matisse at the end of his life. Sooke explained: 'This is a man who spent his life foremost painting. In this place he has left oil paints behind and instead is working with light... I genuinely feel quite moved by it and I think the reason is that he was so old when he designed it. The fact that he had this final surge of creativity shortly before his death is just so beautiful.'

Feilden Clegg Bradley Studios' Stanbrook Abbey, the new home and monastery for Conventus of our Lady of Consolation, has two such moments. I can't recreate the little epic required to reach this isolated part of the North York Moors, but I can retell that of the nuns. And for that, as the Abbess and Sister Anna did for me, it is necessary to start at the beginning.

Stanbrook Abbey was founded in 1623 in France during Penal Times, when England forbade Catholic religious houses so they were set up on the Continent. The monastery traces its roots back to nine young English women, pioneers of the community's first monastery in Cambrai – northern France now but part of the Spanish Netherlands at the time. The community remained there until the French Revolution when the nuns were imprisoned for 18 months between 1793 and 1795. They avoided the guillotine and a small band was eventually allowed passports to return to England.

They returned, penniless, and wandered for several

Opposite Light streams into the church from the southern aspect. The choir stalls for the community are in English sycamore.

Below During night-time chapel services, shafts of light from the crossshaped window strike across the Vale of York from the building's hilltop position.





years. They rested in Wolton outside Liverpool for 10 years, then in a borrowed house on the border of Worcestershire and Warwickshire in Abbots Salford from 1807 until 1838. In 1838 the community moved to a purpose built monastery by Pugin at Callow End, just outside Worcester, the first property it owned in England. They stayed there until moving to the North York Moors in 2009, but the process of relocating began in 1997 when the community was looking to the future.

'We lived in a building that was four acres of space, five storeys high, plus a lot of land,' says Sister Anna. 'We had a farm just outside the wall of the enclosure and were looking first to adapt those buildings, but that wasn't possible so we started to look at bigger options.'

The old Stanbrook was built for a different time and situation. There used to be strict enclosures. The community averages between 25 and 35 now, but at times grew to 80. The sisters' cells, or bedrooms, for example, were designed when nuns weren't supposed to look out of windows so they were high up, which was hard for the elderly who might be there most of the day. It was also grade two listed.

'We needed a new lift, proper plumbing, to get the electricity meter redone... the insulation was terrible – all sorts of problems like that,' explains Sister Anna.

'Yet we had limited funds,' adds the Abbess. 'We were pouring money into the building – money we just didn't have. Heating bills alone were £6000 every six weeks in winter.'

The idea behind moving and building a new monastery was to escape such mental and financial drains. No high ceilings for heating efficiency; lots of daylight; insulation and other environmentally friendly additions to cut bills: rainwater harvesting, a woodchip boiler, solar panels and a reed bed sewage system.

'We wanted to simplify life, be able to live our life more fully,' says the Abbess. 'The decision to move was made in 2002. We had no idea what we wanted; again we

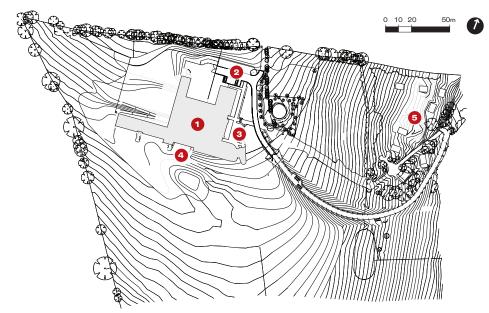
Above View of

Stanbrook Abbey from south showing completed phases 1 and 2. Phase 3 will rise above the cells in the west wing.

Site plan

- 1 Monastery
- 2 Parking
- 3 Eastterrace
- 4 Outlook
- 5 Holiday let lodges





were opening all gates and seeing what was there.'

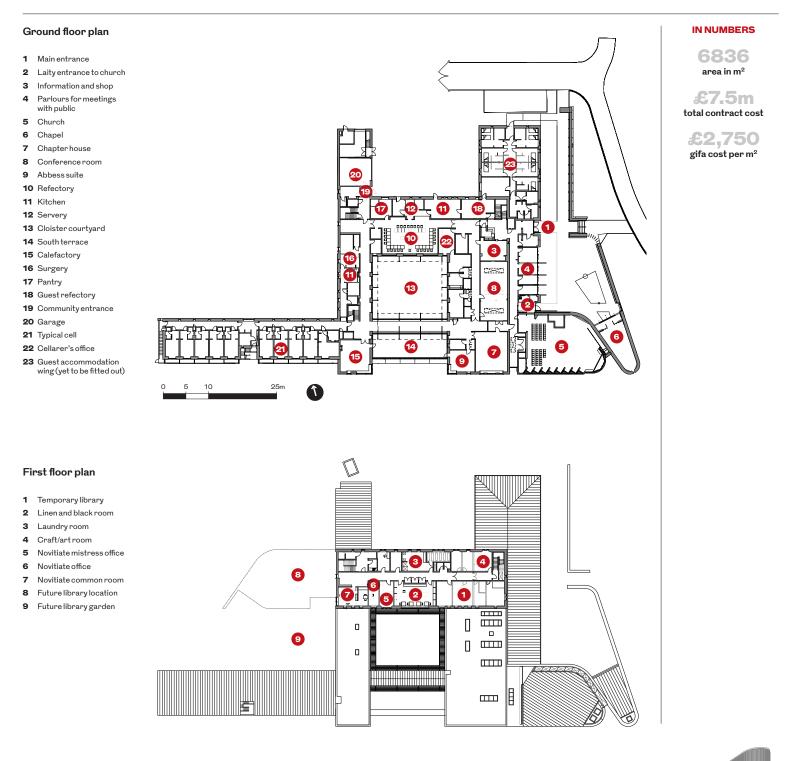
The sisters looked at properties as far south as Devon and as far north as Cumbria.

'We kept being drawn back to Yorkshire. There were two properties we almost took. One wasn't practical and the other we got gazumped on, but we lost that property on the Monday and on the Saturday Anna got the brochure for this property. It was obviously meant.'

And in the grand scheme of things, it feels like the nuns have come home. North Yorkshire has many ancient monasteries, several of which fell into ruin during the Reformation: Fountains Abbey, Rosedale, Mount Grace Priory, St Hilda's. Stanbrook Abbey looks down onto Byland Abbey. Rievaulx Abbey is four miles away. The idea was that their brethren at nearby Ampleforth were modern monks and they at Stanbrook Abbey would become modern nuns.

'Monasticism has its roots here. We are living by the same rule as those lost abbeys so it felt right and it fitted

Buildings Stanbrook Abbey





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the aspirations of the North York National Park, which is very aware of its monastic history. We will build on these roots and re-establish them.'

The nuns bought the property in 2004. There was a farmhouse on top of the hill up the drive, but the main advantage was its nine Scandinavian holiday lodges which were an immediate source of income. The area of the new building, however, was just a playing field. But did they buy it with a planning application in place?

'You're kidding! We did everything the wrong way. We did it on a wing and a prayer,' says the Abbess.

'We bought a property that had good quality buildings on it, good land and the lodges, so if we didn't get planning permission we anticipated that we wouldn't have problems selling it on again. But at the same time it was very nerve-racking preparing the application, meeting the people that we needed for advice and to make ourselves known to them. Then lo and behold, we did get planning permission – much to everyone's surprise,' recounts Sister Anna.

Though inevitably, it wasn't just the case of getting permission from the local committee. The site is in a national park. Their plans had not just one hoop to go through, but two; first the planning committee and then the deputy prime minister's office.

FCBS was selected as architect at the time the first site was found, for its sensitivity to the community's needs and its experience at Iona. The final core building

We did everything the wrong way. We did it on a wing and a prayer

Above On a clear day, when the sun comes round in the evening it is possible to see York Minster from the south terrace and cloister: 'It's wonderful, like an arch between us and them.'

Below The refectory, opening onto a tranquil cloister courtyard, has local 'mouseman' Robert Thompson furniture commissioned by the monastery in the 1930s. - with 26 ensuite bedroom cells, refectory, chapter house and work rooms – was completed in 2009, while the sale of the old abbey released the funds to allow the recent phase to be constructed; the parlours, church, chapel, guest house and conference room in what is the east wing. Stage three, the library and archive, will come later on the west side of the building. Those things at the moment are 'in the mind of God and his financier'.

What about the style of the commission?

'One of the points made in the narrative part of our application was that the Benedictine monastic tradition has been going for 1500 years and it has survived by blending into its environment,' explains Sister Anna.

At first the nuns were interested in curving organic forms but the qualities they valued most were simplicity, tranquillity and calm. The main living areas are therefore arranged in a simple orthogonal plan providing restful vistas and axes, with a cloister acting as the focus. Access to the building is from the east side; views and sunshine are to the south. All shared areas therefore had to be positioned on the east side, with service areas to the north, leaving the west and south sides to enjoy uninterrupted privacy and views.

The church and chapel, however, provide a more organic counterpoint to the orthogonal plan. The church is designed around the two liturgical axes inherent in the teachings of St Benedict. The Eucharistic axis is derived from the monastery geometry and focuses on the altar: the Monastic sets up a counterpoint running diagonally across it following the structural geometry of the building as it rises from the congregational entrance though to the high point of the church.

In all, the building is now much more manageable on a human and financial level, and socially in terms of the community being able to live together on a smaller scale.



Right Eucharistic axis towards Chapel of Blessed Sacrament with central altar, choir stalls and tiles marking the omphalos for receiving communion. The cross was brought from Callow End and restored.



Below View through internal window through church from Chapel of Blessed Sacrament.



It is more appropriate too for life in the 21st century. 'It has freed up time,' says the Abbess. 'We are not looking after four acres of building now. You obviously have to take into account that it feels like we have been building since 2007. Just to get here is remarkable.

'The community is happy it moved, but it loved the other building as well because that's where many of us made our solemn professions. Yet we knew this was right. We used the phrase "choosing life" which we took from Deuteronomy; you can choose life or death. If we had continued living in that other building it would have killed us. We had to do something to give new life to the community. We can run this building.'

Knowing all this – the long relationship the architect built with the client, how it has secured the future of the community, the slight naivety of the client but also its courage, the site's long monastic links, how the monastic life confronts everyday realities – finding a plot, getting gazumped, shortage of funds – I hope you too feel your breath taken away by the view of the new monastery and church with its cut-out cross at the end of the drive up the hill, and by stillness and serenity of the church hall.

Returning to Alistair Sooke: 'Matisse said that all his life he was trying to create a sense of calmness in his art and he said the reason was that he himself was in need of peace... Matisse suffered from that throughout his life and in his work he created something which eased that.'

For Stanbrook, as for Matisse, what else can you ask of a great work of art? •

Credits Architect Feilden Clegg **Bradley Studios** Client Conventus of our Lady of Consolation, Stanbrook Abbey **Contractor Phase** 1 William Birch Construction Phase 2 **OSP** Construction Structural engineer Phase 1 Structures One Phase 2 Buro Happold M&E Engineer Phase 1 AECOM Phase 2 Energy Unique **Project** management Phase 1 Davis Langdon LLP Phase 2 Richard Cavadino Quantity surveyor/cost consultant Phase 1 Davis Langdon LLP Phase 2 **Richard Cavadino** Landscape architect Phase 1 Camlin Lonsdale Phase 2 Urban Wilderness Lighting design Energy Unique Organ designed by Joseph Cullen and made by Jennings Organs Altar and Ambo Claudio Pastro



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Buildings Envelope

Sheffield rocks

Twelve Architects' diamond-patterned facade for Sheffield University's engineering building looks forward, not back Words: Stephen Cousins Photographs: Jack Hobhouse



A trip to Twelve Architects' headquarters in Hatton Garden takes you into London's historic jewellery quarter and the centre of the UK diamond trade. Shop windows are filled with pricey stones and signs with flashy diamond graphics compete to pull in wealthy punters and brides-to-be.

Strange then, that this apparently had no influence on the studio's design for the Diamond Building, a 19,500m² development for the University of Sheffield's Faculty of Engineering, where the facade is covered by an intricate pattern of more than 2,000 anodised aluminium diamonds.

'I know it seems strange. I genuinely hadn't considered the Hatton Garden connection. Maybe it was subliminal,' quips studio director Matt Cartwright.

What did have an obvious impact on the design was the client's requirement for a landmark building that would symbolise an ambition to become the UK's leading engineering university. The diamond lattice creates a highly sculptural facade, its chunky, sweeping diagonals juxtaposed against the more delicate lines of the unitised curtain wall behind. The pattern is repeated on the rear face of the glass, clearly visible to students and staff inside.

