

FOR LEISURE ARCHITECTS, DESIGNERS, INVESTORS & DEVELOPERS

KENGO KUMA

“Architects
should never be
the winner”

BEAUTIFUL BATHHOUSES

Is timber the
future for tall
buildings?

Ma Yansong

On battling
conservatism

A man with dark hair, wearing a dark blue blazer over a light-colored button-down shirt and dark trousers, is sitting on a chair. The chair is made of numerous curved, dark-colored wooden slats that create a rhythmic, wavy pattern. The background is a plain, light-colored wall. The overall lighting is soft and focused on the man and the chair.

PATRIK SCHUMACHER

The next chapter for Zaha Hadid Architects



GOCO RETREAT UBUD
Bali, Indonesia



GOCO RETREAT NIUTUO
Greater Beijing, China



GOCO RETREAT THIMPHU
Thimphu, Bhutan



THE SPA AT STEIGENBERGER FRANKFURTER HOF
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“ Personal pollution sensors will guide where people spend time ”

The era of WELL buildings begins

With pollution affecting the health of the vast majority of the world's population, the buildings of the future will either add to the problem or shelter us from toxins, help clean the air and create safe and much sought after havens of healthfulness

“ Imagine how devastating it would be if a building you were involved with was rendered permanently unuseable, your insurance didn't cover you and you had to carry the economic impact of that outcome. This scenario is one architects, designers, investors, developers and operators will all face in the near future.

We're fast approaching a time when people will wear or carry pollution sensors and these will guide decisions about where they spend their time. Air and water quality, light and material off-gassing will all be constantly monitorable and if a building or environment is toxic, people will leave as swiftly as they're able.

Buildings and places will be quickly identified as toxic and will plummet in value. Who would want to stay in toxic hotels, work in toxic offices, send their children to toxic schools or live in places which undermine their health and wellbeing?

Here at CLAD, we think the arrival of pollution sensors will create a revolution in architecture.

Everything will change, as consumers exercise their choices in their millions and developers, investors and operators scramble to ensure their real estate is clean.

We'll see the value of some properties soar, while others become less than worthless – they'll actually become a liability. Buildings will be graded by the quality of their environments, with star ratings for healthy buildings.

And so we'll enter the era of WELL buildings – a time when health and wellbeing are the starting point for all developments, rather than a superficial afterthought.

While sustainability – via standards such as LEED and BREEAM – has been a precursor to WELL and heralded it in some ways, the new era will be very different because it concerns the

WELL buildings will be about the individual not the corporation and interest will be driven by fear

individual, not the corporation and because it will be driven by fear as well as altruism.

And while toxic buildings damage health, WELL buildings will protect us from toxins and create healthful environments: shocking new research just released by the World Health Organization (WHO) found 90 per cent of the world's population is “breathing air which is damaging to health”. Millions are dying as a result.



WHO says 90 per cent of people are breathing unsafe air

WELL buildings will be havens from this pollution, screening out the toxic particles which cause cancer, heart attacks and lung disease and creating environments which promote life.

As a carrot and stick, it doesn't get any more compelling.

Liz Terry, editor, CLAD @elizterry

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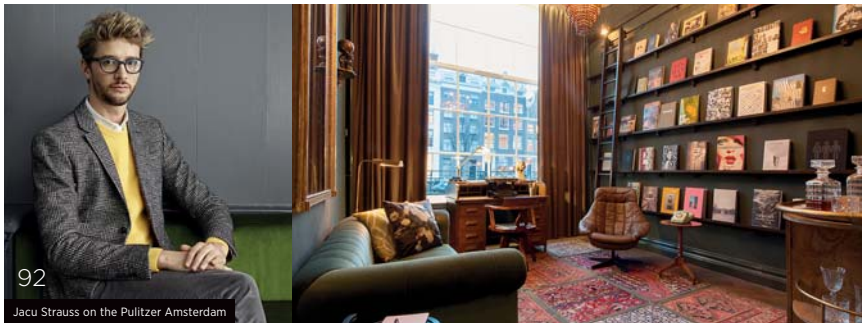
Crowdfunding can empower architects, but knowledge of the challenges is vital, finds Kath Hudson



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Ma Yansong speaks out



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Koen Olthuis: floating buildings are the future



CLAD

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CLADglobal, the organisation behind CLAD, is a media business creating magazines, books, websites and digital feeds to enable CLAD professionals to share news, opinions and best practice. Find out more about the CLAD portfolio at CLADglobal.com

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It's the biggest area of consumer expenditure in the developed world and the biggest driver of growth in the developing world.

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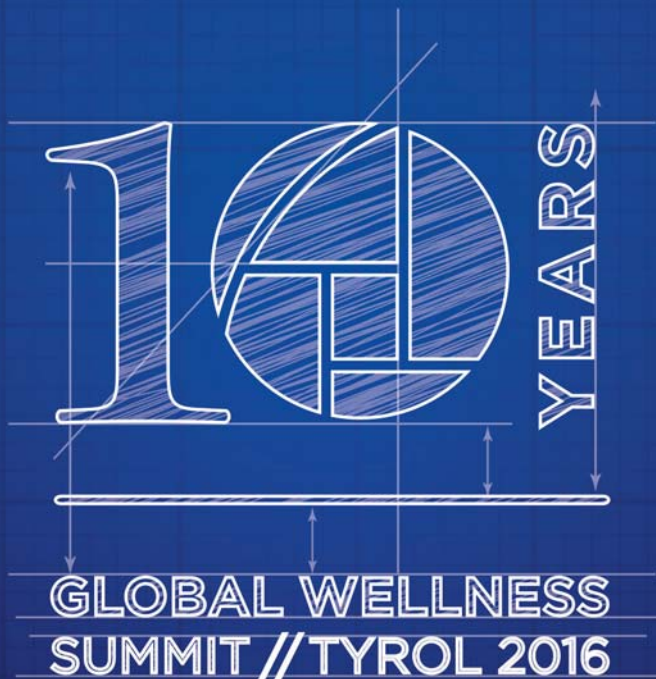
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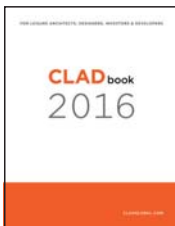
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CLAD People

“The designs portray the drudgery and strenuous nature of miners’ daily lives”

Peter Zumthor architect



PROJECT
Allmannajuvet,
Norway

PHOTO: MARTIN ANSCHUTZ/LEMO, COURTESY OF PETER ZUMTHOR & PARTNER

Peter Zumthor created three buildings at the site of the old Allmannajuvet zinc mines

Work has been completed on a unique project for Norway's National Tourist Route (NTR), with a cluster of prefabricated structures by Swiss architect Peter Zumthor creating a selection of viewpoints and architectural rest stops as part of a project dating back 14 years.

Allmannajuvet – which was first conceptualised and commissioned in 2002 by the Norwegian Public Roads Administration – is now open to the public, with the Allmannajuvet zinc mine site now featuring a mining museum, café and toilets. The café and museum are raised above the ground on timber supports, sitting over the rocky landscape of the mine. The service building – which contains the toilets and parking facilities – sits on the side of a stone wall.

According to the architect, the designs portray the "drudgery and strenuous nature" of the miners' daily lives, with each structure assembled on site and fabricated with an exterior plywood cladding.

The zinc mines themselves date back to 1882 when 12,000 tons of zinc ore were produced up until 1898. The site was later repurposed as a tourist attraction and is one of 18 designated tourist trails that cross Norway's fjords, islands, cliffs and boulder fields. ●



Zumthor's service building sits on the side of a stone wall (above). The buildings provide a strong visual contrast with their surroundings landscape



PROJECT

Sheraton Grand
London Park Lane,
London, UK

“We were very
conscious of the heritage
we were dealing with”

Maria Vafiadis founder MKV Design



Respecting the hotel's
heritage was key,
says Maria Vafiadis

The Sheraton Grand London Park Lane (formerly the Park Lane) in Mayfair, London, relaunches this month (October) following a multi million pound renovation and redesign by interior designers MKV Design and architects Woods Bagot.

The two year project has seen the hotel's 303 guestrooms completely redesigned, and the addition of a new bar and restaurant at street level, a redesigned reception lobby and upgraded public areas including the famed Palm Court Lounge. The Grade II listed Ballroom and Silver Gallery also underwent a sensitive restoration as part of the project.

MKV drew on the hotel's Art Deco heritage with the interiors, completely stripping back the guest rooms and adding contemporary features in keeping with the building's history. The schemes are discreetly glamorous with Art Deco touches, including polished silver finishes on furniture, bevelled mirror panels above the full length of the bedhead and 'Deco inspired wall lights. Guestroom bathrooms are finished in classic black and white tiling, and fittings also subtly refer to the building's provenance.

One of the challenges of the project for MKV was replanning the public spaces to enable guests to navigate and understand the layout of the building more easily. "Space planning was central to the redesign particularly in the ground floor public areas where we had to work around existing structures including several



The hotel's historic Art Deco features were carefully restored

imposing columns and changes in floor level," says Maria Vafiadis, founder and MD of MKV.

"We were very conscious of the heritage we were dealing with in this large and prominent listed building on London's Piccadilly, which has the distinction of being both the first hotel in London constructed with a steel frame back in 1927 and also the only hotel remaining in the capital with extensive Art Deco interiors."

The hotel's listed status added an additional layer of complexity to the project, says Vafiadis. "Every material used on and in the building had to be submitted for Listed Building Consent and samples provided for approval, requiring a close relationship with the architectural team."

For Vafiadis, renovating the Palm Court Lounge was a particular highlight of the project. "The Palm Court is the area that most clearly expresses the hotel's Art Deco glamour and best represents the next chapter in its history," she says. "It is the jewel that sits at the heart of the revitalised ground floor public areas, with the new bar, restaurant and executive lounge areas all spanning off it."

MKV has also recently completed a major refurbishment of the Hotel Royal Savoy, Lausanne in Switzerland.



The Palm Court Lounge was renovated as part of the project

“This is the first of these towers, but it might not be the last”

Julia Barfield

Managing director Marks Barfield Architects

PROJECT

i360, Brighton, UK



Julia Barfield and David Marks also designed the London Eye

Julia Barfield has told CLAD that the British Airways i360 'vertical pier' that opened in Brighton, UK in August, could be replicated elsewhere.

"We're open to suggestion, put it that way," she said. "This is certainly the first of these towers but it might not be the last. A future model likely would not be identical – I'm a true believer in making the projects fit their context. We would have to adapt it for its surroundings. This fits the West Pier (in Brighton, UK) nicely but you would have to consider particularly the base building and how it sits. Future iterations would be designed to be bespoke to their surroundings."

Designed by Marks Barfield Architects, the British Airways i360 is the world's first vertical cable car, tallest moving observation tower and most slender tower. It sits on the foundation of Brighton's former Victorian-era West Pier, which was destroyed by an arson attack in March 2003.

"When the West Pier was built and when the Palace Pier was built, there was a sort of rivalry between them," said Barfield. "It was all about enjoying the view back to Brighton as much as enjoying the air and the promenade. This is really a vertical way of replicating that."

"We wanted a small space with a great view and this was the way to do that," she continued. "The footprint of the tower itself is 3.9m (12.8ft) in diameter. The pod for this tower is at the limit of what a tower this size can take, with 200 people able to board at one time."

Marks Barfield worked on the project with constructor Hollandia, local engineers Mackley Construction, pod-maker Poma-Sigma and Italian glassmaker Sunglass. The i360 cost £42.2m (US\$56.2m, 50.3m) to develop, funded in-part by a £36.2m (US\$48.2m, 43.1m) government loan.

PHOTO: VISUAL LAB



The i360 opened in August following 11 years of development

ray hole architects - Practice Profile

ray hole architects is a specialist international, award winning architectural practice with over 25 years experience gained through delivering a broad portfolio of visitor attractions and experiences - *wildlife (animal and botanic), cultural, science, industrial, educational, man-made heritage and natural history, sports, brandlands, museums, themed environments, hotels and restaurants* – across a range of locations and a rich diversity of cultures.

Our belief is that creating 'architecture' is a very important criterion of a much broader responsibility, providing the means by which greater value can be created for our clients, stakeholders, end users, society in general and the environment. We strive to achieve this through realising achievable, yet technically innovative and sustainable design solutions. Our projects are informed by active exploration of as many influences as possible which allows us to develop a design attitude which differentiates our approach to completed work. This combination of attitude and understanding has provided us with opportunities to play an influential role of redefining the UK and International visitor attraction sector.

We have a proven track record of working on projects ranging from; the multi-billion pound London Paramount themed resort at Ebbsfleet to the Volkswagen AG Brandland – Autostadt, Wolfsburg; from the first UK based Kidzania at Westfield, White City to the Rainforest House for the Herrenhauser Garten in Hannover; from the Gold Medal and RIBA Award winning *Snowdon Summit Building – Hafod Eryri* - to the Heritage amusement park at *Dreamland, Margate* and the re-masterplanning of *ZSL London Zoo*.

Equally, maintaining an understanding of cultures and trends within the visitor attraction sector itself is fundamental to our ability to deliver relevant, engaging, commercially sound, operationally efficient and enhanced revenue generating facilities.

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RIBA Award Hafod Eryri – Snowdon Summit
Gold Medal for Architecture T Alwyn Lloyd Memorial Medal



BHSTS Master Plan
Brighton



Fashion Hotel
Dubai



Rainforest House
Hannover



Int. Sports Village
Cardiff



**Ripleys BION
Museum**
London



VW Brandland
Autostadt



Bentley Pavilion
Autostadt



**Marwell Wildlife
Cafe Graze**
Hampshire



London Paramount
London



Grand Pier
Weston-Super-Mare



Restless Planet
Dubailand



Railway Station
Castellon



Kidzania London
Westfield, White City



Dreamland
Margate



Sports Campus
Newcastle



VW Pavilion
Autostadt



**Master Plan
ZSL London Zoo**
Land of Lions



**Balloon
Apartments**
London



Gorilla Enclosure
Durrell Wildlife



**Lingfield
Racecourse**
Surrey



**Snowdon Summit
Visitor Centre**
Wales

rayhole architects

...museums brandlands cultural attractions botanic gardens
zoos safari parks visitor centres themed attractions mixed
development heritage centres science centres hotels restaurants...

“The most important challenge is maintaining this old classical context”

Tadao Ando architect

Tadao Ando has told CLAD about his design for the ‘The Pinault Collection, Bourse de Commerce’, a new contemporary art museum in Paris which will house the vast collection of billionaire businessman François Pinault.

Pinault’s plans to transform the French capital’s historic Bourse de la Commerce into the museum were unveiled earlier this year, and were given the go ahead by the Paris City Council in July. Ando was selected to work on the project following

a previous collaboration with Pinault to renovate Venice’s 17th century Punta della Dogana customs house as an art museum.

Speaking exclusively to CLAD, Ando vowed to create a building for Paris that “will stand the test of time.”

“First and foremost, I create buildings for the people who use them,” he said. “Architecture in general is a public space, regardless of the typology. People will gather in this museum, and so it must be well designed – that is my responsibility.”

PROJECT
The Pinault Collection, Bourse De Commerce, Paris, France



Pinault’s museum will be housed in Paris’ Bourse de la Commerce, which was built in the 19th-century





Ando worked with Pinault to renovate Venice's Punta Della Dogana

He revealed he will approach the Bourse de la Commerce renovation in the same way that served him well in Venice. "The basic concept is the same – to take an old place and inside build a new world," he said. "The most important challenge is maintaining this old classical context and building something new which looks towards the future."

The Bourse, built in the 19th-century by architect François-Joseph Bélanger, is a circular structure topped with a high glass dome located close to the recently revamped Les Halles culture centre. Paris mayor Anne Hidalgo – who championed Pinault's vision and describes the project as "a gift to the city" – wants the renovated building to reinforce the city's reputation as home to some of the world's greatest art museums.

To ensure the building serves the Paris public as best it can, Ando is working on the project with local architect Pierre-Antoine Gatier and a group of young French students.

"I involved students on the Punta della Dogana design to improve international collaboration and to teach them the difficulties of architecture and the rewards it brings," he said. "They spent more than



PHOTO: NEAL SIMMONS/EMPIRIS/ISI ART

François Pinault

three months working on that project and I was very satisfied because they overcame many hardships and took away much satisfaction for themselves.

"My intention is to use this same approach in Paris. Collaboration is a positive step forward for the next generation and involving young students helps realise the concept of integrating the old and the new – the theme that runs throughout these projects."

The Bourse de la Commerce art museum is slated to open at the end of 2018.



Ando will recreate the process he followed for his acclaimed renovation of the building in Venice, which he showcased with models at the international architecture biennale in the city

PROJECT

Little Pine,
Los Angeles, US

Comfort is not always photogenic

Moby musician and restaurateur

Musician and restaurateur Moby – whose vegan restaurant Little Pine is approaching its first anniversary – has told CLAD that too many architects and designers ignore the needs of the people who will use their buildings.

In an exclusive interview about Little Pine and his design philosophy, Moby criticised designers “who think about stuff that can be photographed well, but who never actually plan on spending time in the spaces they create.”

“I have an issue with architects and designers who think about how the space is going to look when it’s on an architecture website, rather than how it’s going to feel for the people who either live there, work there or patronise it,” he said. “Sometimes certain things like comfort are not that photogenic, and if you’ve ever tried to live in a photogenic space that isn’t comfortable, it can be really upsetting.”

“I had a couple of nights in Madrid staying in a hotel room that Zaha Hadid Architects had designed. It looked amazing, but was the least comfortable space I’ve ever inhabited. There was nothing soft in there. Everything was

Moby believes public spaces should be designed to make people feel happy and comfortable

moulded plastic, which photographed nicely but wasn’t designed for humans.

“Literally sleeping in a dumpster would have been more comfortable.”

The design of Los Angeles eatery Little Pine – which Moby designed with local architects Studio Husto – to present veganism in a compelling way – is intended to evoke a “simple and unpretentious mid-century Scandinavian ski house”.

Largely inexpensive and “nice but very, very basic materials” were selected and laid out in a semiotic way to create a space where people can feel comfortable. Describing the design approach, Moby said: “Humans like certain basic things. We like light and we like comfort and we like safety. And I think a lot of good design can be really compelling as design, but also meet the basic needs of the people who are inhabiting the space.”

“The criteria by which design should be judged is ‘does it make people happy?’ You have to consider their practical and emotional needs.”

Moby, an animal rights activist and vegan for over two decades, donates all of Little Pine’s profits to animal welfare organisations, and the building’s design was developed to offer “progressive people a beautifully designed vegan restaurant that is probably more consistent with their principles than Burger King”.



The design of Little Pine was inspired by a "simple mid-century Scandinavian ski house"



Moby designed the interiors with local architects Studio Husto



CLAD NEWS



Needless to say that Egypt has a unique cultural heritage, but we were also attracted by the ambition of the project

Chris Williamson

IMAGES: VW + P



The facility will be the first 21st century science museum in Egypt

Weston Williamson + Partners will design Egypt's futuristic Science City

Architecture studio Weston Williamson + Partners have triumphed in an international design competition to create a Science City for Egypt.

The Bibliotheca Alexandrina – a major library and cultural centre – organised the single phase, open contest to receive conceptual designs for a 125,000sq m (1.35m

sq ft) complex designed to promote scientific knowledge to the public.

Malaysian studio Ngim Partnership came second with Zaha Hadid Architects finishing third.

The Science City will be built in the desert in a new town on the western edge of the Egyptian capital called "6th of October City". The complex will house interactive science exhibitions, a museum, a planetarium, an observation tower, research and development facilities, workshops, plus a conference centre. It will be the first 21st century science museum, learning and research facility in Egypt.

The brief called for "a set of buildings and spaces that must be inspiring on the outside and

motivating and exciting on the inside to visitors and employees alike." In total 446 contestants entered the competition.

The design submitted by Weston Williamson + Partners features a series of futuristic white dishes sheltering the facilities and one leaning tower densely clustered together and surrounded by desert.

Studio co-founder Chris Williamson said: "Needless to say that Egypt has a unique cultural heritage, but we were also attracted by the ambition of the project, clearly expressed through the brief. We look forward to developing the design and creating something worthy for Egypt's future generations."



The futuristic complex will be located in the desert

German architect Ole Scheeren has completed one of his highest profile projects since leaving OMA and setting up his own studio: Thailand's tallest building.

MahaNakhon is a 77-storey, 314m (1,030ft) tall 'pixelated' skyscraper located in Bangkok's Central Business District.

The dramatic addition to the skyline opened with a spectacular light show. The multi-coloured LED display highlighted the three-dimensional ribbon of architectural pixels that coil up the tower, giving a glimpse into the interior of the building.

The 150,000sq m (1.6 million sq ft) development features a 150 room boutique hotel operated by Marriott and Ian Schrager; 200 luxury apartments by Ritz-Carlton; a multi-level retail centre with restaurants and cafes; a 24-hour marketplace; a rooftop

Sky Bar and restaurant; and a landscaped public plaza at its base.

A series of cascading indoor/outdoor terraces at the foot of the tower accommodate most of the public leisure facilities and are designed to evoke the shifting protrusions of a mountain landscape.

An adjacent freestanding seven-storey building called The Cube has corresponding terraces and forms an atrium space between the structures.

"The design of MahaNakhon dismantles the typical tower and podium typology, creating a skyscraper that melds with the city by gradually 'dissolving' as it flows downward to meet the ground," said Scheeren.

The architect is a former partner of OMA, where he led the design of the China Central Television Station building. He set up his practice, Büro Ole Scheeren, in 2010. A team from OMA collaborated on the new project.

Ole Scheeren creates Thailand's tallest tower with 'pixelated' MahaNakhon



“The design of MahaNakhon dismantles the typical tower and podium typology, creating a skyscraper that melds with the city by gradually 'dissolving' as it flows downward to meet the ground”

Ole Scheeren

The tower features a 150 room boutique hotel operated by Marriott International and Ian Schrager





IMAGES: VO TRONG NGHIA ARCHITECTS



“The design aims to establish a compact and autonomous place of solace, wherein one can immerse oneself within the lush mangrove reservoir whilst nestled inside the bamboo constructs.”

Vo Trong Nghia

Each of the spa's arches will hover above the water of a small lake surrounded by mangrove trees

Vo Trong Nghia imagines floating bamboo spa on Vietnamese island

The architectural studio of Vo Trong Nghia are creating a floating bamboo spa on the Vietnamese island Phu Quoc.

Named the Signature Spa, the facility will be attached to a five star hotel on the island, which is famous in the region for its dense expanses of nature and areas of jungle.

The spa will consist of a building containing treatment rooms, alongside a series of arched bamboo

podiums that will provide space for relaxation and consultation services. Each arch will hover above the water of a small lake surrounded by mangrove trees, with glass walls providing a view across the water.

Guests will travel between the buildings on a stone walkway that emerges just above the water level.

The combination of stone, glass and bamboo is designed to evoke “a reserved simplicity” and to



reconnect visitors with nature.

Each bamboo podium will resemble hands clasped together and fingers interwoven. Where the frames meet, a skylight opening will be included to diffuse changing light into the space.

“The design aims to establish a compact and autonomous place of solace, wherein one can immerse oneself within the lush mangrove reservoir whilst nestled inside the bamboo constructs,” said Nghia in a statement.

The Signature Spa will have

The spa will consist of a building containing treatment rooms, alongside a series of arched bamboo podiums

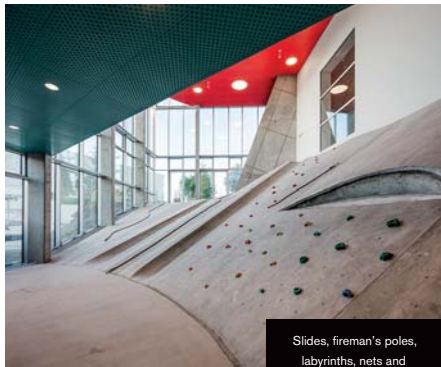
four single treatment rooms and one double treatment room. There will also be separate rooms for foot treatments and pedicures.

The project was designed by Nghia and studio partner Hidetoshi Sawa. The client is the Syrena Viet Nam Investment & Development company. A completion date for the project has not yet been released.



JACOBUS & ADRIAN VAN RIJS

Fitness and fun promoted at MVRDV's House of Movement and Culture



Slides, fireman's poles, labyrinths, nets and climbing walls provide a means of navigating around the building



Culture, health and movement are the focus at MVRDV's new community centre in Copenhagen, which encourages adults and children alike to enjoy a better quality of life through physical activity.

Slides, fireman's poles, labyrinths, nets and climbing walls provide a means of navigating around the Ku.Be House of Culture and Movement.

The project, designed in collaboration with ADEPT, is described as "the first of its typology – a community space which also focuses on exploring and developing our most fundamental process – movement."

The 3,200sq m (34,400sq ft) Ku.Be facilitates both fixed and spontaneous programmes. The six main volumes have specific areas for different forms of exercise and movement – with each interior area clad in its own colour and material.

In contrast, the voids between them are left for the users to interpret how they wish and the garden outside offers interactive environments for when the activity spills from the building. This allows

the site to evolve for the specific needs and demands of its users.

The brief's sole criteria was that the building would bring people together and improve the quality of life in the municipality of Frederiksberg.

"We designed Ku.Be to encourage the unexpected," said MVRDV co-founder Jacob van Rijs. "Larger volumes are suited to holding performances or public meetings, smaller ones can be for exhibitions or debates. The fast-pace rooms are perfect for dance, or parkour; and zen rooms give you the contrast of yoga or meditation.