'The university wanted the building to be distinctive inside and out, which is something many buildings struggle with,' says Cartwright. 'For us, the diamond lattice is really successful in delivering both as it is instantly recognisable from any interior space.'

Valued £81 million, the Diamond Building is the university's largest ever capital investment in teaching and learning. It will play a major role in its wider research programme and partnership with industry and is designed to double the faculty's capacity by 2021.

The scheme is deep plan, 85m by 70m at its widest point, and comprises two four-storey blocks, on the north and south sides, separated by a full height central atrium.

The two wings are highly-serviced and house specialist spaces for laboratories, classrooms, offices and a learning resource centre. They were constructed with post-tensioned

The 2,780 rhomboid forms are inspired by detailing on the surrounding historic buildings

reinforced concrete to maximise lab spaces and create large column-free spans. A naturally ventilated atrium features social and student-led learning spaces, including lightweight, curved steel pods supported 'mid-air' on raking orange columns.

There are 2,780 rhomboid forms in total, inspired by detailing on the surrounding historic buildings, notably the stonework tracery supporting stained glass windows in the adjacent Gothic church. They also reference a 'cellular automaton', a discrete model studied in engineering and used by the university to describe how the microstructure of steel changes during processing.

Essentially, the lattice is a form of capping, fixed back to raking transoms on the unitised curtain wall. Cartwright says the semi random pattern is also intended to 'create an identity and give human scale to a building that is essentially a rectangular box extruded straight up, a form dictated by the many functions we had to accommodate and fairly common for highly serviced laboratory buildings.'

Early in the design, the practice explored the idea of creating the primary structure using concrete diamonds, but the scale of the elements would have over-constrained internal spaces, adds Cartwright, and sacrificed the delicate engineered aesthetic Twelve wanted.

There were also programme benefits to the chosen approach: installing the lattice after the unitised curtain wall was complete enabled the main contractor, Balfour Beatty, to take the facade off the critical path and quickly progress internal packages.

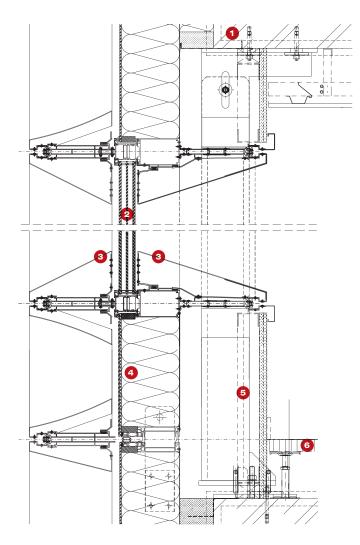
Diamonds on the facade are of numerous sizes, based on multiples of the 1.8m planning module. The smallest is 1.8m wide by 0.9m tall, the largest is 18m across. Only the atrium elevations feature the largest diamonds.

Facade drawings identified interior functions and window positions, which helped bring logic to the diamond pattern. Each elevation has a different combination of transparent, translucent and opaque glazing behind the lattice to address levels of solar intensity.

Cartwright comments: 'We wanted to create variation between clear and solid glazing to give the building subtle changes of light at night and help soften the diamonds.'

The facade plays a central role in reducing carbon emissions, helping the building secure its design stage BREEAM 'Excellent' rating. Around 40% is triple glazed with a U-value of 0.8W/m²K, a 250% improvement on building regulations. Air conditioning cools the two wings, but the central atrium is naturally ventilated. The end elevations of the atrium incorporate automated louvres, controlled by the BMS, which open at low and high levels to encourage airflow in and out of the building, informed by a computational fluid dynamics model developed by engineer Arup.

Czech Republic-based consultant Sipral detailed, manufactured and installed the facade. The unitised curtain walling is hung on a steel frame, fixed back to concrete slab edges to create a watertight line. Two halves of pressed aluminium make up the diamond





Opposite University of Sheffield's Faculty of Engineering is covered by an intricate pattern of thousands of anodised aluminium diamonds.

Above The pattern is recognisable from any interior space - here in one of the laboratories.

Left Facade detail.

Concrete slab Triple glazed unitised 2 curtain walling

1

- Pressed anodised aluminium lattice 3
- Insulated spandrel panel Additional support for double height glazing
- Carpet tiles on raised ess floor

capping, fixed to the front and rear of transoms on either side of the curtain wall.

Colouration of the external anodised aluminium elements was chosen to create a 'live' finish and match the hue of the stonework in nearby buildings. 'As the sun moves the colour of the lattice goes from almost black to a beautiful gold,' says Cartwright. The internal lattice was powder coated to resemble lead work in stained glass windows.

The uniform depth of the lattice creates a flat external edge profile and end elevations. It is raised by about 10mm from the surface of the curtain wall to allow water to run behind.

Individual sections can be unclipped, via a secret fixing, to enable replacement of damaged panels, or to expose the underlying unitised panels for maintenance.

Perhaps inevitably, the Diamond Building's angular zigzagged facade has divided opinion in Sheffield. With the building standing in an architecturally diverse area of significant historic buildings from different eras, some have questioned why, as an engineering faculty, it doesn't reflect Sheffield's international reputation for steel production.

But if student interest is the true barometer of success, the indications are positive - since the building opened at the end of 2015, the university has seen a 25% increase in applications to engineering courses. For these bright youngsters, at least, diamonds are forever.

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Intelligenc



External management

David Sleath



live

New president of the British Property Federation and chief executive of warehouse developer Segro talks about property after the Brexit vote and how houses could sit on top of distribution centres You have become president at a turbulent time. What does Brexit mean for property?

How is the BPF addressing government?

You have been quoted as saying the internet trumps Brexit. Is that true?

Your business is built on distribution sheds. How can they contribute to the urban environment? It's a little bit early to tell. The immediate aftermath has been quite choppy with market volatility as expected – although I didn't think we would vote for Brexit. There are concerns about what it does to government, which will be distracted, but at least we have a new leader.

We are better placed to respond to challenges than we were in 2008-9: the amount of debt is reduced, finance is more conservative and interest rates are lower. There is a lot of foreign investment in real estate – and not just because of the UK providing route to a single market.

BPF staff are sending new ministers a clear message that the government must instil business confidence. We are asking ourselves what the key priorities are in this unexpected environment. We want the government to maintain focus on growth in the regions and rebalancing the economy. We need a concentration on infrastructure which will enable other growth. And we have suggestions on how to assist the private rented sector and build to rent – for example allowing it to satisfy the affordable housing requirement by writing that into supplementary planning guidance.

In Segro's sector of warehousing and logistics, retail sales and the internet are great drivers for both big box demand in the Midlands and last mile delivery bases inside the M25. It is a period of massive change in retail. I think in the medium term that will be more important for us than Brexit.

Half our sheds are in urban locations, half out of town. Over the last few years we have worked a lot with local authorities to update urban warehousing, create jobs and train people. We're also developing alongside other uses. At Park Royal [west London] we are by a Bellway residential scheme. At the old Nestlé coffee facility in Hayes [west London], the west half of the site is being developed by Barratt near the Crossrail station and the east is for logistics. The end game is vertically integrated schemes with residential on top, so we're looking at multi-storey warehousing. There is shrinking availability of industrial land.

At the same time more people want to live in digitally connected cities. There are problems with London but if it can attract talent, the companies will come. That is the challenge, and a very important role for our politicians.

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33

Key to all this is a new form of building regulation they call 'Part S', the S standing for Sharing – both space and programme Hugh Pearman meets Swarm: ribaj. com/intelligence/ swarm-architectureachieved-differently

What a grave error we have made voting to leave' ... or: 'It's the best thing done for our nation in 40 years' Keep up to date with our rolling coverage of Brexit - responses, projections and analysis: ribaj.com/ intelligence/nbs-eusurvey



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



management management

Uncertain times

Until we know what Brexit means, industry wobbles are inevitable. There are potential positives for the UK but freedom of movement is a must

Adrian Malleson

What does the Brexit decision mean, for the UK economy, UK construction and British architects? The NBS RIBA Economics Panel met in early July to investigate the only topic really worth discussing at the minute. With a range of expert opinion ready to be deployed, we set about uncovering what may be in store, though mindful that events are overtaking opinions and facts quickly.

Before we look at any detail of the discussion though, one theme came straight to the fore. The only thing we can be sure of is uncertainty. These are early days, there is a lot we do not know. What we are seeing, in the economy and markets, is a result of that uncertainty. It is not due to our future relationship with the EU: we don't know yet what that will look like. We can expect this period to last some while though. We already have a new prime minister and before any future relationship is determined, we will see the invocation of 'Article 50' and up to two years of negotiation with the EU nations. It could well be 2019 before the uncertainty begins to lift.

What this negotiated agreement will look like is unclear. There are existing models. Norway, for example, is a member of the European Economic Area (EEA) and, as such, has freedom of movement of goods, services, people and capital between it and the EU. Switzerland has negotiated a series of bi-lateral agreements with the EU that allows it (for now at least) free trade in goods, and free movement of people with the EU. Even if the UK and the EU were to fail to reach any agreement about future trading in the two years permitted, we could fall back on pre-existing World Trade Organization (WTO) agreements. There would be trade in goods, perhaps subject to tariffs.

The panel's view was not, however, that the UK would simply adopt some pre-existing model for non-member trading with the EU. It is more likely to strike a different deal.

Worrying signs

Long-term trade deals are for the future, and the sooner they are reached the better. For the present, the response to the Brexit vote has been concerning. Share prices of housebuilding firms have been very significantly reduced, property investment funds have been marked down in value, or had trading suspended altogether. Against the dollar, the pound is reaching lows not seen for decades. The panel also gave anecdotal evidence of job cuts in some practices, as a response to projects being cancelled or put on hold, and a marked cooling in office leasing and land sales. We can expect a fall in property prices across the country, but most markedly in London and the South East.

Does this mean we are entering a recession? Possibly, but we are not seeing the sudden global economic seizure of 2008. Instead, we are likely to see postponement of investment decisions, hesitancy over building projects and exploration of relocation options. A slow erosion of investment such that growth over the coming years will be lower than it might have been. Why work with uncertainty in the UK when you could invest in Paris or Berlin? The panel expects the economy to be diminished in the short term. Whether this means overall growth is a little above zero, or a little below, is perhaps not so significant.

That said, for the UK construction industry some of the fundamentals for medium Does this mean we are entering a recession? Possibly – why work with uncertainty in the UK when you could invest in Paris or Berlin?

and longer-term growth remain in place. Regardless of the referendum, we still need many more houses than we build, (housing accounts for some 55% of RIBA chartered practices' revenue). Our infrastructure needs ongoing investment, whether road, rail, power, or water. We continue to need new schools and hospitals to support a growing population. Indeed, the fall in the pound may yet make the UK construction a more attractive investment than it was pre-Brexit, as asset valuations become increasingly attractive, and so spur foreign investment.

Home and abroad

What does this mean for the architectural profession? We can look at in two ways: what it means for international working, and what it means for UK working.

First, a weaker pound makes architectural services invoiced in sterling more competitive. The pound's depreciation may give UK architects an immediate competitive edge.

The panel took a wider view though. London is a global centre of architectural excellence. This excellence extends from innovative early stage design through to leading techniques for detailed design, such as BIM.

This is due partly to some UK architectural practices being thoroughly cosmopolitan. Around 500 EU architects register each year with Arb, and there are many more UK-based overseas architects who don't need to be Arb registered (perhaps as many as 4,500). This flow of overseas talent into the UK pools global architectural expertise, and forges relationships across the world. In turn, it supports our enviable global position and opens up an increasing number of markets to us.

The RIBA Business Benchmarking survey

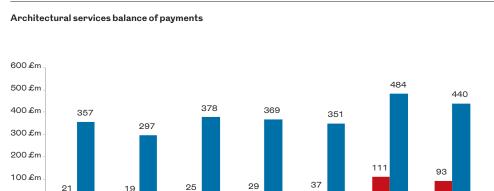
tells us that RIBA chartered practices generated £514 million of revenue from projects based outside the UK last year. Compared with the £93 million worth of architectural services the ONS say was imported in 2014, architecture is clearly a strong positive contributor to our poor balance of payments. It is worth noting that 40% of overseas architectural earnings come from trade with the EU.

To maintain the success of UK architecture, particularly for London as a global centre of excellence, the panel suggested freedom of both trade in services, and movement among architecture professionals, is a must.