"It's between these volumes where the real fun will happen though; spaces where we hint at a use, but which will become entirely user-defined."

To cater for all abilities and ages, both easier and more standard ways of moving around the building are provided.

ADEPT co-founder Martin Krogh said: "What would otherwise be a simple, mindless journey through the building turns into an exploration and discovery of movement."



It's between the volumes where the real fun will happen though; spaces where we hint at a use, but which will become entirely user-defined

Jacob van Rijs

Vessel is a honeycomb-like structure of 154 interconnecting flights of stairs

Thomas Heatherwick unveils landmark sculpture for New York's Hudson Yards

British designer Thomas Heatherwick has unveiled a climbable public landmark that will be the towering centrepiece of New York City's Hudson Yards development.

Vessel is a honeycomb-like structure of 154 interconnecting flights of stairs, 2,400 steps and 80 landings.

Conceived as a vast interactive sculpture and a new public landmark, it will stand 150ft (45.7m) tall with a diameter widening from 50ft (15m) at the base to 150ft at its top.

The painted steel frame – with its underside surfaces covered by a polished copper-coloured steel skin – is currently being fabricated in Italy. The project is due for

IMAGES: ROBBISS MASSI/THOMAS HEATHERWICK STUDIO



“Rather than just be something to look at, our design undertook the challenge of creating a landmark every inch of which could be climbed and explored”

Heatherwick Studio



A mile's worth of pathway will rise above a public plaza below

completion towards the end of 2018.

“Rather than just be something to look at, our design undertook the challenge of creating a landmark every inch of which could be climbed and explored,” said Heatherwick Studio in a statement. “Vessel will lift the public up, offering new ways to look at New York, Hudson Yards and each other.”

Stephen Ross, the chairman of Hudson Yards developer Related Companies, has previously said Heatherwick's tower “will become to New York what the Eiffel Tower is to Paris.” It is expected to cost around US\$150m (£133.5m, £114m) to build.

The wider Hudson Yards development is New York's largest since the Rockefeller Center. The mixed-use real estate development

will consist of 16 skyscrapers and a 750,000 sq ft (70,000sq m) retail centre with restaurants, cafes, markets, a cinema and bars. There will also be new houses, schools and 20 acres of public space.

Vessel will be located in the site's five acre Public Square and Gardens, designed by Nelson Byrd Woltz Landscape Architects.

Speaking about Vessel, New York mayor Bill de Blasio said: “I'm struck by the notion that this could be a place – yes, to keep active – but also a place that will cause us to reflect and think.

“There's something compelling and attractive about it; certainly something that will make it a must-see and a must-walk for all New Yorkers.”

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Adjaye's National Museum of African American History and Culture opens in Washington DC

The long-awaited opening of the National Museum of African American History and Culture has taken place in Washington D.C., with US president Barack Obama in attendance.

A three-day festival of music, literature, dance and film accompanied the opening of the museum, which is dedicated to exploring the story of America through the lens of the African American experience.

The 400,000sq ft (37,000sq m) museum is located on a five-acre site on Constitution Avenue next to the Washington Monument.

The nine-story building features exhibition galleries, an education

centre, a 350-seat theatre and a café. Signature spaces are the Contemplative Court, a memorial area for reflection; the Central Hall, the primary public space in the museum; and a reflecting pool at the south entrance.

The most significant component of the design is the bronze crown-like corona, which forms the visible exterior of the building. Three inverted pyramids, inspired by the form of a Yoruba sculpture and exactly echoing the angle of the Washington Monument, sit on top of each other to give a sense of uplift. Meanwhile, the patterned façade evokes the architectural ironwork made by African

American artisans in southern US cities before and after the Civil War.

The building was designed by the Freelon Adjaye Bond/SmithGroup collective, with Tanzanian-born British architect David Adjaye leading the overall vision.

"In a way, I always conceived of this building as a kind of turning point – a knuckle, a joint – which articulates the two things, neither one nor the other, but bridging between the two," Adjaye told CLAD. "This can be understood as a metaphor for the less tangible bridge between cultures – ensuring that the African American story becomes a universal story."



“I could never remake this museum, or repeat it, because it's so bound up in the particulars of its location, of its goals and of its place in history”

David Adjaye



The most significant component of the design is the bronze crown-like corona

6 The building for The Perelman will be flexible and elegant and provide the most dynamic possible artistic experience, while also staying true to the needs and desires of the neighbourhood and the city

Joshua Prince-Ramus



The translucent marble cube will be built north of the 9/11 memorial in New York

Architects reveal design for US\$250m World Trade Center arts venue

Designs have been unveiled for the final piece of Daniel Libeskind's World Trade Center masterplan, with the US\$250m (€222m, £188m) Perelman Performing Arts Center labelled as the development's "keystone".

Designed by Rex Architecture, the translucent marble cube will be built north of the 9/11 memorial – two reflecting pools which fill the footprints of the former World Trade Centers, remembering those who died during the 11 September 2001 terrorist attacks.

According to Rex co-founder and project lead architect Joshua Prince-Ramus, the 90,000sq ft (8,400sq m) venue – which will include three auditoriums and a rehearsal room – will be wrapped in a translucent marble laminated by insulated glass. During the day the building will resemble a large "mystery box" with a dull sheen. At night the building will take on the form of a glowing cube, similar to that of a Chinese paper lantern.

At the bottom of the monolith

structure, a slice is cut away to form the building's entrance, leading up to a lobby, restaurant and bar. To accommodate flexibility for artistic directors, the building's rooms and halls will feature moveable walls to create up to 11 different configurations, with the largest configuration having a capacity of up to 1,200 people.

"This will be a new kind of arts space for the next generation of audiences and artists, redefining downtown Manhattan as a prime cultural and social destination," said the centre in a statement.

"The building for The Perelman will be flexible and elegant and provide the most dynamic possible artistic experience, while also staying true to the needs and desires of the neighbourhood and the city."

The centre has been named after billionaire philanthropist Ronald Perelman, who donated US\$75m (€66.5m, £53m) towards the development. A further US\$75m in public donations is still being sought before the project opens its doors in early 2020.



IMAGES: DIZOON



Giant aircraft-hangar doors open to the cooling breeze, improving natural ventilation



Is AECOM's new Sacramento arena the most sustainable stadium ever built?

The new California home of US National Basketball Association franchise the Sacramento Kings has become the first indoor sports venue to achieve LEED Platinum certification.

The US\$507m (£336m, €476m) Golden 1 Center is the highest-scoring stadium ever certified by the US Green Building Council – the body that oversees the LEED system. It is also among the top three per cent of all buildings granted LEED certification.

The downtown Sacramento stadium – described by AECOM as “the arena of the future” – features giant aircraft-hangar doors that can open to the cooling breeze and a public plaza with water-saving

gardens. The facility completely runs on solar power and uses 45 per cent less water and 30 per cent less energy than demanded by California regulations.

Other sustainable features include a “first-of-its-kind” displacement ventilation system, which saves energy and improves fan comfort by delivering conditioned air directly beneath the stadium’s seats. Spectators can control the temperature through an app on their phones.

During the building process, 36 per cent of construction materials came from recycled sources, 95 per cent of construction waste was diverted and 99 per cent of demolition materials were recycled. Additionally, 90 per cent of food

and beverage concessions are sourced from within 150 miles in order to limit carbon footprint. “From the beginning, we’ve strived to be the greenest team, representing a region that embraces conservation and care for the environment,” said Sacramento Kings president Chris Granger. “Golden 1 Center will stand out as a global model for how businesses, communities and designers can think about the environment in innovative and intelligent ways, without compromising quality and comfort.”

AECOM’s global sports leader, architect Bill Hanway, added: “This indoor-outdoor arena is revitalising downtown Sacramento and setting a new global standard for sustainability.”



“We worked with the Kings to design a stadium for fans, city and planet”

Bill Hanway,
AECOM global sports leader

Eco-friendly Maldives resort transforms solar panels into a design feature

The developers of a luxury island resort opening this year in the Maldives have claimed it will be one of the most eco-conscious ever created in South Asia – with thousands of solar panels used as a design feature.

Developer Crown & Champa Resorts claims that the Hurawalhi Island Resort will

“put as much back into its surroundings as it takes out.”

New York architect Yuji Yamazaki has created a futuristic, contemporary collection of villas and resort facilities, located on stilts over the water, by using 4,243sq m of solar panels – equivalent to 26 volleyball courts.

Sixty per cent of the resort will be powered by solar energy. Other green initiatives include access to a local water bottling plant to reduce plastic consumption; food and water recycling facilities;

The resort's developers believe it's possible to care for the environment without sacrificing design elegance

IMAGIE, CROWN & CHAMPA RESORTS



a collection of greenhouses, fertilised by food waste, to produce organic produce for guests; a desalination system which filters sea-water and turns it into clean water for drinking and cooking, and supplies rainfall showers in the resort's villas.

“In a fragile environment like the Maldives, eco-conscious

operations should be the norm,” said the developer in a statement. “It’s possible to care for the environment without sacrificing elegance, luxury and a highly personalised approach to service.

The centrepiece of the Hurawalhi Island Resort will be an underwater restaurant, billed as the world’s largest.



Race your own avatar: Nike creates ‘reimagined running track’ in Manila

The design studio at Bartle Bogle Hegarty Singapore and global sportswear giant Nike have joined forces to open a “reimagined running track” in the centre of Manila where sprinters can race against themselves.

The Unlimited Stadium was shaped as a huge sole print of

Nike's newest footwear release, the Lunar Epic. The 200m track was lined with an LED screen, and up to 30 runners at a time were able to register an avatar with a unique name and colour combination. A sensor was then attached to their shoes, so their competing avatar ran with them on the screen,



COURTESY NIKELAB SINGAPORE

racing ahead or falling behind depending on the runner's pace.

The digital avatars grew in size the further and faster they ran, encouraging runners to push beyond their limits.

“We conceptualised the stadium from strategy and creative concept to the stadium architecture and

The Unlimited Stadium was shaped as a huge sole print of Nike's Lunar Epic new footwear

overall user experience bringing it all together with our expert partners,” said the designers. “The Unlimited Stadium was a fusing of the virtual and physical worlds.”



The size and shape of the interior venues can be changed depending on the needs of the performers

Dubai's boat-shaped Opera House ready to challenge Sydney

The nautically-themed Dubai Opera House has officially opened, with developer Emaar stating the venue will rival the Sydney Opera House for cultural impact.

The configurable 2,000 seat venue will host theatre, concerts, art exhibitions, opera, orchestra, film, sports events and seasonal programmes.

Architecture studio Atkins were inspired by Dubai's maritime history – specifically Arabian sailing vessels – for their design. The 'bow' of the structure contains Dubai Opera's main stage, orchestra and seating areas, as well as a sky garden and rooftop

restaurant. The elongated 'hull' area features the waiting areas for spectators, a taxi-drop off area, and parking amenities.

"Trading vessels have played their part in introducing culture and ideas to the city and they're part of the reason Dubai is so welcoming and culturally diverse today," said design director Janus Rostock. "We looked into Dubai's heritage and traditions for inspiration to find an architectural language which would celebrate the city's past, as well as supporting its future."

"This theme resonated strongly with our client and it has resulted in a building which is very much embedded in the place, culture



Architecture studio Atkins were inspired by Dubai's maritime history

“We looked into Dubai's heritage and traditions for inspiration”

Janus Rostock



and history of the emirate.”

Facing Burj Khalifa, the world's tallest building, the wider opera district will eventually feature luxury hotels and residential areas, a retail plaza, waterfront promenades, recreational spaces and parks.

A key consideration in the building's design was its impact on the surrounding neighbourhood. The foyer will be very visible through special anti-reflective glass, transforming theatre-goers into performers for the local community by blurring the lines between the interior and the plaza.

"We had a very special opportunity to transmit Dubai Opera's inherent spirit and

energy well beyond the venue itself, and this will add vibrancy across the public realm," said Rostock.

The biggest challenge of the project was creating the innovative configurable elements, that can change the size and shape of the interior venues depending on the needs of the performers.

This has been achieved with the installation of a number of moving floors, walls, stages and ceilings.

Richard Smith, Atkins' technical director, said: "Dubai Opera's shape and the stringent theatrical design requirements needed our building services engineers to use four types of advanced virtual modelling to predict the performance of the building and its systems and to optimise the design solutions."

IMAGES: JON GAMBRELL/AP PRESS ASSOCIATION IMAGES





A sensory system will stimulate the feeling of being surrounded by rainfall



The urban rainforest sits on a central podium

Round this amazing rainforest there'll be adventure trails, play zones, waterfalls, streams and an artificial beach with a splash pool

DJ Armin

A rainforest in a hotel? ZAS Architects create a Rosemont with a difference

A 75,000sq ft (7,000sq m) rainforest will be situated halfway up a tower in the Hilton Worldwide hotel in Dubai as part of a "never before seen" entertainment experience created by ZAS Architects.