Outside the capital

For the nations and regions outside London, the picture is nuanced. In previous slowdowns, the construction sector suffered more than the general economy, and architectural workload deteriorated more than the construction sector. In the short term we might expect this again. However, the referendum result might present new opportunities. Will the government look again at capital expenditure, in schools, universities, hospitals, for example, as the investment needed to improve our productivity and competitive standing? If London's position as a global finance provider is reduced, will more-geographically diverse, industries flourish instead? Will we see renewed investment in the nations and regions as London fails to generate the tax receipts it does now?

It is clear that a successful UK economy – and importantly political and social cohesion – requires investment in those regions that have lost out economically in the period of de-industrialisation. Capital investment needs to be spread more effectively beyond



2011

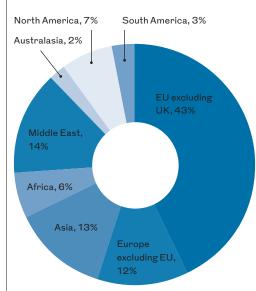
Imports Exports

2012

2013

2014

Source of practice revenue from outside the UK



Source: RIBA Business Benchmarking Survey 2015

If London's standing as a global finance provider is reduced, will other moregeographically diverse, industries, flourish instead? London and the South East. London alone cannot maintain a national economy and this vote may be a spur to a more concentrated government efforts to rebalance the national economy. Will a regional rebalancing of the UK economy better support the 64% of RIBA chartered practices working outside London? For now, these questions only outline possibilities but unless a Brexit agreement is very similar to our current trading arrangements, we can expect significant change.

While we are in this period of uncertainty, what's the best thing to do? We don't yet know what that future will look like.

Polarised views were a hallmark of the referendum, and its aftermath. A more considered approach may be needed now. As ever, careful attention to the data may help decision making. The Bank of England is providing both data and a thought-through response. Information on mortgage lending and the ONS on property transactions will help give an understanding of underlying trends. The share prices of tier one contractors and the larger construction product manufacturers will, after the initial volatility, give an indication of which way the wind blows. Most important perhaps will be the government's autumn statement. With a new Prime Minister in Theresa May, and chancellor in Philip Hammond (who has construction experience as director of Castlemead), this will set out the direction of travel for the UK economy.

The panel stressed that the uncertainty of the next few months will be challenging. Significant risks lie ahead, but change may yet bring opportunities we had not anticipated.

Regular analysis of the effects and implications of Brexit: ribaj.com/intelligence/brexit-analysis

ON THE PANEL

Noble Francis, economics director, Construction Products Association Sue Foxley, research director, ThinkBarn Aziz Mirza, director, The Fees Bureau Adrian Dobson, executive director members, RIBA Lucy Carmichael, director of practice, RIBA Eleanor Young, executive editor, RIBA Journal Adrian Malleson, head of research, NBS

Source: RIBA Business Benchmarking Survey 2015

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Intelligence



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Taking back control

Determined to keep its projects true to the design, Facit Homes decided to 'manufacture' its buildings itself

Gesine Kippenberg

Digital fabrication, bespoke design and agile onsite manufacturing have helped Facit Homes carve its niche in the one-off housing market. Keen to maintain control over the whole build process, co-founders Bruce Bell and Dominic McCausland set out to 'manufacture' buildings using digital design information and a portable CNC router to produce the components that form the Facit chassis.

George Legg, Facit's director of architecture, explains.

Did Bruce's specific background encourage this approach?

Because of his product design background Bruce was probably thinking very differently to an architect, who would have probably said 'let's do the contracting', not 'let's try and find a way to control construction through a manufacturing process'. Although elements of what we do conform to traditional contracting, the aim is to replace it with manufacturing as much as possible and to constantly increase that level of control and accuracy.

What sets your way of working apart?

We do fewer projects, but we do them in more detail. We draw everything in 3D. If you told an architectural firm that we are drawing nuts and bolts in 3D, they'd probably say we



The finished result

are mad. But as we are responsible for the construction we want to make sure everything co-ordinates properly. By investing in that level of detail we save time and cost on site.

Not all the consultants we work with use BIM. If they don't we model their information ourselves to make sure it works. That BIM model becomes the cutting pattern for our timber frame.

How does your approach compare to modular systems like cross laminated timber?

Ours is more of a framework for controlling what happens on site than a construction method or building system. The idea behind Facit is not about plywood boxes, it's about the design team achieving greater control over the outcomes.

So you draw everything in your model, and reality follows suit?

We have control from our office over the frame of the building. But if you tell a plumber to put a pipe run in, they won't necessarily put them exactly where you said to; rather they will find the most efficient route.

Do you issue site information in 3D or 2D?

We have tried both. On our last project we

had a tablet on site, and the site manager was accessing a version of the 3D model and taking dimensions from it. Some of the questions we asked while using this method were: Do you give site managers access to the model, which is a live piece of information? Can they read it? Is it easy for them to navigate?

We use really simple things like Google Hangouts to document the process and archive that information. So there's a continuous conversation going on between the office and the site team.

And when things go wrong?

As an architect you don't normally get told about construction problems. They occur, the walls get covered over, you never know about it. We are in a unique position, because the problem pops up on screen. And it's in everyone's interest to look at it and make it better as we are all accountable.

Could you design remotely and only ship the information for others to build?

We are looking at how we can employ subcontractors in another area and still communicate effectively. Doing a house in Denmark was quite interesting for that reason. We did all the coding and produced all the information for the frame, and then we shipped that data to the client. It cut it all out on its CNC machine and assembled it.

Would you sell the D-Process itself?

Originally we were looking at self-build projects where we would sell the frame and others would complete the building. But we couldn't achieve the desired built quality for a building with our name on it. To control that final product we have to see it through from start to finish.

What potential do you see for exploiting economies of scale?

We'd love to do more. Bespoke one-off homes are quite a premium market to be in, custom build is another way to go. We are doing a research project about digitising custom build at the moment; looking at whether we might be able to offer things more cost effectively to a rapidly growing market.

Gesine Kippenberg is practice policy and projects officer at the RIBA. Facit is the first is a series of RIBA case studies on the role of architects in construction innovation. See more at architecture.com



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Adjudication doesn't come as standard

Whether you expect your home improvement project to run smoothly or not, make sure you have an adjudication clause

Stacy Sinclair

How often do you find that works have started on site without the parties fully formalising the terms of their legal relationship? Unfortunately we see this all too often, particularly on residential projects, and the consequences can be costly.

The difficulty arises because the parties have not clearly expressed and formalised their agreement. If a dispute occurs, lawyers – and ultimately the court – must analyse ambiguous contract terms to make sense of what was agreed.

In the context of a construction contract involving a homeowner, if the terms are not clear, the parties may not have a statutory right to adjudication under the Housing Grants, Construction & Regeneration Act 1996, as amended. This gives the parties the right to resolve their disputes on a temporary basis by way of adjudication – but not if one party is a 'residential occupier' (see panel).

Where one party is a residential occupier, the contract must be clear that the parties have incorporated an adjudication clause, if adjudication is to be an available option.

The recent case of Goldsworthy Builders v Mr & Mrs Harrison demonstrates just what can happen when the parties have not signed a formal contract.

In this case, Mr & Mrs Harrison appointed an architect to act for them in respect of works to their house. The architect proposed a schedule of works to its main roof and sent this to Goldsworthy Builders, which provided a quotation in November 2011. Works started on site in late October 2012 even though a contract had not been signed. Ultimately, over the next several years, on several occasions the architect asked Goldsworthy to tender for further works on the house. By January 2014 the parties considered the contract sum to be over \pounds 500,000.

Some of the parties' correspondence referenced the JCT Minor Works contract and some referred to terms which were not consistent with this contract. For example, payment terms were on the basis of 14 days from certification, which of course conflicts with the Minor Works terms.

Ironically, as will be seen, in January 2014 the architect prepared a completed Minor Works contract but for reasons which are not entirely clear Goldsworthy declined to sign it. When the Harrisons stopped payments in April 2014, Goldsworthy began adjudication for the balance based on the last certified sum. The adjudicator ordered the Harrisons to pay Goldsworthy circa £75,000, but when they declined to pay, the parties ended up in court (in a summary judgment application). The primary issue was whether they had agreed contract terms which contained an adjudication clause. If they did not, the adjudicator had no jurisdiction.

Goldsworthy argued that the Minor Works contract had been agreed and incorporated and these terms contain a provision for adjudication. The Harrisons argued that no final agreement had been reached on the Minor Works contract and that the work proceeded under an informal agreement without an adjudication clause.

The judge found that without a better understanding of what was said between the parties, he was not able to say definitively what the terms of the contract were. Goldsworthy's application failed.

As a result of not having a signed contract, both parties incurred irrecoverable costs in the adjudication and, unless the dispute proceeds to a full trial, in enforcement proceedings. With no definitive clarification on contract terms, arguably neither party is better off.

Putting clear contracts in place at the outset of projects can at least avoid disputes on what procedure the parties should use to resolve their disputes.

Stacy Sinclair, Fenwick Elliott LLP

The primary issue was whether they had agreed contract terms which contained an adjudication clause. If they did not, the adjudicator had no jurisdiction

IN PLAIN ENGLISH: Residential occupier

The Housing Grants, Construction and Regeneration Act 1996, as amended, gives parties the right to resolve disputes on a temporary basis, by way of adjudication, provided the contract is a 'construction contract'. However, an exception to this is a construction contract in which one party is a residential occupier (see Section 106 of the Act).

Such a contract is one which principally relates to operations on a dwelling which one of the parties to the contract occupies, or intends to occupy, as his or her residency. A 'dwelling' means a dwelling-house or a flat.

In the past, there have been cases before the court arguing whether or not a party was a residential occupier for the purposes of the Act. By way of example, the Court has found that it is difficult to imagine how a company could ever be a residential occupier (see Edenbooth Ltd v Cre8 Developments Ltd, 2008) and that occupation or intention of occupation of the dwelling is critical for the exception to apply (see Westfields Construction Ltd v Clive Lewis, 2013). **Curtain Walling Systems**

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Internal management

Go figure

In honour of the V&A's engineering season, Maria's column is written this month by structural engineer Steve Webb

Steve Webb

I clear my desk and push my computer right to the back. I sweep my hand over the white tabletop a few times to clear the snots of eraser and dust. Quite empty now, it suggests I'm in control and have comprehension.

I print the drawings and arrange them to my left. I place a rubber, my calculator – bulky and filthy – and a scale ruler on the right. Then I find a calculation pad. I try to find a fullish one of heavy stock, thick and flexible. I get a pencil. The pencil I like is a propelling Pentel P209s with a 0.9mm soft B leads. They're slightly top heavy so they lean back a little into the cleft of my thumb and forefinger. A 0.9 B lead, not brittle or feint, allows for decisiveness and bold action: big clear dark figures.

Engineers still calculate most things by hand. This seems very strange to me as so many things today are automated. The hand calculation invites numerical error and it's laborious. But it allows nuance and approximation, and its slow pace and meditative nature give other parts of the brain time to unconsciously weigh what I'm doing. I never feel like I am working if I'm not calculating. The muck has to be shovelled. I've got to turn pages of information into proven conclusions.

I put the pad in the middle of the desk and lower myself into my chair before it. I bow my head and bring that pencil to the page. I write facts; facts that I suppose to be true. I lead those facts through numerical processes into other facts. 'Therefore' is a symbol of three dots in the form of an equilateral triangle. Truth equals truth equals truth.

I start with the easy things: the loads. How much do things weigh? I weigh a kilo newton. There might be four of me in a square metre. I put these all down. Page one is filled. Then the system: I call it the system. I copied this idea from someone else, 20 years ago. I draw a little sketch. Beams and columns and slabs feature. Some dimensions. References: beam A beam B. And then the 'design': the maths. The strength and then the deflection. Strength is most important but easier to prove. Strength failure means dangerous collapse. Deflection and resonance are elusive but obvious on the finished structure. This is the grey area between known fact and the incomprehensibility of behaviour. This is where I have to start to think about how I might behave if I were a beam or a slab. How a piece of paper might twist in my fingers, or how a fishing rod or a spline might flex. I have to find numbers for this and put them down so someone else can follow them.