Studio principal DJ Armin said the firm is using innovative digital technology, advanced architectural practices and biophilic design to create an indoor/outdoor leisure experience that "can work successfully through all four seasons and attract visitors to keep returning."

The urban rainforest sits at the heart of the Rosemont Hotel project, which will feature Hilton's Curio Collection branding. Lush vegetation native to Dubai will be installed on the outdoor podium of the futuristic 53-storey hotel tower, so that huge jungle canopies provide shade and shelter.

A sensory system will stimulate the feeling of being surrounded by rainfall, while keeping guests dry by controlling where the water falls. A high humidity level mimicking a tropical environment will be created using water stored from condensation.

"The whole idea is to create outdoor

entertainment in Dubai in the summer," said Armin. "Usually people can only spend time outdoors in winter because of the heat. But by planting a rainforest on the rooftop of the podium we'll create a cooler environment and different opportunities to connect and contrast to the indoor entertainment on the floors directly below – such as the trampoline park, bowling alley and laser tag.

"Our brief was to keep hotel guests at the Rosemont and attract exterior guests to use the public areas. So around this amazing rainforest there'll be adventure trails, play zones, waterfalls, streams and an artificial beach with a splash pool.

"This idea is great for Dubai, because it's so dry and you see sand and desert but never any trees. Bringing the greenery to the building makes it look softer, so it's not just concrete and steel and sand."

Aside from the rainforest, other natural settings will be showcased in the hotel through animated 4D displays of underwater worlds in the lobby and 3D mapping in the elevators, which will see guests stepping around animated fish swimming on the floors of the high-speed elevators.

Brad Pitt building luxury resort in Croatia

Actor Brad Pitt has visited Croatia to tour the site of a proposed €1.5bn (US\$1.7bn, £1.3bn) resort development near in the coastal town of Zablance, local media have reported.

The plans are to transform the city of Zablance into a "modern ecologically-responsible planned community," complete with a flagship luxury hotel, shops, villas, a school and clinic.

Swiss-based investment company TFI Holding has invested €60m (US\$68m, £51m) to buy land in Zablance over the last seven years.

All the facilities for the planned community will be in accordance with the highest environmental and spatial standards," reported the *Independent Balkan News*.

"We are building a city, not a tourist destination nor a tourist resort," project architect Nikola Basic, who also designed the Zadar sea organ and the minimalist luxury D-Resort in Sibenik, told the news agency. "Nothing like fake scenes for some pseudo tourist experience. It's a real, live city."

Basic reportedly travelled with Pitt and a group of ten others to tour the area in September.

Pitt is not the first Hollywood star to delve into luxury resorts; actor Leonardo DiCaprio owns Blackadore Caye, a private island in Belize that will be home to a green development featuring a Deepak Chopra wellness facility.



Pitt is the latest Hollywood star to enter the world of hospitality

KARL ZEHRINGER/LOA PICTURE ASSOCIATION IMAGES

Robert De Niro's Covent Garden hotel plan wins approval



COURTESY DAVID COOPER

Construction is set to begin next year and will be completed in 2019

Hollywood star Robert De Niro will build his planned luxury hotel in London's Covent Garden after the deputy leader of the local council hailed the design as "one of the finest schemes we have considered in years".

Permission for the The Wellington Hotel has been granted, enabling the star of *Taxi Driver* and *Raging Bull* to increase his burgeoning hospitality portfolio.

Architects Kohn Pedersen Fox have designed the 83-room hotel, which will be housed in six adjacent buildings, three of which are Grade II listed.

Substantial renovation, including the creation of new storeys, will take place to the interiors of three of the buildings, but the historic facades will be largely retained.

Westminster City Council deputy leader Robert Davis hailed the design as being "of the highest quality", meshing the new with the old in a way that "will attract visitors from all over the world." The hotel will have 83 guest rooms,



Hollywood icon De Niro will work with architects Kohn Pedersen Fox

EVAN AGOSTINI/WIREIMAGE.COM/GETTY IMAGES

a spa, two restaurants, a café and a members' club. A roof garden will be built on the top of one of the buildings on Wellington Street.

Speaking about the plans earlier this year, De Niro – who has partnered with development firm Capital & Counties Properties and hospitality operator BD Hotels – said: "London is one of the most exciting and cosmopolitan cities in the world, so it makes perfect sense to develop a hotel that represents all of that in the heart of this city in Covent Garden."



“A powerful community is forming around the indoor, built environment and its effect on human health and well-being”

Brent Bauer, Well Living Lab medical director

Architects and developers back Well Living Lab as new wellness alliance takes shape

The Well Living Lab – the first human-centred research centre investigating the links between health and well-being and indoor environments – has announced its founding “alliance members”.

Architecture and engineering firm Arup, technology giant IBM, real estate developer Lendlease and energy saving window company View Inc are among the founding supporters of the project, which

was formed by wellness real estate developer Delos and non-profit healthcare group Mayo Clinic.

The Well Living Lab expands upon the principles of the WELL Building Standard – which focuses on how indoor environments consider air, water, nourishment, light, fitness, comfort and mind.

The lab generates evidence-based practical information to create healthier indoors environments “in which to live, work and play.”

CBRE Group, the world’s largest manager of commercial buildings; and Chinese developer Sino-Ocean Group are the two other founding members of the lab.

International Flavors & Fragrances Inc, which designs products consumers can taste, feel or smell; and healthcare group the Noaber Foundation have also joined the lab as Sustaining Alliance Members. Steel and energy company Welspun has joined as

a Supporting Alliance Member. Other interested companies are invited to join the alliance.

“A powerful community is forming around the indoor, built environment and its effect on human health and well-being,” said Brent Bauer, medical director of the Well Living Lab. “New knowledge shows that building healthier indoor environments can actually preserve and enhance human health and quality of life.”





6 The lifestyle centre's universal appeal will make it one of Cape Town's foremost attractions

Lukas Reichmuth



The Blue Rock Village Hotel will provide luxury facilities "in a calm and relaxed environment."

Leisure and wellbeing will be the focus of South Africa's Blue Rock eco-village

Architecture and property development practice Swisatec has announced new additions to their planned 40-hectare leisure village in Cape Town.

A seven-storey mixed-use lifestyle centre and a five-star hotel are among the facilities the studio has revealed will feature prominently at Blue Rock Village – billed as Africa's "most environmentally friendly estate".

The former, called the Santa

Luzia Lifestyle Centre, will be designed to host interactive events such as local produce markets, product launches, concerts and music festivals. It will also feature boutique shops and restaurants.

The centre will have a wellness, spa and sports venue with its own "beauty farm" – containing therapeutic centres, gym facilities, saunas, a steam room, roman bath, thermal pool, medical spa, dance and yoga studios and health bars.

"The centre will be a vibrant hub

of Cape life where sophistication and chic collide with history and tradition," said Lukas Reichmuth, director of Swisatec. "Its universal appeal will make it one of Cape Town's foremost attractions for both locals and international visitors."

Meanwhile, the Blue Rock Village Hotel will provide luxury facilities "in a calm and relaxed environment." It will have over 150 guest rooms, 30 condominiums, a conference hall for 500 delegates, high-end restaurants,

a bar and lounge areas and South Africa's biggest outdoor pool.

Construction on Blue Rock Village has already begun on the shores of Lake Blue Rock. Work on the hotel and lifestyle centre will follow next year. The R14bn (US\$978m, €882m, £735m) development, which will include public leisure facilities, is designed to be car-free.

Swisatec aim to create the first village in Africa to be awarded a six-green star rating from the country's Green Building Council.



The centre will have a wellness, spa and sports venue with its own beauty farm



IMAGES: SWISATEC



The 'Container Globes' can be built around the world using readily-available materials

IMAGES: THE CONTAINER GLOBE



'Punk reimagining' of Shakespeare's Globe Theatre uses shipping containers and scaffolding



“We see it as a very cost effective, replicable venue that is both cool and innovative”

Angus Vail

Plans are underway to recreate William Shakespeare's iconic Globe Theatre around the world using nothing but scaffolding and re-purposed shipping containers.

The original Globe was built by Shakespeare in 1599 in the London borough of Southwark as a theatre in the round, which allowed huge crowds get as close as possible to the on-stage action.

Now entrepreneur Angus Vail wants to create "a punk reimagining" of Shakespeare's concept by creating cost-effective 'Container Globes' that can be built around the world to host Shakespeare performances, as well as music, dance and other live events.

Architecture studio Perkins Eastman are leading the design of the project. The idea is that the theatre's galleries, stage and backstage areas will all be created using stacked and fastened shipping containers, scaffolding and other readily-available building materials.

Vail has received interest from investors in the cities of Denver, Staunton, Los Angeles and Sydney. In Detroit, investors, the arts community and the local government are strongly backing the creation of a Globe. A potential midtown site has been identified and building plans are currently in development.

Multidisciplinary firm Arup are working on the acoustics, lighting,

disability, fire, and theatre design aspects of the unusual project.

The team has set a preliminary budget of US\$6m (£5.3m, £4.6m) per theatre constructed.

Vail told CLAD that as the Globes will have a demountable base, they can be either temporary or permanent additions to a city; although the cost of moving them means they would likely stay in any one place for at least a year

"We see it as a very cost effective, replicable venue that is both cool and innovative, but also provides an immersive, interactive and 'up-close & personal' theatre experience that hearkens back to Shakespeare's original Globe," he said.



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Above: Dax Polé Commercial



Den Haag Zuiderpark



Lyon Carre de Sole



Derby Arena



Omnisportcentrum Apeldoorn



“The masterplan invites the visitor to experience this strong force of nature, but also to carefully consider how the incredible story of St Kilda can be told in a powerful and coherent way”

Reulf Ramstad



The design is inspired by St Kilda's extreme climate and location

Architects and UNESCO develop prototype ‘satellite visitor centres’ for world’s remotest heritage sites

Two architecture studios hope to show how remote heritage sites can be served by ‘satellite’ visitor centres through their own design for a tourist hub which celebrates an uninhabited Scottish archipelago from a location on a nearby island.

Scottish studio Dualchas Architects and Norway’s Reulf Ramstad Architects, who are working in the UK for the first time, have unveiled their masterplan for the St Kilda Visitor Centre. They propose the building, known as ‘Iomart Hìort’ in Gaelic, should be built on the more accessible Isle of Lewis 50 miles away.

St Kilda contains the westernmost islands of the Outer Hebrides of Scotland, on the far edge of Europe. It’s dramatic geological formations have seen it named a UNESCO World Heritage Site. Small populations of islanders lived across the archipelago for thousands of years, before the last ageing community requested to be evacuated in 1930 following severe food shortages.

While the built stone structures they left behind still remain, the last of

the native St Kildans, Rachel Johnson, died in April 2016 at the age of 93.

With the backing of UNESCO, a number of organisations in Scotland have been developing a multi-functional visitor hub that will capture the story of St Kilda and showcase the Hebridean landscape and culture, while regenerating the communities on the surrounding islands.

“We’re trying to show how we can experience and represent World Heritage Sites that are very difficult to access,” architect Rory Flynn, from Dualchas, told CLAD. “Some around the world are in war zones or extreme landscapes and locations, so this is hopefully seen as a prototype project for how you might design a satellite centre.

“We’ve tried to achieve that with the use of local materials and the orientation of the buildings. In fact, the whole form comes from having made existing links with the buildings on St Kilda, which is a very inspirational place.”

The design has been inspired by the extreme climate and location of the

archipelago. The visitor centre will sit on a clifftop site, with an 80m drop below.

“One of the first things you notice on the site is the wind – it is incredibly exposed,” said Reulf Ramstad. “You are also aware of the power of the Atlantic crashing against the dramatic cliffs and stacks. The masterplan invites the visitor to experience this strong force of nature, but also to carefully consider how this incredible story can be told in a powerful, coherent way.”

Exhibition design firm Metaphor have designed the content for the museum, which will include galleries using cutting edge technologies, a digital laboratory and an observation room looking towards St Kilda.

“The brief has so many elements – the story, the landscape, the climate – and the task of achieving all of them has shaped the project,” said Flynn. “We’re a large team of people working together, split between London, Glasgow, Skye and Oslo, so that’s an operational challenge. We’re working hard together towards opening this centre in time for the 90th anniversary of the evacuation in 2020.”

IMAGES: DUALCHAS ARCHITECTS AND REULF RAMSTAD ARCHITECTS

The visitor centre will be built on the accessible Isle of Lewis, more than 50 miles from St Kilda



The remote St Kilda archipelago contains the westernmost islands of the Outer Hebrides of Scotland



Perkins + Will design elevated air-conditioned stadium for Dubai

Architecture practice Perkins + Will have revealed details about the stadium they're designing for Al Aweer, Dubai, which is expected to be the largest in the United Arab Emirates (UAE).

The Mohammed bin Rashid Stadium has been approved by UAE prime minister Sheikh Mohammed bin Rashid Al Maktoum.

Currently in the concept planning and design phase, the FIFA-compliant 60,000 capacity stadium would take the form of an elevated structure encased in a diagrid bowl, with the playing field elevated 60ft (18m) above an entry plaza below.

The stadium, which would have an open-tensile roof, would be available for use all year-round. It would have an architectural skin that allows for airflow while blocking out unwanted sand and sun. Meanwhile courtyard water elements beneath the stadium would create a natural thermal sink that cools the air, and a landscape design that uses trees and vegetation to block hot wind while providing shade.

According to the architects "the inspiration for the design stems from the desire to create a stadium like no other that draws from regional precedents while providing a sustainable and visionary destination for Dubai."

Perkins + Will are designing the stadium as part of a wider mixed-use development that will include training facilities, a practice pitch and warm up areas, a museum, a multi-purpose sports hall, shops, restaurants, a public plaza and a 5,000-space car park. The total site will cover an area of 120,000sq m (1.3 million sq ft).

The project is part of Dubai's "Sports Innovation Lab" initiative and a government-backed policy to increase the emirate's profile as a global sports destination. The reported cost of the project is AED3bn (US\$817m / €730.5m, £639.6m). Dar Al-Handasah is lead consultant.



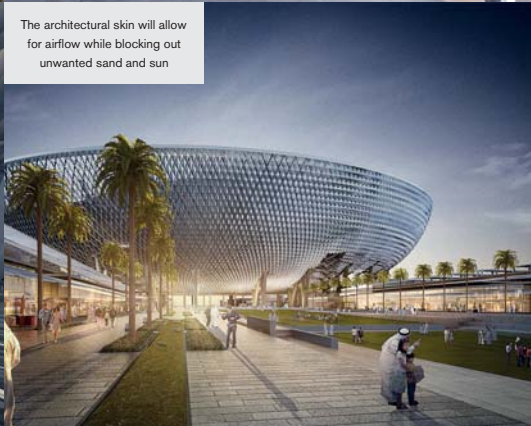
The 60,000 capacity stadium will be elevated and encased in a futuristic diagrid bowl



IMAGES PERKINS + WILL



The architectural skin will allow for airflow while blocking out unwanted sand and sun



INTERVIEW



Schumacher joined Zaha Hadid Architects in 1988 after studying architecture in Stuttgart and London

“WE’RE READY TO GO FORWARD”

Patrik Schumacher

FOLLOWING THE DEATH OF ZAHA HADID IN MARCH, HER BUSINESS PARTNER AND FRIEND, PATRIK SCHUMACHER, HAS BEEN LEADING THE PRACTICE SHE FOUNDED. HE TELLS MAGALI ROBATHAN WHAT’S NEXT

Several months on from the death of architecture legend Zaha Hadid, Patrik Schumacher is grieving, but determined.

We meet Schumacher – now director of Zaha Hadid Architects – at the Zaha Hadid Gallery in Clerkenwell, London. Everywhere you look, Hadid’s immense talent is on show, from her amazing paintings to her furniture, jewellery, lighting and models of her visions, both built and unbuilt. The table that we sit around – the Liquid Glacial Table – is a Hadid creation, beautiful and suitably fluid in form, made from transparent acrylic that ripples beneath the table’s surface and appears to pour down the legs in a sudden swirl.

There’s no question, says Schumacher, of letting all of this talent go to waste. They have worked too long and too hard to allow that to happen. And the achievements of Zaha Hadid Architects (ZHA) are not just down to the talent of one person, he says, they are the product of the hard work and skill of the practice’s 400-strong team.

“The secret of Zaha’s success was that she didn’t insist on only using her own ideas,” says Schumacher. “She was someone who delivered a fantastic new universe of possibility through her radical innovations, but she also allowed younger staff to flourish and exercise their own creativity competitively. That’s the way I came into this.

“At ZHA, we filter out the best ideas, then we work together to develop them. It’s a very collaborative, collective process, and it’s the secret of our versatility. Our

projects share DNA but are quite diverse – more diverse than you find from other so-called star architects, where there’s more of a sense that one person is the creator. That wasn’t the case then, and it’s not the case now.”

Schumacher joined ZHA almost 30 years ago, and worked alongside Hadid on all the practice’s major projects. As well as his design work, he also teaches and lectures at architectural schools across the UK, the US and continental Europe, and has published a number of books and essays on contemporary architecture.

Schumacher admired Hadid’s work before he joined ZHA in 1988, but he couldn’t have predicted how far she would go.


She became an undisputed star, an innovator and the creator of some of the world’s most iconic buildings. Hadid won every significant architecture prize, including the Pritzker in 2004, RIBA’s Stirling

Prize (twice in a row, for the MAXXI National Museum of XXI Arts in Rome in 2010 and the Evelyn Grace Academy in London in 2011) and also the RIBA Gold Medal in 2016.

“We are all still sad,” says Schumacher. “Zaha was very courageous, very driven in terms of wanting to excel. There was an intensity about her, but also an incredible loyalty and warmth. There was no snobbery or pretentiousness. She was an easy communicator and a good friend who was always ready with advice. She was very frank, very entertaining and fun.”

While he is grieving for the loss of his business partner and friend, it’s vital for Schumacher to look forwards. Two

Zaha was a star...
very courageous,
very driven in terms
of wanting to excel

A photograph of Zaha Hadid and Patrik Schumacher standing in a modern, minimalist architectural space. They are positioned next to a large, dark, angular concrete structure. In the background, a wide staircase with a dark, geometric railing leads upwards. The walls are light-colored and feature recessed lighting. The overall aesthetic is clean and futuristic.

Zaha Hadid and Patrik Schumacher at MAXXI National Museum of XXI Arts, which won the Stirling Prize in 2010



One of Zaha's greatest achievements was the radical transformation of what it means to design; the fluidity, the curvilinearity, the dynamism that she explored in her paintings



weeks after Hadid's death, ZHA released a statement saying they were going to carry on without their founder, and Schumacher is keen to ensure that the message gets out that they are still very much in business.

"The focus at the moment is on establishing the notion in the world that ZHA is continuing; that there's a strong collective leadership which is the same as it was and that the way we develop projects – which was always collaborative – is continuing," he says. "We remain in good spirits, we are ambitious and we are still the go-to address when it comes to major projects of significance."

At the time of Hadid's death, the practice had 36 projects on-site in 21 countries, which it vowed to complete. The first of these, the Salerno Maritime Museum, opened in Italy in June in an emotional ceremony which ZHA staff flew from around the world to attend. The second project, the Port House in Antwerp, opened in September. Two further projects are set to open this year: the King Abdullah Petroleum Research Center in Riyadh, Saudi Arabia and the Mathematics Gallery in London's Science Museum.

Since then, the practice has won several new commissions, including a hotel in Qatar and a new cultural quarter on the seafloor in Bournemouth, UK, and has been shortlisted for several more.

A BIG IMPRESSION

When Schumacher joined ZHA, Hadid was already a star within the world of architecture, if not yet within the wider world. At the University of Stuttgart and London's Southbank University – where Schumacher studied architecture – students pored over Hadid's paintings. "I was getting bored as a student, but Zaha's work shocked me into loving the field," he says. "The thought that design could be something so different – more exciting and dynamic and fresh – had a huge influence on me.

"One of Zaha's greatest achievements was the radical transformation of what it means to design; the fluidity, the dynamism that she explored in her paintings."

When the 26-year-old Schumacher joined the practice, it was situated in one room of a converted Victorian school in Clerkenwell (ZHA have since taken over the entire building) and there were just four permanent employees.

"My first impressions of Zaha were that she was a very shy person, very withdrawn," he says. "I was hired by a colleague, not her, and she ignored me for the first three weeks or so. Was I in awe of her? No, no." He pauses for a moment. "Yes, perhaps I was a little in awe of her. Zaha could sometimes be abrasive and intense, but I have a very thick skin and I think that's why I pulled through. I was unfazed by that, and once I'd earned her respect I could start to push back."

Schumacher and Hadid slowly built up a strong working relationship. "Zaha appreciated my knowledge of the history of architecture; she could rely on the fact I'd know what she was talking about if she mentioned certain projects or architects," he says. "And I soon became someone who was good with words."

TIME TO GET SERIOUS

Schumacher's other role – something the practice was arguably in real need of – was that of a 'finisher'; someone who made sure things got done. When he joined, ZHA still had no built work to their name, and the early years saw them enter, and lose, competition after competition.

The early 1990s were difficult years. They did win two high profile competitions – for the Neuer Zollhof towers in Dusseldorf, Germany and the Cardiff Bay Opera House in Wales – but the Neuer Zollhof project was never commissioned (it was later designed by Frank Gehry) and the Welsh government refused to pay for the Cardiff Bay Opera House, something Schumacher says was a huge blow for Hadid. "I observed her suffering," he says, "but she put her head down, however, and we went on."

Hadid's large scale painting/masterplan 'London 2066' for British Vogue



PHOTO: WAVE CULTURE

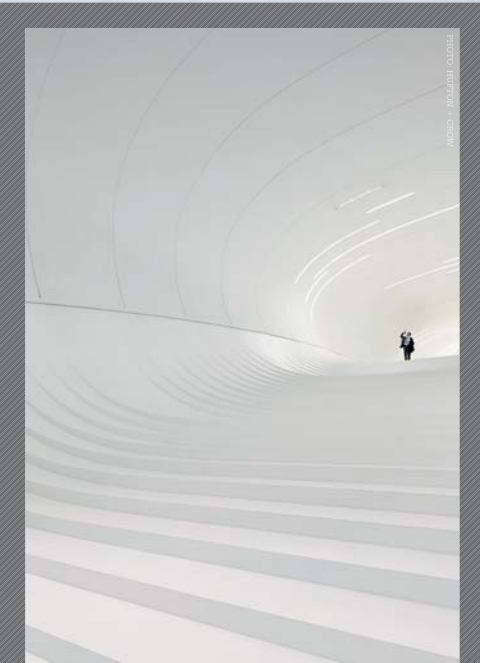


PHOTO: WAVE CULTURE



PHOTO: INTERIOR - GROMA

The Heydar Aliyev Centre in Baku. Zaha Hadid described the building as "an incredible achievement" when it won London Design Museum's Design of the Year in 2014



The Dongdaemun Design Plaza in Seoul is a good example of what can be achieved using parametric design principles, says Schumacher. The centre opened in 2014



PHOTOS: THIS PAGE: VINCIGLI; SIMON BERTHIAUME



Mouzhan Majidi



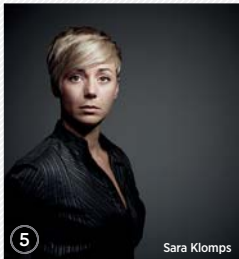
Charles Walker



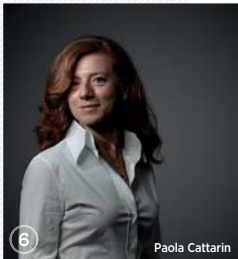
Gianluca Racana



Jim Heverin



Sara Klomps



Paola Cattarin

Key staff at ZHA

ZHA employs approximately 400 staff across offices in New York, Mexico City, Dubai, Beijing, London and Hong Kong. Key staff at the London office include CEO Mouzhan Majidi (1), who joined ZHA in 2016 after working for Foster + Partners for 27 years. Directors at the London

office are Charles Walker (2), who moved from Arup to ZHA in 2007, Gianluca Racana (3), who joined in 2000 and has worked on projects including the MAXXI Museum in Rome; and Jim Heverin (4), whose projects include the London Aquatics Centre which was built for London 2012. The firm employs 12

associate directors. These include Sara Klomps (5), who joined in 1998 and whose projects include the London Aquatics Centre and the Phaeno Science Center in Wolfsburg and Paola Cattarin (6), who joined the firm in 1999 and has worked on projects including the Maritime Terminal in Salerno.



Towards the end of the 1990s I developed more of a killer instinct



By the mid 1990s, the practice still had only one major built project to its name (the Vitra Fire Station, in Weil am Rhein, Germany). Schumacher decided enough was enough. "Through the 1990s we did wonderful competitions, but they were maybe a bit overly ambitious – too fluid for the time," he says. "Towards the end of the 1990s I developed more of a killer instinct. I said, now I want to build. We drew back a bit and tried to work these projects, not to impress the peer group, but to actually win the competitions. It was a time to get serious.

"I'm an ideas person, but I'm also a person who wants to finish things; to execute and deliver. My role was to know when to stop and turn from exploration into commitment on a project."

This approach paid off and ZHA won several major competitions in a row – the Lois & Richard Rosenthal Center for Contemporary Art in Cincinnati, US, the MAXXI Museum in Rome ("one of my all time favourites," says Schumacher) and the Phaeno Science Center in Wolfsburg, Germany.