After so many years I have convinced myself I can feel these things. As I get older I get vaguer and more complacent. I forget names and faces, dates and appointments. But I'm still a sharp calculator. My capacity for mental arithmetic has grown wildly. Sometimes I believe I can feel how one beam hands loads to another; how another beam transfers movements; how its flex allows This is where I have to start to think about how I might behave if I were a beam or a slab. I have to find numbers for this and put them down so someone else can follow them

another beam to flex. But I also know this instinct vanity is conjectural and flawed.

I have to enumerate. I calculate the loads, the bending moments, the shears and then I choose components to resist them. I use codes, formulas and first principals. As the design becomes more complex my handwriting becomes looser and what's more, I'm rushed: I have to finish. There's a fee to consider. The bold figures start to become scrawny, many times erased. Those three dots draw conclusions that many may question. Reason and hunch are deployed.

Off the paper, I draw up contingency plans. If I'm wrong, then this will happen which will still be OK. Safety factors, redistribution of forces, restoring effects. I'm proud of a skinny beam and a thin slab: ego. I won't over design. I reach a conclusion but I have reservations.

I'm a climber. Not a good one, but nonetheless a courageous trad climber. I rise on an escarpment with my rope, placing chocks and bolts into cracks: climbers are cautious, they make many provisions to safety. When I'm calculating I'm quite often flamboyant, but then I think about this: I think I'm climbing. I try to envision the jeopardy of others. I try to impose a fear on myself that a person in a desk sitting over a pad cannot easily feel. But I've done the numbers. I believe in the numbers. I've performed the act of calculation.

Steve Webb is a structural engineer and director at Webb Yates Engineers and Interrobang

Schueco UK promotion Digital working

Digital working: What's in it for us?

How can the industry make better use of the new tools at its disposal? At the Schueco/RIBA Journal innovation in architecture seminars, panels in Glasgow, Manchester and London talked about the big issues in digital working: collaboration in the digital world; changing the way we design and build; and getting the most out of digital technologies. Each panel was drawn from a cross-section of the building industry: architect, engineer, contractor, client and manufacturer. We asked: 'How are evolving technology and modern methods of construction changing the way we design and build?'

London: Opening new possibilities

DUNCAN SMITH

Staring from the Glazier's Hall windows at the view of London Bridge and stretching across to the towers of the City, I'm reminded of the crowds flowing through the 'Unreal City' of TS Eliot's The Wasteland. These themes are the touchstones of the Schueco/ RIBA Journal London seminar on BIM and the wider role of technology and modern methods of construction. The audience confirms again that 'unreal' virtual building models not only have the ability to mimic reality for clients through the use of Oculus Rift, but can enable modification of the final building to optimise operational performance and facilities management.

And flows? Panel members drawn from across the consultant spectrum, and chaired by Hawkins\Brown director Nigel Ostime, made clear that BIM not only improves work streams but provides a whole way of understanding what a drawing is and the information it conveys. Yes, there's Autocad and Revit, but with algorithms and code increasingly used in building design, programmes such as Grasshopper are making drawings into flow diagrams – representations of processes rather than things; it's a new language the sector needs to understand.

Back in the real world of construction, it seems BIM is making inroads into changing the industry now. Chloe Obi, head of BIM implementation at Bouygues UK, which has implemented full BIM on over 30 projects, told the audience that the main driver for BIM take-up was increased profitability and added value for the client. Mostly that meant 'getting rid of design inefficiencies and mitigating risk, such as clash detection, preferably [by] using a federated file, before construction starts on site'. Initially driven by the government's 2011 Construction Strategy report which mandated Level 2 BIM,



and even help with on-site activities'. Director of facilities management at the Ministry of Justice, Deborah Rowland also highlighted the importance of augmented reality from an FM point of view. She sees BIM's potential to inform FM strategies from Stage 0 through to Soft Landings as gamechanging. Oculus Rift allowed stakeholders to affect design decisions from inception, potentially reducing operational costs. 'Information in the digital model gives us data accuracy when we tender for FM services... which helps with whole life cost reduction,' she said. And on building maintenance, she warned architects that lack of clarity about strategies plays into the hands of those



seeking profit. 'Facilities managers like to play the role of victims,' Rowland noted. 'They and supply chains like ambiguity because they can charge more for their services.'

By contrast Linda Thiel, director at White Arkitekter, seemed more excited than concerned by the notion of ambiguity, thrilled by the design opportunities BIM presents to the industry – and architects. 'We need to embrace the tools to take ownership of the scheme,' she declared 'It's a collaborative process but we must lead. We also need to be smarter with the resources and technology allows us to do this,' she said. And the 'fuzzy space' BIM allowed us? That too is a site for design potential: 'In Grasshopper a line is not a border but a connection. Young architects read its flow charts like sheet music,' said Thiel.

Format Engineers director Stephen Melville looked at fuzziness differently, seeing how digital tools can quickly cut through vague initial design stages. 'Coding should be part of the conceptual design, allowing algorithms to create far more complex and useful design – say the relationship between



Above 'We need to be frontrunners,' Linda Thiel, White Arkitekter.

Left Chloe Obi (on the left) of Bouygues expects added value for the client, while Deborah Rowland warned architects to avoid expensive ambiguity.

structural holes and solar ingress,' he said. For Melville, the potential of BIM for architecture and engineering is almost limitless. 'It allows us to model complex behaviour very quickly – things that would have been impossible before.'

This was picked up by Oliver Hans, Schueco International senior product and innovation manager, who introduced the firm's new Parametric System, an attempt to use the potential of complex parametrics to create a simplified, standardised, componentbased approach to cladding design that runs from initial design to final fabrication, saving time and money. It could be seen as a via media between specific BIM approaches for the industry now and the bewildering potential of digital technology.

Futurist Alvin Toffler, who died last month aged 87, once remarked: 'The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn.' That chimes with the panel's conclusion that upskilling the industry to embrace BIM's true potential will be one of its biggest challenges.

Manchester: Potential to aid efficiency

By crane count Manchester is flourishing. The universities are investing, the science and tech industry alongside is growing, there are high profile commercial schemes like 2 St Peter's Square and plenty of housing going up. What part are digital technologies playing in all of this? We drew on experts from the North West to discuss how they are making the best use of digital technologies.

Appropriately, the seminar kicked off with the stations and connections that will ultimately bring the region closer together. BDP designed the transformation of Manchester Victoria and is in the process of linking it and Manchester Piccadilly Station for the first time with the Ordsall Chord. For project director Peter Jenkins, the value of digital technologies comes from designing into the projects how to build them. On Victoria Station the conservation approach produced an irregular structure. Using Bentley Systems, designs for 400 ETFE panels were generated, every one of them different. But 'it demonstrated the first lesson for using technology the right way,' said Jenkins. Everything looked good in 3D as you flew around the virtual model. 'But as soon as we had made the physical model we realised we had got it wrong.'

This reality check applies to buildability too. 'It is pointless if industry can't respond to it,' warned Jenkins. At both the station and Ordsall Chord the technology found the right home, with contractors Vector on ETFE and Severfield Watson on steel. This allowed a box section to morph into an I section, while also bending on plan. 'It was really complex... but you just press a button,' Jenkins said. He contrasted it to other materials. 'BIM is a swear word for concrete contractors.'

Frank McLeod, who in another world

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might be called a BIM manager but prefers the title head of project technology at WSP, admitted he hates the term BIM. Better a clear goal: that you are moving towards a virtual construction model. He brings to WSP an array of tools for exploring the design up front, including Spaces Allowances and SketchUp to quickly model a project and gaming technology such as Unity for immersion in the 3D world, via augmented reality. Then, as the design starts getting locked down, it transfers to one digital site and the technology focus moves to how changes are shared and logged, here using Huddle and KanbanFlow. Once the project is in production design BIM provides a single source of truth: very large, federated models. They throw up a huge amount of information: so avoid clash detection advises McLeod and look instead at search sets on clash to determine the larger areas that need concentration.

From contractor Laing O'Rourke Dirk Pittaway showed how digital technology has become critical to delivering major projects with its ability to turn three dimensions into four with a timeline. Manchester's Etihad Stadium never closed during its expansion by 13,000 seats; two million fans went through it during 42 home matches and it also hosted three sell-out One Direction concerts. 'We had to be sure we could do the exact work between matches,' Pittaway explains. The clarity of tasks in the model allowed for that, right down to the briefing of site operatives.

In situations like this much of the risk rests on the client's business. John Lorimer of the Construction Industry Training Board has spent much of his career as a client and was clear that 'every client is looking to exploit technology'. How they can look at data defines how valuable it is to them. But inevitably, it also leads to the question 'Shouldn't it be cheaper?'

Oliver Hans, senior product and innovation manager at Schueco International, set out how parametric facade design, at least, could be cheaper. A new 3D Parametric System that uses tubes allows a whole set of variable geometries, the calculations going right through the system with automatic workflow that can give folding 3D facades with an elegant aluminium feel and small nodes. It reduces design time by as much as 99% and means that once the design stage is complete and files have been imported to SchuCad Inventor, production can start within hours. It was satisfying to sit back and enjoy the impressive fruits of Schueco's labours without struggling to think about how to apply them in practice.

The ensuing debate concentrated on the processes, risks and rewards of new ways of working. Nathan Jones of Turner and Townsend wanted to know panel members' opinions on 5D modelling of cost and 6D on facilities management. McLeod was being asked for it but thought it 'foolish' to take rigorous quantities from a design intent model. 'It is more about trends. The question is "Are we on target?" Saving that developments with a cost consultant have examined how costs might be visually managed with heat map reporting, AFL's Marcel Ridyard asked why costs were coming in at €2m more than estimated at every work stage, against initial hopes of BIM. 'We expected more accurate pricing early on,' he said, calling for earlier investment in the cost plan.

But why is construction at the bottom of the league table on efficiency? 'The construction industry is approximately 53% efficient,' replied McLeod, 'which means half of it is making good money from not embracing technology.' Pittany reminded the audience of the slow speed of construction: 'The cycle of learning is challenging: it's project by project and once you've started a project time stands still.' In the meantime the panel expected the costs of software itself to come down, with easier access and cloud subscriptions. This and the gradual gathering of confidence and knowledge in digital ways of working could, quite soon, result in projects with the digital equivalent of the design on napkins and unique component codes that talk to each other through one system.

Why is construction at the bottom of the league table on efficiency? 'The industry is approximately 53% efficient, which means half of it is making good money from not embracing technology'

Glasgow: View from the coal face

Kieran Gaffney, Konishi Gaffney Architects

We have been working with digital modelling and also use CNC fabrication of various types for smaller building elements like stairs, furniture and fixtures. But I have been frustrated that more output from digital to real-life is not readily available. There are opportunities, such as at the offsite fabrication hub which is being set up by Construction Scotland Innovation Centre, for digital to real world crossover for small practices and contractors and I'm interested in our practice exploring these.

I most enjoyed the talk by Schueco on its Parametric glazing system, which was a specific take on how digital technology is changing the production of buildings. It was very interesting and well presented.

Both architect and engineer speakers gave examples of the BIM model as a communication tool for clients, planners and public rather than an enhanced 'federated' model. This may be because, as we heard, PM and QS roles lag behind designers in terms of implementation. All speakers emphasised the collaborative and shared output associated with BIM as the main innovation.

I've been prompted to explore modelling tools (we use SketchUp) and the Schueco software plug-in: even though this is intended for big office facades, I'd like to see if it could be adapted to smaller projects.

Other attendees I spoke to were from larger practices already using BIM. They commented on how it was changing their workflow but not really changing how they actually design, instead streamlining



Above Where BIM, and more, fit in: Andy Gotts of MSPS.

Left Schueco International's Oliver Hans with the manufacturer's view on how technology can improve efficiency – and design.



the production process through better communication and collaboration.

I'm not particularly interested in mass producing architecture because buildings tend to work better when they are site specific. The example of assembly line car manufacture doesn't apply to buildings and so the architect/small contractor approach to making buildings remains relevant. However we need to move towards more intelligent models to allow us to explore new materials and processes and to help pin down costs and timescales – and to make sure we don't feel left behind.

Tell your network wl

The Glasgow panel: Rod Duncan, design director, JMA Architects; Andy Gotts, director for civil and structural engineering UK, MSPS; David Philp, director, Building Information Modelling, Aecom; Andrew Walker, business unit design manager and BIM core team, Morgan Sindall; Paul Dodd, associate director, Scottish Futures Trust.



RISING STARS RISA STARS

Who should enter?

You

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Your best collaborators

When you get the news that they will be working on the project you give a little cheer. Here is another professional you can rely on. But not just an ally, also as a challenger who will ask difficult questions and work with you to come up with the answers. They can hold their own and go beyond professional disciplines to ensure that value engineering is creative, the landscape truly works with the building, the ventilation strategy is at the core of thinking, the structure is more than something that holds up space. These are the collaborators we want to hear about: nominate them now.

Your rising stars

As a boss you can see the quality of the individuals working under your nose. That project architect who really made the build go beautifully, building up a real rapport with the contractor, always available for the client. Or your articulate associate who has taken on extra practice responsibilities and, with a few moves, opened up a whole new way of working. Show them you appreciate them. Nominate them now.

The judges

The first tranche of judges for RIBAJ Rising Stars 2016, in association with Origin, has been announced. The panel will be chaired by the RSA's Matthew Taylor. By the age of 37 he was director of policy for the Labour Party ahead of its landslide general election victory. He continues to ask difficult questions and offer insightful analysis as he promotes a fairer society through a network of forward-thinking RSA fellows.

He will be joined by property entrepreneur Gus Zogolovitch who has already made his mark on London's housing, first with his own venture into residential projects then with his father at Solidspace. This has an innovative formula for homes, creating space and privacy using split levels. It has also spun off into custom build.

Engineer Patrick Bellew of Atelier 10 includes the labyrinth among his innovative thermal storage designs. He has helped set up sustainability training programmes and teaches at Yale School of Architecture in the US, where his London practice has a 60-strong base.

From the RIBA Journal comes Eleanor Young, who at the age of 24, before texts were even thought of, was riding the wave of the dot com bubble as editor of a mobile phone title before turning to writing about something more important. She has interviewed brilliant and gifted designers, many for these pages.

In these turbulent times the industry needs the best talent to step to the fore. The judges will be looking for original thinking and honest graft. Put yourself forward or nominate your colleagues and collaborators now.

How to enter

The form (see bottom of this page) is simple. It needs details of the nominated rising star and their referee, a potted biography, an explanation of why they should be considered and answers to a couple of questions about the wider industry. What would you most like to improve about the industry? Who would you most like to work with?

We welcome nominations that focus on one particular achievement or initiative and those that detail a wider breadth of activities.

Fill in the form and email it to risingstars@ribaj.com

*Eligible individuals must have completed their professional training (part 2 for architects) no more than 10 years prior to 12 Sept 2016

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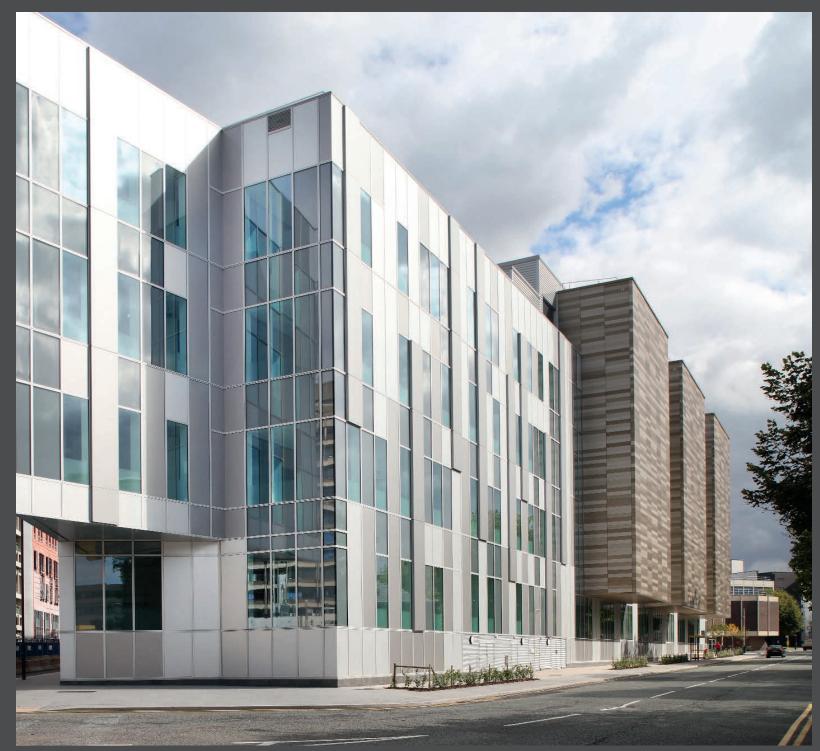
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3: Culture

It's the thought that counts

It's good to build, but the idea is the cornerstone of architecture



Hugh Pearman Editor

HOLLY EXLEY

I've said it plenty of times in these pages, and I'll say it again: architecture does not have to be built to exist. It helps, obviously. But the unbuilt version is no less architecture than the built, and – given the usual compromises and cuts on the way to site – is frequently superior. Two of the finest pieces of 20th century architecture are Mies van der Rohe's designs in 1921-2 for glass curtain-walled skyscrapers in Berlin. Never built, and in form very unlike his later work that did get built, they remain enormously influential.

And there's the point: unbuilt architecture of influence gets absorbed into the general architectural hive-mind, often to re-emerge in the hands of others. Frank Lloyd Wright's 'Mile-High Illinois' of 1957 anticipates today's supertall towers remarkably well, minus the nuclear-powered lifts Frank Lloyd Wright's 'Mile-High Illinois' of 1956 anticipates today's supertall towers remarkably well, minus the nuclear-powered lifts that Wright sparkily suggested that Wright sparkily suggested. And we're all used to the idea that Cedric Price and Joan Littlewood's 'Fun Palace' for Stratford, East London, fed straight into the concept of Piano and Rogers' Pompidou Centre in Paris, and adaptable high-tech in general. It's not uncommon to find architects running parallel careers - one in everyday buildings that get built, the other in fantasy or idealistic or just plain speculative projects that do not. Don't decry this - Soane did it as much as Wright, Mies or Corb, and it's not a million miles away from how architectural competitions get won. There's the winning design, and then there's what gets built if you're lucky, and the two may or may not correlate particularly closely.

These thoughts are prompted, as they always are at this time of year, by our August 'Eye Line' drawing competition results, which you'll find in this issue. Thanks to our partner AVR London for its support of this. Eye Line does not demand practicality or buildability, though it rules neither out. Instead, it celebrates the art of architecture, the pleasure of the drawing for drawing's sake. And I hope you'll agree that this year's winners and commendations, quite apart from the clear skill and talent on display, also show that most valuable of architectural commodities: optimism.

Let's hope, naturally, that post Brexit everyone doesn't find themselves with too much time on their hands to indulge in the pursuit of the unbuilt. We and the RIBA are keeping close tabs on that and will pass on our findings and recommendations to you. But – in another recurring theme of this column – time to think, in architecture, is never a bad thing. New projects get mulled over, new groupings of architects, other professionals and artists spring up. Architecture gets most progressive during uncertain times. Mies, after all, designed those great prophetic buildings during the political and economic turbulence of the early Weimar Republic.

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houses. He gives them girls' names and his descriptions of them are more Fifty Shades than Pevsner Will Wiles reviews Pekić's 'Houses': ribaj.com/buildings/ review-houses

'I felt the buildings were talking to me and they needed a soundtrack' Pamela Buxton hears Peter Adjaye's music for brother David's buildings: ribaj.com/ culture/music-forarchitecture

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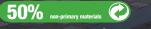
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Is inclusive design achievable?

Do architects have the skills and attitude we need to create truly inclusive environments? Is it even possible to design architecture for everyone?



Jane Duncan

'My disability exists not because I use a wheelchair, but because the broader environment isn't accessible' – disability advocate Stella Young

In 2012 millions of us watched top athletes with physical impairments demonstrate super-human abilities as they competed in the London Paralympics. There is no question that a major shift in perspective took place. But with just a month to go to the Rio Paralympics, how confident are we that over the last four years the built environment has become more accessible?

Some people are still uncomfortable about disability: they don't understand it and fear what they don't understand. Architects are in pole position to reclaim environments for a wide range of user requirements. Isn't it about time we challenged the polarised separation of 'able-bodied' and 'disabled', and realised that we just need to design for people?

Good design is inclusive – it makes places everyone can use. How buildings are designed affects our ability to move, see, hear and comIsn't it about time we challenged the polarised separation of 'able-bodied' and 'disabled', and realised that we just need to design for people? municate effectively. It is vital to remove the barriers that create undue effort and separation and enable everyone to use buildings equally, confidently and independently. This provides opportunities to deploy our creative and problem solving skills for real people in all their variety, removing the frustrations experienced by many disabled people.

Considering a more diverse picture will often achieve superior solutions that benefit everyone, exceed minimum technical specifications, and help people use developments safely, with dignity, comfort, convenience and confidence.

The RIBA's CPD programme covers a whole range of inclusive design topics from accessible housing to designing for older people, equipping all of us with the skills we need to provide inclusive design.

By challenging (or removing) the idea of normal – there is no such thing as an average user – we can widen our capabilities beyond relying on anthropometrics and ergonomic data. Employers are starting to recognise that it's smart business to have a diverse workforce, one in which many views are represented and everyone's talents are valued. Well, disability is part of diversity, and it's not just about fairness: it makes good business sense to create accessible spaces. A rigorous inclusive design process mitigates business risk and ensures repeatable design success.

I had the pleasure of launching a brilliant accessible hotel design competition recently which seeks to create fully accessible solutions.

The 'purple pound' figure from the government's Department of Work & Pensions shows that households with a disabled person have a combined income of £212 billion after housing costs. Research has also shown that disabled people find shopping the most difficult experience for accessibility, followed by going to the cinema, theatre and concerts. Drinking and eating out at pubs and restaurants was third on the list.

We can change that.

Bridget Bartlett, chair of the CIC Diversity Panel, said: 'To build really healthy communities all sections of society should be catered for within our structures and infrastructure. Buildings that don't work for people have no place in their future.'

She was right on the inclusive button.

(@janeduncanPRIBA Find out more about the hotel competition at architecture.com/riba/competitions

RIBA TO LAUNCH NEW Fellow Membership

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The RIBA is delighted to launch the new Fellow Membership category, which will open for applications this August. This recognises chartered members who have made a significant contribution to architecture. It will celebrate the sometimes unsung heroes of the profession and create a benchmark to which future generations of architects can aspire. architecture. com/fellowmembership

AVR London promotion Eye Line drawing competition



A living art

Joseph Robson, of RIBAJ Eye Line partner AVR London, is convinced by the enduring need for – and value of – drawing

Many of us love drawing, but it has a chequered past. The emergence of photography in the mid-19th century 'killed drawing' according to many, prompting Ruskin to spend years campaigning to get people sketching again. More than a century later, the advent of computers was again condemned as the 'death' of artistry in drawing, with BIM potentially the latest nail in the creative coffin. Yet this all really misses the point. Drawing has enduring importance because it fundamentally enables the development of perceptions and ideas, not just their visualisation. For some, as Royal Gold Medal winner John Tuomey once observed, it is often the act of drawing that produces the idea, not the other way round.

That's why AVR London has partnered with RIBAJ on this year's Eye Line competition. Drawing will always be a passion of ours – it's important not just for creative expression but as a way of 'creating'. Eric Parry stressed its lasting importance during the panel discussion at the launch of Eye Line, held at Anise Gallery in April. With over 500 drawings entered this year, it is clear that other practitioners in the industry feel the same.

Over the last 10 years of practice in architectural illustration, AVR has naturally gravitated towards architects that share this mindset. Those that see the computer not as the machine for creating an image,



Below FCB Studios Competition, Waterloo.

but as another pencil. Our best illustrations have resulted from being welcomed into the mind of the architect; walking hand in hand with them, to interpret their vision and enhancing it through the image. Those that recognise us as artists, and not as technicians.

A real-time virtual reality environment is the latest iteration of illustration. We've been working with it for almost two years and we've seen an increase in its use as a co-creation tool, and how it brings closer relationships with clients. A new emotive vocabulary has emerged, 'how does the space feel to you?' is a whole new way of communicating: it's fresh territory for digital artists and architects alike. It is influencing not only how we depict (or rather, 'experience') unbuilt architecture but how designers 'think' and translate an idea. This may sound a little 'meta' but we've gone from thinking in 3D and drawing in 2D; to thinking and modelling in 3D and remaining in a 3D fully immersive, interactive environment. What does this mean for the future of drawing? Perhaps Grayson Perry has the answer: 'Until we can insert a USB into our ear and download our thoughts, drawing remains the best way of getting visual information on to the page.' •

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

The University of California, Berkeley's Nicholas Harvey-Cheetham's Brick Pavilion.