At this point, things really took off, and the practice grew rapidly. Hadid was ahead of her time – her swooping, curved lines would have been incredibly labour intensive to build when she first dreamed them up, however, advances in computer modelling made it possible to translate them into reality, as well as making them financially viable. The opening of the Guggenheim Museum in Bilbao also played an important role, says Schumacher. "Frank Gehry's magnificent Bilbao Museum was a seminal project that helped signal to the world not only what a building could do for a city, but also what kind of design could actually be executed and what a sensation it could create. That helped us a great deal."

In 2004, Hadid became the first woman to win the Pritzker Prize, catapulting the firm into the major league.

"Winning the Pritzker really helped us," says Schumacher. "You never know what would have happened if we hadn't, of course – we were in the ascendant already – but there was a definite acceleration in the pace of work."

By 2008, the firm employed 400 people, and the following few years saw the opening of several major projects including MAXXI in Rome, the Guangzhou Opera House in China,



the London Aquatics Centre for the 2012 Olympics, the Heydar Aliyev Cultural Center in Baku, Azerbaijan and the Messner Mountain Museum Coronas in Italy.

The firm still had its share of setbacks, of course – most notably the Tokyo Olympic Stadium (more later) – but it had risen through the ranks to become one of the highest profile and most admired architectural firms in the world.

LOOKING TO INNOVATE

Zaha Hadid's work was always about innovation, and Schumacher is determined to ensure the practice continues to build on this. "Just as when Zaha was around, we are always looking for the next step of development," he says. "There's a strong DNA in this company, a strong set of overall principles, but there's also a process of maturation and continuous innovation, and that's something I'm focusing on. I will be the main driver of this innovation, but we've also built a research team over the years, and have several other major creative figures within the team who will help pull this along."

Schumacher is a proponent of parametricism (a term he coined in 2008), an approach that uses algorithms and computer programs to manipulate different variables for design purposes. With this approach, all of the design parameters are interconnected, meaning that you can play

MAXXI National Museum of XXI Arts in Rome, one of Schumacher's favourite projects. The museum opened in the city's Flaminio district in November 2009

with them to see how changes alter the form. It allows for adaptation late into a project, and results in complex, organic, fluid forms that mimic those seen in nature (and that have long been the hallmark of Zaha Hadid's designs).

"Our formal repertoire is very organic-looking but has lots of versatility – it's not about preconceived forms – it's about forms you can adapt, nestle into irregular sites, connect to unpredictable adjacencies," says Schumacher.

Schumacher uses ZHA's Dongdaemun Design Centre in Seoul, which opened in 2014, as an example of the benefits of the parametric approach. "This was a very complex irregular site, with many different points of entry at different levels, where we wanted to create a park as well as a building on the same site. Using the tool of an amoeba-like mass pouring itself into the different niches, corners and entry points results in something that is quite elegant and beautiful. It [the design] is not something we invent, it's something that emerges through a dynamic system like a creature – an amoeba – adapting to a condition."

TOKYO OLYMPIC STADIUM

For all their success, ZHA have also had their share of disappointments, and none were more shattering than the decision by the Japanese government to scrap Zaha Hadid's stadium design for the 2020 Tokyo Olympic Stadium.



Losing the Olympic stadium job was the biggest setback ever, Zaha was devastated



"Losing the Olympic stadium job was the biggest setback ever," says Schumacher. "I found it absolutely shocking and Zaha was devastated. We were so happy to get that project, it was a well deserved win and we were looking forward to 2020. That was pulled away from us. We found the whole experience incredibly distressing."

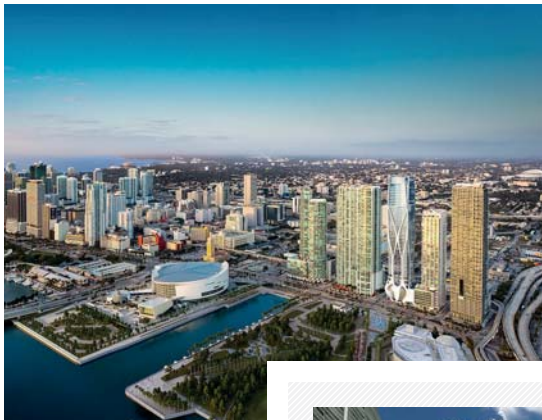
ZHA originally won the contract to design the stadium in 2012, but the design attracted criticism from a number of high profile Japanese architects, including Toyo Ito and Fumihiko Maki, who launched a petition for the design to be abandoned due to its cost and scale. The design was revised in 2014, and won final approval from the government in July 2015, before being cancelled just 10 days later. A new competition was launched by the Japanese government, and Kengo Kuma was chosen over the other finalist, Toyo Ito, in December 2015.

How did the experience affect Hadid? "She was really depressed; she gave up nearly everything," says Schumacher. "It was such a humiliation. The loss of two years' intense, passionate work, not to mention the guys from the team flying to Japan all of the time. You can only do that if you have that reward in sight.

"Everyone was depressed and demoralised, and there was also the potential shock to our reputation—the perception that this was due to our obstinacy or outrageous extravagance in terms of the design. None of this was true, but the suspicion lingers on in the minds of clients. That's why we made a PR effort to try to explain what happened and how conscientious we'd been in the process, signalling all the way through until the final decision that we were totally willing to do anything."

Kengo Kuma has denied claims that he plagiarised Zaha Hadid's Tokyo Stadium design [see p70 for more from Kuma on this]. How does Schumacher respond?

"We don't want to fight over this," says Schumacher. "What is important is to clear our name and reputational loss. Kengo Kengo is a friend and he didn't come out against us in the process. Once we were cut out altogether then I accepted that anyone else could step forward [with a



new stadium design]—except that I didn't expect Toyo Ito to step forward because he had so vocally said it was the wrong site and the wrong size of building. That I found problematic and I wouldn't want to encounter him."

It was a dark time for the company, but in September 2015, the announcement came that Zaha Hadid had become the first woman to win the RIBA Gold Medal for Architecture. It couldn't have come at a better time, says Schumacher. "That was the motivational boost and positive signal she absolutely needed and we all needed. It was wonderful."

LOOKING AHEAD

ZHA's list of future projects includes the Al Wakrah Stadium for the 2022 World Cup in Qatar, the 1000 Museum residential tower in Miami, US; Beijing New Airport Terminal Building; and the Grand Theatre de Rabat in Morocco, as well as smaller projects such as the new Mathematics Gallery at London's Science Museum, which is due to open in December 2016. The gallery, which will include more than 100 objects from the museum's collection, was something of a passion project for Hadid, who studied mathematics at university and used it as the foundation for her designs.

"The Mathematics Gallery was a nice opportunity for us to create an experience, to structure an educational environment and also to experiment," says Schumacher.

As for new commissions, what is the firm looking for? "We're curious and interested in nearly everything," he says. "We want to demonstrate the universality of our approach. We do look for an opportunity to innovate — most projects have some element of novelty and complexity, so that would be a minimum criteria, but otherwise we are very open."

Schumacher's time working at ZHA has been a "rollercoaster" he says, and the future looks set for more twists and turns, but he is embracing it all. ●



Zaha Hadid was responsible for the architecture and the interiors of the communal spaces at the 1000 Museum residential tower in Miami (above). It is under construction

The Mathematics Gallery at London's Science Museum was a passion project for Zaha Hadid. It is due to open in December



Patrik Schumacher in his own words

When did you become aware of Zaha Hadid?

She was a star in the 1980s before I even stepped foot into her office. She had a radical influence. In schools of architecture around the world students looked at her drawings and started started to imitate them. That landscape-like flow was hugely influential.

What do you see as Zaha's greatest achievement?

Something she could have achieved without ever having built anything, which is the radical transformation of what it means to design the repertoire; the fluidity, the curvilinear nature of it, the dynamism of the language she explored in her paintings

What was she like as a person?

She was very, very driven in terms of always excelling, always outshining everybody else – in terms of the competition there

was enormous pressure. She was very intense, and therefore could be very unhappy if things weren't coming together, but that was born out of this will for excellence.

She was able to maintain close friendships with staff and students, people from all walks of life. There was no snobbery at all about her. She had very few filters in terms of formality in intimate circles. She was very frank, very entertaining and fun.

How did you feel about the Brexit vote? Will this impact you?

My hope is that with the new situation there is a chance to manage immigration more sensibly. We need to search the whole world labour market for talent and skills rather than being so focused on Europe versus the rest of the world.

At ZHA we have people from America, Latin America and Asia and we need to go back into these regions. I love

We need to search the whole world labour market for talent and skills rather than being so focused on Europe versus the rest of the world

to be an entrepreneur and I think there need to be entrepreneurial freedoms in order to flourish in the world market.

I hope there will be open borders as much as possible in all directions, in terms of trade and talent. Of course there's no guarantee that such a policy will be used in the way I would wish it to be used, but there's a chance, and within the EU there was less chance."

Would you like to grow ZHA in terms of numbers of employees?

I would be happy to grow, because I see the advantage of

a larger portfolio so that you are more robust in case something goes wrong in one arena. I also like the idea of having more resources to invest in research, to have lecture series for our staff. These things make for a more exciting life for everybody.

Do you have a minimum budget when considering which projects to take on?

We're competitive with our fees but we can't compete with very run-of-the-mill firms or ideas that are just pulled out of a drawer. Sometimes we're willing to take a loss on a job if we find an opportunity that is intellectually interesting. Particular small projects usually apply a loss, but we're willing to do them because of the prominence of the site or the motivation for the staff – like the Serpentine Sackler Gallery [in London, UK] for instance. We take a loss on many small projects, happily. But we can't on big projects.

TIMBER TOWERS

With the development of new engineered timber products, wood is having a moment in the architectural spotlight, but what are its advantages and are fire codes and regulations up to speed with the science? Kate Parker investigates

In recent years, timber has seen something of a resurgence in its use as a building material, and with new wood products available, construction is proving lighter, cheaper, quicker and more accurate than conventional concrete and steel.

Architects around the world are embracing the wonder material with SHoP Architects in the US developing a 10-storey tower in Manhattan, CF Møller working on a wooden skyscraper project in Stockholm, and in Vancouver, Acton Ostry Architects looks set to clinch the title of the world's tallest timber building with its 18-storey,

53m-tall Brock Commons student housing structure at the University of British Columbia.

An 80-storey timber skyscraper is also being proposed for the Barbican in London by British practice PLP Architecture and researchers from Cambridge University.

So, what's the technology behind wood's move into mainstream builds? The material used in the making of these new 'massive timber structures' is cross-laminated timber (CLT), an engineered wood consisting of laminated timber sections glued together for greater strength. It has a high degree of fire-resistance, can be prefabricated to any shape or dimension and precision machined.

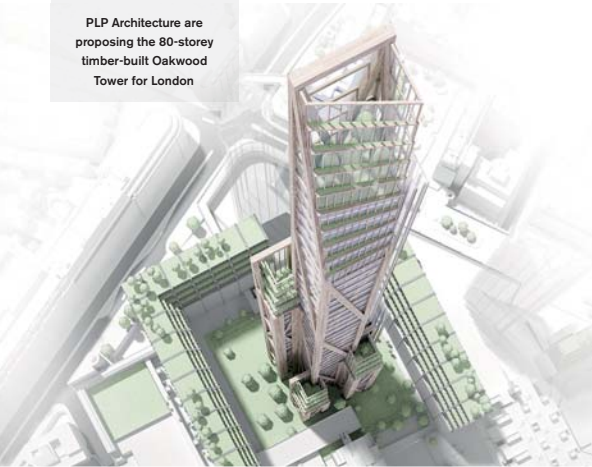
Wood is a renewable material that sequesters carbon in the region of one ton of carbon per cubic metre

Besides the on-site advantages of CLT, it is possibly its environmental credentials that provide the most compelling driver of them all. Wood is a renewable material that sequesters carbon in the region of one ton of carbon per cubic metre, which could see mass timber buildings become carbon banks well into the future. Sourced from sustainably managed forests, it also has the potential to feed back into rural economies and engender better forest management practices.

However, perhaps the biggest challenge to overcome is not technical, but bureaucratic. A lack of experience within the construction industry means fire and building codes in many countries are out of step with the advances in wood products. Fire resistance remains one of the main issues with using timber in construction, but many existing fire codes fail to reflect the fire-safe properties of CLT.

So, if architects are to embrace fully 'the beginning of the timber age', how will their designs meet the regulations? How are they contributing to the R&D process? Will their efforts help shape the cities of the future? We ask the experts what the advantages are in using timber and how their projects are overcoming the administrative pitfalls...