A fiesta of colour greeted the Eye Line judges for another year of outstanding drawings and remarkable techniques Words: Jan-Carlos Kucharek

Imagination unchained

Our judges were taking no prisoners this year. Chair Hugh Pearman might have been doing his level best to keep hardened critics Will Alsop, curator and writer Jes Fernie and Eric Parry from their most excoriating comments, but it seems that, once started, it was hard to stop the contagion from infecting former winner, Studio Weave's Amelia Hunter, and Joseph Robson – director of Eye Line sponsor AVR London. As a result, drawings were dropping like flies at RIBAJ Towers.

Perhaps it's that the quality of what is being demanded is rising. Most of this year's 202 entries, whittled down to 50 for the final judging, hailed from UK schools and practices (perhaps accounting for the stylistic similarities through a kind of academic osmosis), with international submissions from east and west US and Australasia – the latter using a formal language possibly of their own academic vernacular.

A significant proportion of this year's submissions employed chiaroscuro – a technique that seemed to compel and repulse in equal measure. Robson declared himself 'drawn to the black and white images while trying to resist that urge,' with Hunter feeling they 'should almost be judged against each other in their own category'. Hunter, it turns out, was the voice of reason in this regard: Fernie, as an art curator, was prepared to slice through the graphite brigade, saying of one: 'You could take a wet cloth and wipe it all away.'

But that wasn't an option with the rest of the submissions, given their complex digitised printing, with the judges seeing a plethora of hand drawn images that had been scanned, rendered and put through V-Ray or Photoshop. The highly complex layering of images in some was impressive but left the judges suspecting a triumph of style over content at times. Alsop, for whom the image is a tool, preferred 'drawings that look like explorations - as if they are working towards some kind of resolution or clarity.' Fernie found the overlaying of techniques frustrating, obfuscating the point of the drawing and compromising uniqueness; she was 'amazed at how uniform some of the stuff is. With all the technology, people [are finding] homogenised ways of presenting different ideas.'

If there was something the judges could agree on, it was the obsessive drawing, wheth-

er or not it proves there was an architectural idea governing it or not. Some drawings had us wondering if we should laud the artist or have them sectioned. Robson asked:'I can see that it might have taken two or three weeks to do the drawing but you have to wonder what other project discoveries might have been achieved in that time.' In other words, had digital technology been used to open the project potential up or to close it down?

But these sorts of abstracted discussions are generally the reserve of those with the luxury of judging a high quality of output. My regret is only for one or two that missed out. One submission, where an industrious Berkeley student employed an algorithm on his drawing to randomly start erasing it like a digital rubber, resulted in a brick pavilion of a particularly haunting, diaphanous nature. It's an example of what the judges were looking for; when the technique informs the output - when what is not there becomes as crucial as what is. 'Technology was used to embody the idea of decay and erosion, rather than just representing it', said Fernie, 'That's what makes it so lovely.' •

Culture Eye Line drawing competition



People are the tokens in this chaotic, luminous world, bouncing around the coruscating pinball city 'Medal' of its urban landscape



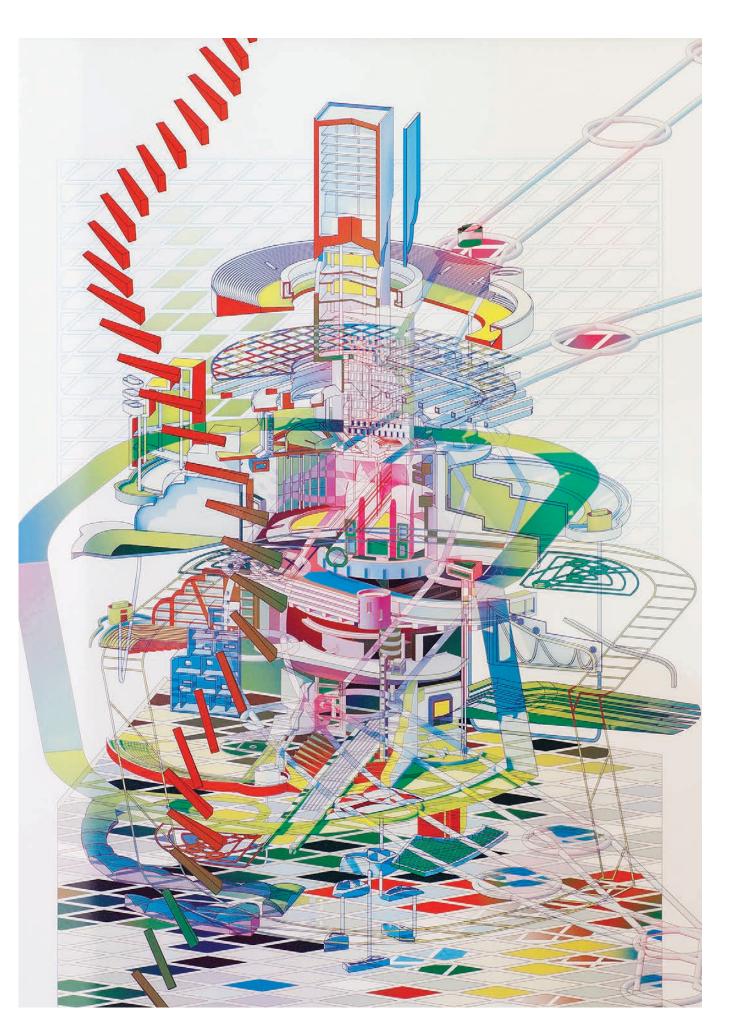
First winner

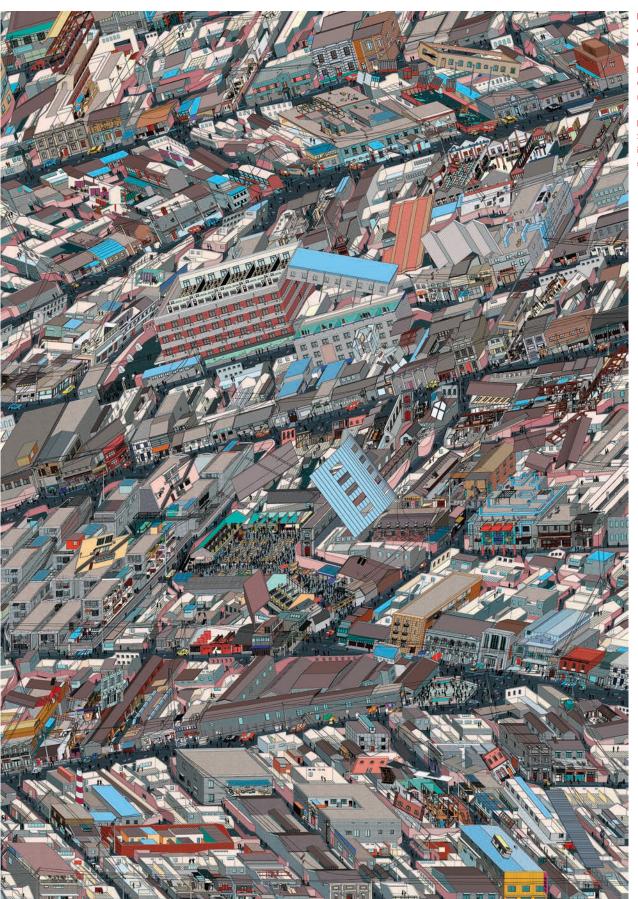
Sandra Youkhana and Luke Caspar Pearson, You+Pea, London Tokyo Back-Up City; Medal 01

It's hard not to be thrilled by the sight and sound of Japan's ubiquitous pinball Pachinko Parlours. Their neon, strobes and deafening clatter of ballbearings offer the Japanese salaryman a form of sensory overload – a white noise of distraction from the drudgery of the day job. The pleasure's also an illicit one, the valueless 'tokens' won illegally swapped for cash via some nearby 'hole in the wall'. The parlours' cultural specificity proved to be the inspiration for London-based academic duo You+Pea's studies into the creation of a pop-up, back-up capital for Japan in the event of Tokyo's seismic number coming up.

People are the tokens in this chaotic, luminous world, bouncing their way around the coruscating pinball city 'Medal' of its urban landscape. The language is the schematic drawings of the Pachinko machines combined with the applied programme for the new city, coming together to form an 'intimate reflection of the supersaturated world of the Medal.'

3D modelled with hand painted textures, the idea of the world presented thrilled the judges universally, with Alsop declaring it 'a potential winner' when he first saw it and Robson calling them 'images of real drama.' Fernie likened their form to the work of the turn of the century Italian Futurists, 'excited' by their swirls and vortices and 'genuinely convinced by their framing.' Parry remarked: 'It's difficult to know what the original impetus was but it's as if a seed was sown and it blossomed.' The difficulty of categorising the images was what made them winners. 'I think it's great to see work that isn't framed in terms of conventional visual art or architectural practice,' concluded Fernie. 'It's rare you get to see that narrative.'





Left Dashilar – oblique drawing of contemporary hutong.

Right Tuan Jie Hu – Cubism's view of an old residential area.

Below right Qilou Old Street – 'the mask is melting and life is sprouting'.



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Second winner

Li Han, Drawing Architecture Studio, Beijing, China Qilou Old Street, Tuan Jie Hu & Dashilar Project

One half of a creative design office investigating 'new models for the creation of contemporary urban culture', architect Li Han's studied observations of the expanding megalopolis of Beijing, while having immediate associations with the likes of Zaha Hadid's early work and Cubism, have nonetheless a raw energy all of their own.

In two dimensions, Li Han attempts to explain the three dimensional complexity of the ancient low level Hutong areas of the Chinese capital and the breathless expansion of the city's population, its need evidenced in the rise of high towers. The polar opposites of these two are then brought together in his Dashilar Project drawing, a scheme acknowledged as bringing together the best of the two worlds. This spirit of tradition, post modern frenzy and millennial morphology almost sing from each individual image and work in mesmerising visual harmony when the three are read together. The images almost defy focus, forcing both eye and mind's eye to slip about on their surface – evoking the disarming complexity and information overload of the contemporary Asian city.

The judges were impressed by the power of the images. Alsop and Parry both found them 'amazing', with part of the allure being the way they flipped between the real and illusory and back again. Robson likened their curiously confounding quality to 'a Google Maps 3D view that hasn't buffered correctly', yet Parry noted that 'on studying them the structure of the buildings comes through with real legibility.' Pearman felt there was 'something of Zaha to the work'; Fernie meanwhile, looked beyond the current architectural language associations of the drawings to 'the influence of 1920s Braque or Picasso' to this 'genuinely exciting work.'





Third winner

Corina Tuna, The Cass, London Metropolitan University Bungamati Studies, Nepal

In November 2015 Corina Tuna visited Bungamati in Nepal, a peri-urban village on the outskirts of Kathmandu that had suffered in the area's devastating earthquake of April 2015. Her aim was to come to an understanding of the physical and sociocultural effects of the event on such communities, and to get an understanding of how they might repair themselves in a safer and more sustainable way. Her work took on board the new, subsided topography, the move of the Newari community from destroyed homes to the forest fringes in temporary accommodation on reclaimed common land. But it was propositional too. Tuna looked at building new homes using courtyard forms on the perennial terraces, where grey water would be treated to ensure clean run off to the village stream.

The images, despite an almost Hergé, Tin-Tin-like naivety, in fact belie what the judges felt was very acute first hand observation coming together with a propositional sensibility to create understated drawings loaded with information and potential. Pearman was taken by the way Tuna's hand drawings moved from surveying the damaged site with new interventions to imagining the new semi-urban spaces defined by the courtyard forms, and a near-future view of the repairing community. Hunter said: 'You can see the technical skill in all the images and a veracity that makes them fresh'. Parry was 'intrigued by the temporary and nomadic qualities of the spaces she's evoking,' and Alsop agreed, saying: 'She seems to be really able to control the atmosphere she's conveyingand that's a real skill.'

All agreed that Tuna's measured work on postdisaster reconstruction was a 'good antidote to the abstraction of some of the submissions'.