PLP Architecture are proposing the 80-storey timber-built Oakwood Tower for London



A 34-storey skyscraper made out of timber is being proposed for Stockholm in Sweden



Julian Weyer

Partner, CF Møller architects

A huge part of the resurgence of timber is due to the fact that we now have completely different kinds of wood products to work with. Products like cross-laminated timber, which is geometrically stable and with properties much closer to what are required for modern structural design, plus the ability now to machine them to a much higher degree of precision.

Fire resistance remains one of the main issues to contend with in using timber in construction. It goes without saying that a timber building cannot be any less safe than any other building, so the question is always about what measures need to be taken to obtain the correct level of fire safety and that varies a great deal from country to country.



Geography is not to be underestimated! Just as in one location you might have issues with rot and in another place it's termites, the nature of the regulatory framework in place in any given location very much depends on where you are. Ironically, some

of those countries which have a tradition for timber construction might actually be the ones that have the most restrictive codes.

The historical perspective is interesting. Sweden, for example, has a long tradition of wood constructions, and with it come severe limitations on building height and distances. Yet with today's modern materials, the fire risks are completely different, so there's a great need for the fire codes to be re-evaluated.

At CF Møller, we're currently working on a wooden skyscraper project in Stockholm. It's still under development and is part of a research and design project in collaboration with several institutions in Sweden to explore the issues around updating the building and fire codes.

As well as the factors surrounding the fire codes, the project has also uncovered a further issue to impact timber construction; that of insurance. Whilst the fire codes are being modernised, insurance companies are lagging behind in their ability to deal with this kind of construction. They simply don't know how to class this type of building, an issue which has the potential to hold back the spread of timber construction.

CF Møller is one of Scandinavia's oldest and largest architectural firms, with headquarters in Aarhus and offices in Copenhagen, Aalborg, Oslo, Stockholm and London.

Weyer studied at the Aarhus School of Architecture and became a partner of CF Møller in 2007.

● www.cfmoller.com

Dr Danny Hopkin

Head of Fire Engineering, Trenton Fire Ltd

The various 'Great Fires', such as London (1666), Chicago (1871), Baltimore (1904) and San Francisco (1906), all devastated timber neighbourhoods and influenced societal expectations of how buildings should perform in fire.

These events shaped modern construction in terms of how fire performance is assessed, the performance levels that must typically be achieved and under what circumstances different materials can be utilised.

In the wake of the Baltimore and San Francisco conflagrations, a need for alternatives to timber that were 'fire-proof' was identified. So was the need for a consistent means of testing and

defining what 'fire-proof' meant. The now globally-applied fire resistance concept materialised.

Fast forward a century, and many building regulations have transitioned from dictatorial to more flexible, functional manifestations and, with an increasing emphasis on sustainability, timber construction is undergoing a resurgence. The test methods and principles embodied in codes and standards, which emerged to address timber fires and, as a result, are intended for non-combustible materials, are now being asked to cater for tall and/or complex combustible structures. Analogous to fire test methods and principles, public perception of timber performance in fire remains heavily influenced by historical events.



Overcoming preconceptions of performance and ensuring adequate safety is achieved is a challenge. However, this can be achieved in the future, provided that the key differences relative to other (non-combustible) materials are appreciated and addressed.

It requires an understanding of timber behaviours in real fires, such

as charring and its role in insulating virgin wood, the circumstances under which smouldering structural fires might self-extinguish (or self-sustain) and, subsequently, the means by which a resilient building might be achieved.

As it stands, contemporary understanding of timber in fire is not sufficiently developed to answer all of the questions that are reasonably raised when a tall and/or complex timber building is proposed. Engagement on the topic by all key stakeholders is critical, as is investment in R&D.

Dr Danny Hopkin is a structural fire engineer who leads a team of fire safety consultants. He has a doctorate in the field of 'the fire resistance of timber structures'.

● www.trentonfire.co.uk

Dr Michael H. Ramage

Senior lecturer in architectural engineering, Director, Centre for Natural Material Innovation, University of Cambridge

PLP Architecture, engineers Smith and Wallwork, together with our Centre for Natural Material Innovation at Cambridge University, have produced a series of timber skyscraper concepts as part of the super tall timber project, exploring the possibilities of tall, engineered timber buildings.

The designs include conceptual plans for Oakwood Tower, an 80-storey, 300m-high wooden mixed-use super-tall tower at London's Barbican arts complex, and highlights the challenges and opportunities presented by engineered timber as a construction material.

Oakwood Tower looks at the potential around the low self-weight of timber buildings, as

well as issues around robustness, and the mechanical properties of engineered timbers such as glulam (glued-laminated timber), cross-laminated timber and laminated veneer lumber.

The project also looks at the high degree of inherent fire resistance against structural failure that large solid-timber elements exhibit, with their propensity for the surface to form a protective charred layer.

The second phase of the project involves a series of experimental investigations into the actual

performance of engineered timber at the scale proposed for Oakwood Tower. These results will then feed back into the design process, to be further developed.

From an economic perspective, timber allows for faster construction, which is cheaper. It's also quieter, which is good for congested cities, and requires far fewer truck deliveries. However, probably the single most beneficial aspect is that it offers an entirely new way of conceiving buildings in the city.

Engineered timber makes the properties of the material more stable and reliable, so

specification is easier, and designing to particular strengths/stresses is more akin to the way engineers design with steel and concrete.

Timber is the only construction material we can grow. It sequesters carbon, and the trees cut for engineered timber come from sustainably managed forests. European forests are currently expanding – we cut a lot less than we grow – and with declining paper consumption, much of what was planted for paper pulp years ago can be re-purposed.

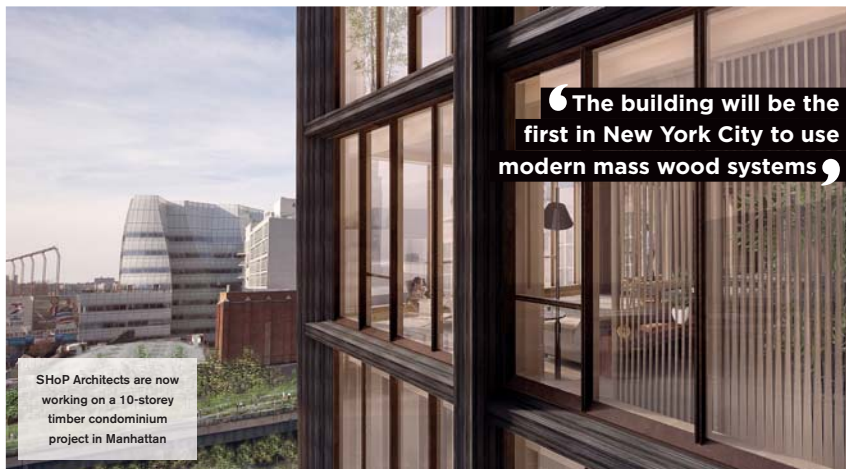
Dr Ramage leads the Centre for Natural Material Innovation at Cambridge University. He's also a founding partner of Light Earth Designs LLP
www.natmat.group.cam.ac.uk
● www.light-earth.com



Architects are looking into the performance of engineered timber at the scale of the proposed Oakwood Tower at the Barbican in London

“European forests are currently expanding - we cut a lot less than we grow”





SHoP Architects are now working on a 10-storey timber condominium project in Manhattan



Chris Sharples

Principal at SHoP Architects

Using wood as a construction material saves time. In traditional construction using conventional materials like steel and concrete, you have a lot of congestion on site, involving wet trades, with numerous different teams working alongside each other. It takes time for the concrete to set, for the formwork to be installed and the rebar to be bent and shaped into place.

Compare this to mass timber construction and a lot of the activity around making the floors, walls and structure can all be pre-fabricated in a factory off-site. The advent of cross-laminated timber (CLT) systems has allowed for more of a building to be manufactured in mass timber. These systems include glulams for columns and beams, and CLTs for flooring and walls.

SHoP Architects has been working with a client and with

city agencies, on developing a 10-storey mass timber residential condominium building, located in Manhattan's West Chelsea neighbourhood. The building will be the first in New York City to use modern mass wood systems, and will be the tallest building in the city to use structural timber, pending approvals from the New York City Department of Buildings.

The project is the outcome of a competition set by the Department of Agriculture, along with the Softwood Lumber Board (SLB) and the Binational Softwood Lumber Council (BSLC), awarding \$3m to a design team looking to develop a high-rise mass timber construction. The money supports the collaborative research developed to prove the science behind using timber as a building material and gain appropriate city approvals.

We're currently in the midst of working with the Department of Agriculture and the SLB and

the BSLC, in conducting the research and setting up the protocols for the testing.

The US Department of Agriculture is looking to promote mass timber construction as a viable way to improve rural economies and provide forestation practices.

As a renewable material, mass wood acts to sequester carbon – approximately one ton of carbon per cubic metre – therefore offering an exciting new tool for designers and a great story for construction in the city.

SHoP Architects was founded 20 years ago, setting out to prove that intelligent, evocative architecture can be made with real-world constraints.

Sharples is a founding partner of SHoP Architects and has been instrumental in integrating cultural projects into the urban environment.

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bathed in beauty

Fueled by a surging interest in health and wellness, bathhouses are experiencing a global renaissance. Rhianon Howells takes a look at some watery temples with added wow

BIG IDEAS

PROJECT: The Well

LOCATION: Sofiemyr, Norway

ARCHITECTS: Halvorsen & Reine, Drammen, Norway

SPA DESIGNERS: Thermarium, a division of Klafs, Schwäbisch Hall, Germany

Opened earlier this year, The Well is the largest spa and bathhouse in the Nordic region, covering 10,500sq m. Located in the pine forests of Sofiemyr just 11 km from Oslo, the project is the personal passion of billionaire entrepreneur Stein Erik Hagen, whose investment firm, Canica, already owns another Norwegian spa: Farris Bad in Larvik, opened in 2009.

At 2,500sq m Farris Bad is hardly small, but it's a minnow compared to its newer sister, which is inspired by wellness traditions

from all over the world. With 11 pools, 15 saunas and steamrooms and more than 100 showers – not to mention bathing experiences from Japan, the Middle East and Scandinavia – The Well is going for quantity as well as quality.

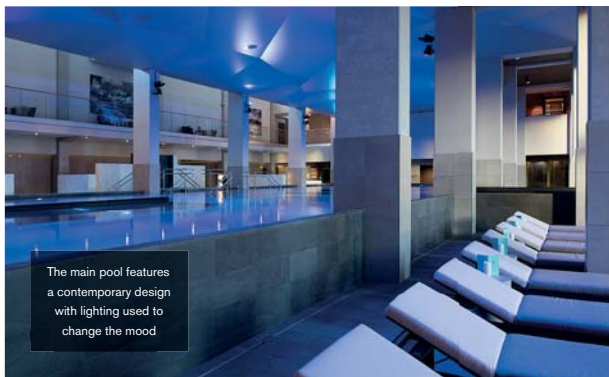
"We wanted to create something big and spectacular and launch something unique in Norway. Because of my love for spa, it ended up being this experience paradise and wellness centre for adults," says Hagen.

In addition to a central three-storey spa building, The Well



STEIN ERIK HAGEN

We wanted to create something big and spectacular, go where no one had gone before and launch something unique in Norway



The main pool features a contemporary design with lighting used to change the mood

features many other indoor and outdoor facilities, so the challenge for the design team was to create a cohesive concept for an offering of this size and scale, while integrating different ambiances for areas inspired by different wellness traditions.

According to Thermarium MD Jürgen Klingenschmid, the spa design and manufacturing firm – then under the leadership of previous MD Adrian Egger – was responsible for the layout, interior design and technical

The Well features
11 pools and 15
different saunas
and steamrooms



planning of the facility, with some areas, such as the pool, done in cooperation with the architects.

The design brief, says Klingenschmid, was "to generate an overall contemporary design but to also integrate a variety of different ambiances for each of the experiences themed around worldwide wellness traditions. Overall, the interiors are spacious and airy and use unobtrusive materials, but the design of special areas are completely different – they immerse guests

in a narrative of each new world with stylish, complex materials and lavish colour concepts.

"Reaching across three levels, the huge pool area is surrounded by a complex columns structure, which gives the hall a sacred character. The two-storey loft sauna is also very impressive."

Other highlights include a cinema sauna, with lighting that changes according to what's happening on-screen; a jungle sauna, with tropical visuals; and Art Deco baths covered in gold mosaic.



The jungle sauna features tropical visuals and a mango scent



PHOTO: © RONANO HABIBI

PUBLIC MEETS PRIVATE

PROJECT: Aqua Sports & Spa

LOCATION: Tokyo, Japan

ARCHITECTS: COE Architecture International, Los Angeles

A new fitness and spa facility in Tokyo has reinvented the traditional Japanese onsen experience for the 21st century, according to the architect behind it.

Operated by fitness operator Seta Sports Connection, Aqua Sports & Spa is a six-storey, 6,000sq m building in the city's Setagaya-Ku district. Replacing a 1980s facility, it combines spaces for fitness training, Japanese bathing and socialising.