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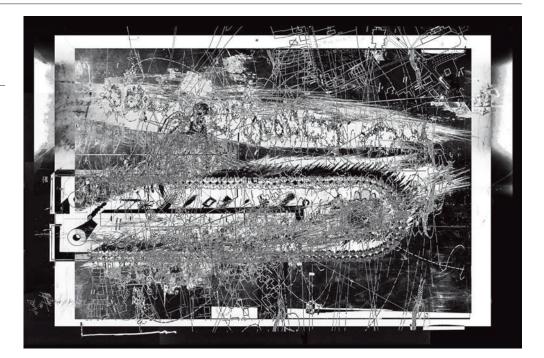
You can see the technical skill in all the images and a veracity that makes them fresh

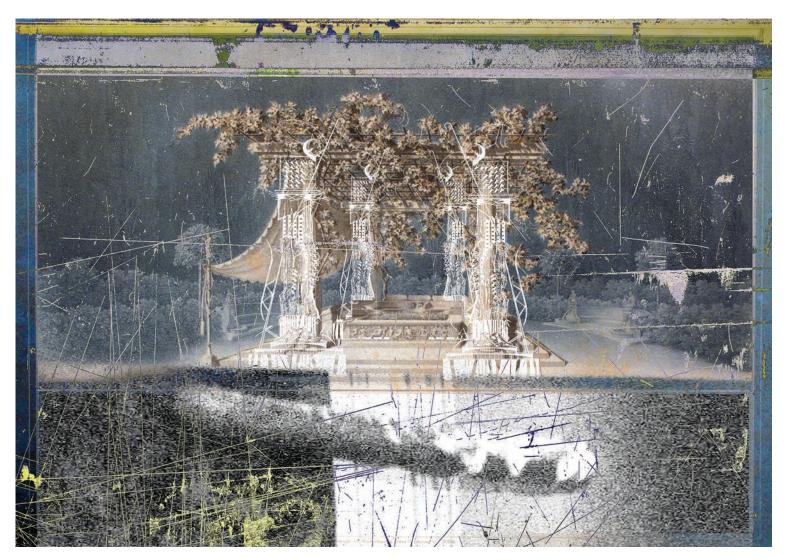
Commended

Neil Spiller, Hawksmoor chair of architecture, University of Greenwich

Skybadium and Hippodrome, Lebbeus Syzygy, Skybadium as a baguette floats past

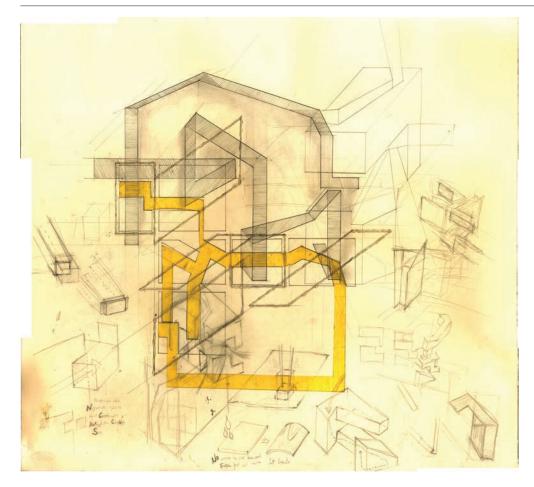
It's intriguing that for a tutor whose unit students generally dive head first into digital multimedia and complex video work, Neil Spiller himself remains an entrenched proponent of pen and ink. His work this year seems an extension of his prize winning Eye Line submission from last year, delineating the barely imaginable with utterly conventional tools. Spiller's Skybadium almost defies explanation but his belief in it is manifested in the sheer intensity bursting off the page, with his homage to Lebbeus Woods bearing his own unique imprimatur. Alsop declared himself 'more than happy to have his work included,' with Fernie agreeing: 'It would just be weird to not include him – he clearly has incredible skill.'







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Commended

Zunheng Lai, Harvard School of Design Door and Draw, Stack, Carve

With the complexity of some of the submissions, perhaps it was the simplicity of Zunheng Lai's work that caught the judges' imagination. Lai's approach was a back to basics one, influenced by Tanizaki's 'In Praise of Shadows' and the ideas crunching, intense sketches of Carlo Scarpa. Both, Lai says, are an approach to 'convey a sense of the sublimity of everyday life.' So we're presented with rays of morning light through a door, an analysis of 'being' rather than 'speculation'. The latter is addressed in his second image with everything recorded, both of a design and the passage of its creation; the taping, marks and staining that this involves 'a testimony to the raw and spontaneous non-linear design process'. 'Everything is registered, either visually or chronologically,' said Fernie. 'It really looks like he's trying to work something out.'

Commended

Paul Woodruffe, academic leader undergraduate, Unitec Institute of Technology, Auckland, New Zealand

Boundary Conditions

Woodruffe's work, part of a project that he says was 'exploring the boundary conditions of three buildings, representing the three types of architecture present on a site that borders a public park', intrigued the judges with an almost Primitivist freshness that they had not seen exhibited in other submissions. Here, the spaces between the elements are as important as the elements themselves, with Fernie bowled over by one image in particular, seeing a compositional power to it not evident in the other two. Woodruffe added that the drawings were the result of multiple site visits and a collective analysis of the way architecture and landscape responded to our excursions into the contested spaces. The resulting work hints at a disjunction between the two, simply expressed, as Pearman noted, in its 'deliberately naïve style'.



Culture Eye Line drawing competition









Commended

Regina Shi Qi Ng, Architectural Association, London Alchemy of Abjection, Sewage Metropolis, Triptych: Halls of Alchemy

Consider the great 6th century Basilica Cisterns beneath Istanbul, the ambition of Bazalgette's Victorian Embankment and Tokyo's cavernous Underground Discharge Channel, designed to save Tokyo from flooding. But those great predecessors don't daunt Regina Shi Qi Ng, whose investigations into possible hydraulic architectures are both impressive and evocative. She pulls in William Blake, artist Piero Manzoni and perhaps, as Pearman noted, architect John Outram, to create her mythical water temples at Crossness sewage treatment plant at Thamesmead. Alsop said the work 'inspired in its visionary aspects,' while Fernie found their multi-coloured joy 'a wonderful foil to all that black and white madness.' While not a prize winner, all the judges acknowledged the drawings' power in their 'epic treatment of effluent'.



To be romantically nostalgic would be hopelessly unproductive, yet it seems an inevitable conclusion that something has been lost

Commended

Sofia Anja Singler, Yale School of Architecture Agricultural Co-Operative School, Clarinda, Iowa

'There's a slightly haunted, Hopper-esque quality to her proposal for an agricultural facility in Iowa,' said Hugh Pearman. That quality is justified; agricultural traditions in the rural US mid-west, Singler explains, are no longer transferred between generations so skills and knowledge of that land must be transmitted, not by inheritance, but through re-learning. Studying under Demitri Porphyrios, Singler has produced an educational facility elevation, 'a mixed overlay of watercolour, pencil, pen, CAD line work and newspaper cuttings', that has a consequential feel that impressed the judges. Eric Parry loved 'the technique that produced its distant, objectified quality', with Fernie feeling that if her other images had been similarly loaded 'we could have been looking at a potential winner.' Singler said her image 'hints at the critique it offers of the present day; to be romantically nostalgic would be hopelessly unproductive, yet it seems an inevitable conclusion that something has been lost.'



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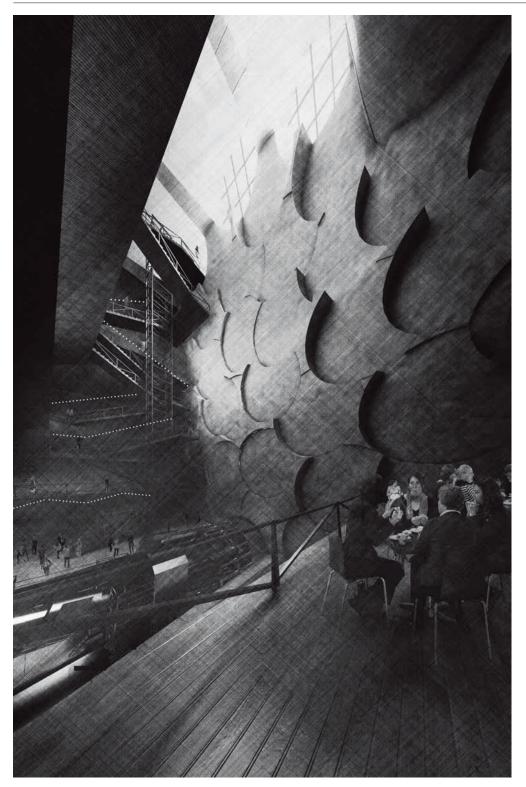
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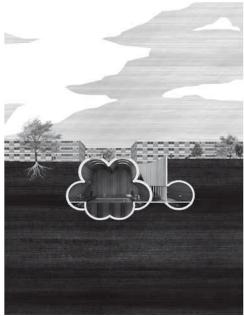


Obsessively crosshatched drawings reminded Fernie 'of 1950s melamine kitchen work surfaces'

Commended

Ciaran Scannell, Royal College of Art, London Subterranean Swimming Pool, Tunnel Boring Machine details, New LSO Subterranean Foyer

Scannell's got a thing about tunnels. Not surprisingly his submission ended up at the extreme end of Eye Line's chiaroscuro spectrum, his obsessively crosshatched drawings, which Fernie described as 'reminding me of 1950s melamine kitchen work surfaces' nonetheless possessing a somewhat Piranesian quality. This could be due to the fact that beyond the construction of the tunnel infrastructure for HS2, the boring machinery could be put to far more luxurious use; in this case for swimming pools below Regent's Park and a new home for the London Symphony Orchestra. Scannell's tunnel boring detail engaged the judges with its reification of the drills' parameters and spatial possibilities, while his pool and orchestra foyer were, according to Fernie, 'stunning spaces'. This last image, its walls etched into by the machinery that created it was, according to Hunter, 'amazing and atmospheric'.



Naturally better

Biophilia sounds a much richer route to sustainability than simple carbon emissions counting. Seven architects set out to find out more

Interface®

Unpick the word biophilia and a little basic Greek tells you it is about love of the natural world. For Oliver Heath, TV presenter, architectural designer and biophilic design ambassador for global carpet tile manufacturer Interface, tapping into biophilia's emerging science is a compelling way to take sustainability beyond mere carbon calculations to understand its impact of the natural environment – and us humans.

To further inform the profession about the value of biophilic design, Interface and Open-City curated and led a tour of some of the best projects. Beetling about in a minibus around London may not be the obvious way to draw out discussions on how biophilia might be applied to architecture. But visiting five of the projects, some nominated by readers of the RIBA Journal, produced an energetic, informed and sometimes divided debate that left the seven architects from practices as diverse as Roz Barr Architects, NBBJ, Ben Adams Architects and Feilden Clegg Bradley Studios enlivened – if foot sore. Led by Heath and Open-City director Rory Olcayto, the tour took in two Stirling Prize winning buildings, a self-proclaimed biophilic work space, a swimming pool on a construction site and the concrete bastions of the Barbican.

This investigation into biophilia has been prompted by Interface, whose founder set a radical goal in the 1990s to eliminate any negative impact by the firm on the environment by 2020. Translating this into design, Heath looks for spaces that connect with nature, from views of plants to the importance of daylight and the use of natural materials and patterns. He also points out the importance of creating spaces that allow inhabitants to enjoy and benefit from this proximity to natural elements – be it the restorative, recuperative or energising effects.

Everyone in the group agreed that these are things most architects try to incorporate but when it comes down to difficult decisions on values that sense of what is right is harder



to back up. Interface's recent global survey shows that 47% of workers have no natural light in their office and 58% have no plants. This is despite research into the benefit to physical and cognitive recovery times plus the reduction of absenteeism. Interface research shows that reported creativity is up 15% in work environments with natural elements and the reported level of well being is similarly increased. This is recognised in the way the Well Building Standard touches on some biophilic principles.

But nothing beats experience. The building visits proved a very powerful way to see some of the most effective applications of biophilic principles. The most telling and touching was the Stirling Prize winning Maggie's Centre in Hammersmith, designed by RSHP. Bernie Byrne, who runs the centre, explained that it was all about feelings. The landscaped path from the hospital entrance enfolds you with cool green. Inside, the courtyard is visible from most of the rooms but you are never confronted with the landscape - like the partially obscured buses outside - rather you glimpse it in the periphery. 'It is part of mindfulness and being in the moment,' Byrne explained. One architect described it as setting up 'an intimacy with nature'. With timber surfaces and plenty of places that offer both a sense of prospect and refuge, it even has its own rainbows thanks to the glass bridges. Here, where illness and wellness are so closely entwined and the building itself is part of the healing offered, it was interesting to see quite how much nature, light and natural surfaces contributed.

The second stop was another Stirling Prize winner, AHMM's Burntwood School. The lesson here was about the sheer importance of a green campus and giving views out to it, including from corridors. Appropriately its logo is a multi-coloured tree. The deputy head described the

The visits proved a powerful way to see some of the most effective applications of biophilic principles grounds as important to the pupils 'to stop them going stir crazy... it may be their only outdoor time.' This pragmatic aspect contrasts with the office space cum club of Second Home on the City fringes. This is dubbed a biophilic space by the founder, peppered with over 1000 plants amid curving transparent polycarbonate walls. Its visual busyness, and lack of sunlight deep in the plan, provoked much debate. The group had some serious questions: Surely sunlight is a critical element? And aren't all those pot plants just window dressing?

Next stop, the King's Cross Pond Club, raised more issues for the city wide scale. A naturally filtered outdoor swimming pool in central London sounds like paradise but does it offset the super high density of the development around it? As we turned back the clock to the last century in our next visit, one-time expedient decisions by the Barbican resulting in a conservatory to disguise its large fly tower were also questioned. What was the brief? And why is it that public and even resident access is so limited even now? Externally, the gardens and water features, some of which almost engulf you, won more support for the Barbican.

It is easier to judge visual elements of design of course, but the ensuing discussion also drew out the importance of other senses, the whiff of rainforest in the conservatory, the cascade of fountains, the touch of materials. It led to wider questions of how we use our spaces, from the static to a more dynamic natural way of working. This tour showed the importance of dash of sunlight, a blast of green and getting away from the office chair, whether to study biophilia or just to allow your brain a space to reset. •



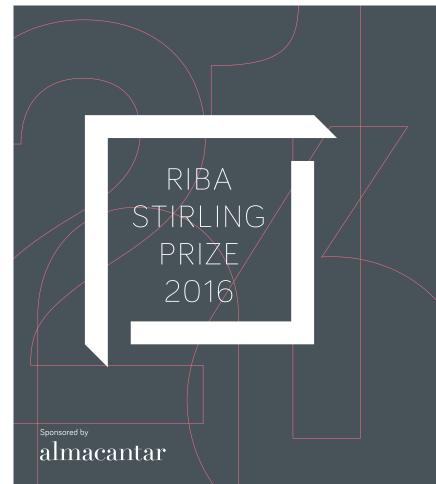
Opposite page Plants frame the outside world in green at Maggie's in Hammersmith.

For evidence on biophilic design including Interface's Human Spaces The Global Impact of Biophilic Design in the Workplace report see http://humanspaces.com/ For a guide to biophilic spaces in London visit interface.com/ biophilic-guide

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TIMOTHY SOAR



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Razed for no good cause

With cultural genocide on the rise worldwide, Robert Bevan's 'The Destruction of Memory' has been turned into a poignant film

Jan-Carlos Kucharek

In an irony that was only later to manifest itself, the day before the stories started trickling through of Islamic State's vandalism of the remains of the ancient city of Palmyra in Syria, I found myself in the newly restored Model Room in Sir John Soane's Museum staring at antique scale models of the city's temples, carved by Focquet from plaster of Paris and no doubt used by Soane as an inspiration and teaching device for his understudies. These delicate records became, in that short time, momento mori of something that had withstood the ravages of history only to fall victim to fundamentalist guerrilla warfare, their destruction coolly recorded on video; part of a terror campaign conducted as much on social media as the battlefield.

In the 10 years since Robert Bevan's important book 'The Destruction of Memory' was published in 2005, it is a sad fact (that will come as no surprise to the author) that the conscious vandalism or destruction of cultural monuments is not only ongoing, but increasing. Bevan's account of the night that Sarajevo's neo-Moorish National Library was deliberately targeted and burned out by Serbian forces in 1992 is moving, eyewitnesses talking evocatively of burning pages from the 2 million books that were destroyed fluttering around in the night sky.

In the new documentary film of Bevan's book, in which he is interviewed, this heinous act and the destruction of Mostar Bridge disturbingly make up its beginning rather than the book's original endpoint. IS videos of the sacking of the Iraqi National Museum A soldier patrols in front of Djinguereber Mosque, Timbuktu. Image by Francois Rihouay from 'The Destruction of Memory'

and the beheading of the brave Palmyra curator Khaled al-Asaad, who refused to disclose to them the whereabouts of its most precious hidden artefacts, are shown as just moments in a continuing litany of cultural terror.

Film and book describe the methodical obliteration of culture as a very 20th century phenomenon, according with the ability to mount industrial scale salvoes due to advances in weapons technology. It might have started with the expulsion of 2 million Armenians from the Ottoman Empire in 1915 and subsequent demolition of any legacy they had there, but the Allies, it's argued, were as guilty as the Nazi regime when it came to the blanket bombing of cities during WWII. In the wake of this it was Polish jurist Raphael Lemkin who first came up with the definition of genocide and within that 'cultural genocide', but the Allies' own wartime culpability meant that the 'cultural' aspect never made it into the statute book of the United Nations' 1948 anti-genocide Resolution 260.

Some redress was made in the 1954 Hague Convention for the Protection of Cultural Property, but even this had its loopholes, specifically in the proviso of 'military necessity', able to be cited by any power justifying its use of force in conflict. The key point being made in writer, director and producer Tim Slade's film is that this waiver justifies what happened not only in WWII, but also in the Balkans conflict from 1991-2001, including the systematic erasure of most of the country's mosques in the wake of Milosevic's shocking ethnic cleansing during the Yugoslav wars. The film argues that until cultural genocide becomes part of humanitarian law, as Lemkin originally intended, the 'military necessity' clause will continue to be evoked and the perpetrators of such destruction will continue to evade justice.

There's a touching caesura in the village of Baljvine in Bosnia and Herzegovina, where the ethnically diverse community came together to ensure its mosque was saved, but on the whole the film makes for grim, sobering but necessary viewing. The Tomb of Jonah in Mosul, Iraq; Aleppo and Homs in Syria; the mausolea of Timbuktu in Mali were all damaged or destroyed despite the latest UN Resolution 2199 on IS putting the destruction of heritage on par with other peace and security issues. The Mali mausolea were the subject of a landmark prosecution this year at the International Criminal Court for cultural destruction.

But in Aleppo in Syria, a century after Armenians were displaced here following the pogrom in Turkey, and the terrible human cost aside, the bombed out ruins of this great, historic trading city (and the refugee crisis itself) are testimony to our shocking inability to learn anything from history. 'The dead are dead, we know that,' cites cultural heritage preservation officer at the Smithsonian Corine Wegener at the film's start, 'But without our culture the rest of us can't go on living.' I once tasked myself and failed to name a work of architecture that had moved me to tears. After watching this film, I realised that it's not a building's physical beauty that might cause me to cry, but its physical absence.

'The Destruction of Memory' will be screened this summer and autumn. Details at: destructionofmemoryfilm.com/screenings



Stirling's final six

Hugh Pearman samples the latest distillation of the RIBA awards, the projects that have made it through to the Stirling Prize shortlist

Hugh Pearman

Another year, and once again everyone's cue to get ready for the summer holidays is the announcement of the six-strong Stirling Prize shortlist – the 21st. Between now and prize day on Thursday 6 October, we have time to ponder the respective merits of three very different educational buildings, a public art gallery, a high-density housing estate, and – rare for the Stirling shortlist – a one-off private house.

So let's start with that. Outhouse by Loyn & Co in Gloucestershire, is further proof that these Penarth-based architects led by Chris Loyn are seriously good. An earlier house, 'Stormy Castle' won the 2014 Manser Med**Above** Herzog & de Meuron's Blavatnik School of Government in Oxford.

Below Outhouse by Loyn & Co Architects.

Below right Wilkinson Eyre's Weston Library for the Bodleian, again in Oxford. al (now RIBA House of the Year). 'Outhouse' hunkers down with its green roof into a hillside, its inside/outside design providing incredible views for its artist owner across to the Rivers Wye and Severn. A classic piece of rural domestic modernism, it is the first solo house on the Stirling shortlist since a London house by Eldridge Smerin, 15 years ago.

Then comes a brace of Oxford buildings. Chalk and cheese, these. At one end of town you have the swooping, glittering geometric exercise of the Blavatnik Centre by Herzog & de Meuron. This is a School of Government – it teaches people how to rule, be they politicians or civil servants, and it's not shy about it. How very different from the old cloistered Between now and 6 October, we have time to ponder the merits of three educational buildings, a public art gallery, a highdensity housing estate, and a oneoff private house







idea of Oxford learning in the historic centre represented by the Bodleian's Weston Library. This previously hermetic, overlooked stone-clad library building from the late 1930s by Sir Giles Gilbert Scott has been imaginatively refurbished, extended and adapted by Wilkinson Eyre. But it too now has a much more public face, a new entrance and lofty agora inside making it almost like a regional version of the British Library – complete with exhibition gallery and café.

The third educational building is far away from the dreaming spires, on the banks of the Clyde in Glasgow. The City of Glasgow College by Michael Laird Architects and Reiach and Hall is part of the now nearly complete Riverside Campus of vocational studies, including, for instance, an impressive simulator teaching you how to sail a large merchant ship. This is a composition which is as much about making dignified new civic space as it is about bringing together a variety of functions.

You'd expect to find an ambitious arts building on the Stirling shortlist, and there's a highly unusual one this time: Newport Street Gallery by Caruso St John on behalf of its ultimate client, artist Damien Hirst. This is a row of unusual Victorian industrial buildings – stage sets used to be painted here – bookended by new additions. Inside it is perhaps more conventionally white-box-gallery than you might expect from Hirst, but it's a highly impressive series of spaces nonetheless and shows the eye for ultra-detail we associate with this architect. Although a private venture, it is philanthropically free to the public.





And finally we have housing in the form of Trafalgar Place by dRMM Architects. This is part of the sometimes controversial redevelopment of Southwark's Heygate Estate: 235 homes cleverly varied by scale, with imaginative use of brick and set in part-mature landscape in such a way as to make a much more humane environment – a result of local consultation – than the old megablocks it replaces. Apartments aside, it's all about public space and connections by means of an excellent ground plan.

Above City of Glasgow College by Michael Laird Architects and Reiach and Hall.

Left Stair at Newport Street Gallery by Caruso St John.

Right Trafalgar Place housing by dRMM.



erations to come.'

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in Rotherham, 2001, Gateshead Millennium Bridge, 2002), once in the case of Herzog & de Meuron (Laban Dance Centre, 2003). Others there have made previous shortlists, namely Reiach and Hall, Caruso St John and dRMM. Jane Duncan, RIBA president, not only noted the exemplary education-sector clients for half of the shortlist, but also highlighted the importance of sponsors in enabling certain buildings to happen – the Blavatnik Family Foundation, the Garfield Weston Foundation and Damien Hirst. Overall, she says, 'their stand-out common quality is the inspiration they will bring to those who study, live in, visit and pass by them, for gen-

Peng, developer Mike Hussey and Rachel

Whiteread, artist. This year's shortlist con-

tains two previous Stirling winning archi-

tects from three successive years - twice in

the case of Wilkinson Eyre (Magna Centre

Finally, if you want to see what did and didn't make the final cut, have a look at our national awards round-up online. And happy holidays!

ribaj.com/buildings/variety-spices-ribanational-awards



The Crucible Theatre Sheffield, 1960s

The Crucible Theatre in Sheffield was designed at the end of the 1960s, at a time when several architects were experimenting with the polygonal plan – not least Powell & Moya with their Chichester Festival Theatre of 1962. The Crucible's plan is based on the octagonal form and its spaces are largely defined by 45° angles. Its most distinctive feature is the thrust-stage, which allows every seat to be relatively close to the performance, in a layout reminiscent of the Greek theatre. The first of a series of theatres designed by Renton Howard Wood Associates, it was built on a sloping site in the centre of Sheffield where the original street grid no longer existed. The architect therefore conceived a building that could be approached from every direction. This photograph by John Donat highlights the circulation flow within the building, from the entrance foyer up the stairs and around the auditorium, as well as the different types of concrete surfaces employed – limestone aggregate blocks, varnished barefaced concrete walls and brightly coloured painted ceilings. The building, which has been home for more than 40 years to a successful regional theatre as well as televised snooker tournaments, gained grade II listing status during its refurbishment, completed in 2010. • Valeria Carullo

RIBA Journal www.ribajournal.com Published for the Royal Institute of British Architects by RIBA Enterprises Ltd Registered office: The Old Post Office, St Nicholas Street, Newcastle upon Tyne NE1 1RH. Registered in England 978271

Printed by Acorn Web Offset Ltd in association with Logical Connections

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