Facilities include a 50m swimming pool, a gym, spa lounges and traditional onsen (hot spring) baths. There is also a lounge, a

bar, a dining room and a café.

Historically, public bathhouses were central to Japanese communities, providing a place for people not only to wash and bathe but also to spend time with friends. COE Architecture's design is intended to foster a similar sense of wellbeing and community, while also bridging the gap between a utilitarian fitness club and a luxury hotel.

"We know there's a big expectation of newness and hospitality in Japan," says studio founder Christopher Coe. "When you're in Tokyo in particular, the buildings that are most attractive



PHOTO: © KEI TAKASHIMA/MACASA

The functions of the club are split into sport and social spaces



PHOTO: © OSANU MATSUDA

CHRISTOPHER COE

Japan has a very big bathing culture which is almost religious

to people are wonderful hotels and shopping centres, because of the out-of-home experiences they offer. We wanted to create that feeling."

Sports and social spaces are divided into white and dark grey concrete volumes, which vary in scale according to their function. The design also includes many windows, which along with semi-transparent materials

◀ The minimalist building is raised off the ground so that the pool can be viewed from the street

for the building's exterior, work to create a public presence within the dense urban site.

"An important component of our design was to bring bathing into the open, so we raised the pool in the air to make it visible through the building from street level," says Coe. "Japan has a very big bathing culture which is almost religious. Bathing is usually such a private thing, it's not about putting yourself on display. We wanted to invert that idea. It was a fantastic opportunity to blur the lines between the public and the private, and bathing and sport, to create something completely different."

The onsen baths, however, remain a private, even sacred, space. Fed by a volcanic hot spring, the identical male and female facilities are located underground, while a deep well cut into the hillside allows light and air to flow in. The baths themselves are clad in dark granite, both disguising the effects of staining from the mineral-rich water and adding drama, while a Zen rock garden at the base of each light well provides a serene backdrop.



PHOTO: © CLARENDON SOLID

NATURAL HARMONY

PROJECT: Lanserhof Lans expansion

LOCATION: Lans, near Innsbruck, Austria

ARCHITECTS: Ingenhoven Architects, Düsseldorf

The world-famous destination spa Lanserhof Lans near Innsbruck, in Austria's beautiful Tirol region, is currently undergoing a major renovation that will include the addition of a new spa and bathhouse building.

The new structure, which is set to open early in 2017, will be situated on a plateau surrounded by forests and meadows. Featuring

a wooden façade and grass roof, it will offer views stretching from the Nordkette mountain range to the adjacent southern mountains.

The building has been designed by German architect Christoph Ingenhoven – himself a regular Lanserhof guest – and the ground floor will house several new sauna experiences, as well as an indoor-outdoor seawater pool. "The new



STEFAN R. SCHOPPA

CHRISTOPH INGENHOVEN

bathhouse is a sensation, with its heated saltwater pool and sauna complex," says Ingenhoven. "There will also be rooms and suites [for treatments], some of which will have their own roof terrace."

As with the existing resort, the design will place an emphasis on transparency, harmonious forms and natural materials, "to open up the heart and soul."

The new bathhouse is a sensation, with its heated saltwater pool and sauna complex

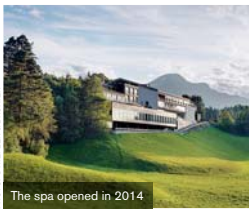


PHOTO: © HIEBLER & BRUNNER

The spa opened in 2014



The new building offers spectacular views of the Tyrolean mountains to the south

EXHIBITION SOAK, STEAM, DREAM

A London exhibition is exploring communal bathing culture through the work of contemporary architects and designers.

The immersive show – called Soak, Steam, Dream

and organised as part of the 2016 London Design Festival – uses photography, film and archive objects to showcase international bathhouse projects by designers as varied as Peter Zumthor, Kengo

Kuma and H3T architekti.

The exhibition has been designed by London studio Kellenberger-White, who have transformed the Zaha Hadid-designed Roca London Gallery into "an

animistic bathing grotto" by drawing on natural and ad hoc materials such as clay, wood and charcoal. Soak, Steam, Dream will be open from 16 September 2016 to 28 January 2017.



YUMI TSUSHIMA AND HIDEAKI KUBO

AHEAD OF THE CURVE

PROJECT: Maruhon Ryokan renovation

LOCATION: Sawatari, Gunma, Japan

ARCHITECTS: Kubo Tsushima Architects, Tokyo

An elegant contemporary bathhouse designed using state-of-the-art technology is breathing new life into a 17th-century hotel in Japan.

Tokyo-based Kubo Tsushima Architects were commissioned to renovate Maruhon Ryokan, a traditional Japanese inn and bathhouse complex in the hot spring resort of Sawatari, with the aim of attracting more guests and ensuring the long-term sustainability of the business.

The first of several planned stages of renovation at the site, the new bathhouse sits at a node between two accommodation

The curved cedar wall separates a relaxation area and a submerged spring water bath ▶

buildings, offering easy access to a large existing bathhouse and open-air bath, as well as previously unexploited views to the west.

From the outside, the building has an ordinary form with a traditional gabled roof. But inside, a striking

cedar-wood floor curves upwards to become a wall separating two distinct spaces: an upper-level rest area and a lower-level area housing a submerged, spring-water bath.

Precisely designed using computational fluid dynamics – the use of applied mathematics, physics and computational software to analyse gas or liquid flow – the form of the curved partition generates natural, buoyancy-driven ventilation in the bathing room, so that air entering

via an opening at the bottom of the building quickly rises when heated by the spring water and exits via an opening under the roof.

The design also facilitates natural daylight diffusion, as light floods in via both the lower and upper openings and a skylight. At night, the space is lit with LEDs.

Meanwhile, in the open-fronted upper rest area, the curved wall doubles as a comfortable backrest for a cypress-wood bench overlooking the view.

“All the elements of a comfortable environment – light, air and view – are combined by a curved slab,” says architect Hideaki Kubo.

All the elements of a comfortable environment – light, air and view – are combined by a curved slab



◀ The project is part of a wider renovation project at the Maruhon Ryokan bathhouse complex

ANCIENT AMBITION

PROJECT: Aire Ancient Baths

LOCATION: Vallromanes, Spain

ARCHITECTS: Alonso and Balaguer, Barcelona

A Spanish company offering a modern take on the ancient bathhouses of the Roman, Greek and Ottoman empires has opened its fifth site in Vallromanes, Spain, and has announced the opening of two more, in Chicago and Paris – all designed by Spanish architects Alonso and Balaguer.

The Aire Group opened the first Aire Ancient Baths 16 years ago, in a restored 16th century palace in Seville. Since then it has opened four more: Barcelona (2008), Almeria (2011), New York City (2012) and Vallromanes (2015). A sixth site in Chicago is set to open this December, and a seventh in Paris in 2017.

The Vallromanes site, like all Aire Ancient Baths sites, is located in a restored historical building – in this case, a 15th century 'mas', or farmhouse, at Mas Salagros Ecoresort, 20 minutes from Barcelona. Also in common with its sister sites, Aire de Vallromanes features a wide range of pool

experiences designed to encourage wellbeing and relaxation.

According to the architects, led by studio co-founder Luis Alonso, the design intent was "to maintain the character of the existing house: its essence, rural, agricultural and medieval," and to transport the user on a journey to the past "through its walls, ceilings, windows, cracks, crevices, masonry, beams and arches."

To accentuate this sense of stepping back in time, the main entrance and changing rooms of the baths are housed in a new building to the east of the mas, which has a permeable, lattice-work skin from the traditional liquor factory on the site.

A glass bridge connects this structure to the farmhouse itself, where treatment rooms can be found on the entrance floor and wet areas on the floor below. From here, a gap in an outer glass façade offers access to an open-air pool, while inside the house the large stone walls that support the building dictate the

The biggest challenge was to create a mystical atmosphere where relaxation is the main objective



Aire Ancient Baths in Vallromanes is located in a restored farmhouse

lines of the hallways and different thermal areas. An old barn adjacent to the modern building houses underground vinotherapy chambers.

"The biggest challenge was to create a mystical atmosphere where relaxation is the main objective," says the studio. "All Aire Ancient Baths constructions follow this magical, mystical premise to achieve a calming effect using natural light and underground spaces."



The architects aimed to highlight the building's original features while adding new facilities





▲ The separate structures and pools are linked by paved and gravelled walkways



WATER WORLD

PROJECT: Fushengyu Hot Spring Resort

LOCATION: Mianyang, Sichuan, China

ARCHITECTS: AIM Architecture, Shanghai

A landscape dominated by water was the inspiration behind the design of a hot spring resort in China, which has made the shortlist of the 2016 World Architecture Festival's World Building of the Year awards.

Fushengyu Hot Spring Resort, opened in 2015, sits at the foot of the Luo Fu Shan mountain range, "in a place where water has shaped the land," say principal architects Wendy Saunders and Vincent de Graaf. "Rivers have carved out the valley and water naturally springs from the earth."

In line with this, the heart of the resort is a spa building/bathroom wrapped around a hill. At its centre is a thermal pool

encircled by a glass walkway, while separate wings with large windows offer views over the valley. "The building's shape and therefore the experience of the spa are informed by this hill," say the architects. "As you progress through the stages of bathing, you are offered differing views of the changing landscape."

Inside one wing, a variety of pools – some screened by curved stone walls – sit at different levels across a stepped floor. Further pools are dotted around the resort outside. "We have sought to push the theme of water, to express its various forms. It is steam, ice, fish, herbs, salt, different concentration of minerals. Some pools are still,

others whirl, bubble, massage and so on. We have sought to make these conditions real, pure and positioned carefully in the landscape to make this a completely escapist place."

Throughout the resort, materials were chosen for their natural qualities, with many walls made from clay mixed with pebbles or

stained timber. River stone was used in everything from seats in pools to benchtops in villas. "This locally sourced stone is a conglomerate of pebbles that have been shaped by water over time," explain the architects. "Cutting it reveals pebbles of various shapes and sizes and a wealth of natural colours." ●



Several of the pools are shielded by curved stone walls



The shape of the building is determined by the hill at the centre of the site

As you progress through the stages of bathing, you are offered differing views of the changing landscape



The design of the Fushengyu Resort was influenced by the surrounding landscape



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Kengo Kuma

The Tokyo Olympic Stadium architect meets Kim Megson to discuss the controversial project, as well as his other high profile commissions

I meet Kengo Kuma at a canal-side café in Venice, where he is staying in the city to attend Alejandro Aravena's Architecture Biennale. As we're talking, he is spotted by a group of young architecture students from Japan. They wait patiently while we finish our interview so they can meet him and snap a selfie. Later, still starstruck, they tell me they came to the Biennale with a wishlist of architects to meet. Kuma was firmly at the top.

The architect is known and celebrated around the world for the elegance and simplicity of his work and his use of natural materials. His early projects set out to reinterpret traditional Japanese architecture for the 21st century, while his later designs – from stadiums and spas to houses and hotels – have become known for their lightness of touch following his self-declared ambition “to build with humbleness.”

This philosophy can be seen in Kuma's best known buildings, including the white latticed Suntory Museum of Art in Tokyo, Japan; the timber Ginza Onsen Fujiya in Yamagata, Japan; and the criss-crossing China Academy of Art in Hangzhou, China, which was completed last year.

Over the past year Kengo Kuma and Associates – the practice Kuma founded 26 years ago – have begun to channel their resources into bidding for a series of public museum projects. Following several competition wins, their portfolio of future museums now includes the Hans Christian Andersen Museum in Odense,

PHOTO: INOX



It's not easy for foreign architects to work in Japan. Zaha was very frustrated with the miscommunication

Denmark; the Museum of Indigenous Knowledge in Manila, the Philippines; and the Victoria & Albert Museum's offshoot in Dundee, UK.

"The role of architects in the 21st century is to create a link between people and art," Kuma tells me. "We should be the communicators between those two things. We have a responsibility to society not to allow isolation.

"In the last century, museums became separated from the culture around them. Now the best new ones are reconnecting with local life. I think they should be part of their street and neighbourhood surroundings, so with each new museum design I do I want to pick up an experience of the place.

"I don't want these buildings to be a reflection of me. Some architects try to push their ideas onto a museum, whereas I try to dig into the spirit of the location and find its essence."

With demand for his services high, life seems good for Kuma and his studio. However, one controversy has emerged which threatens to overshadow all these achievements.

The Tokyo Olympic Stadium saga

The Japanese government's decision to rebuild the country's National Stadium for the 2020 Tokyo Olympics has led to one of the most protracted and public sagas in the history of leisure architecture.

Zaha Hadid Architects (ZHA) won the initial competition for the design with Japanese studio Nikken Sekkei, but their design was eventually scrapped by Prime Minister Shinzo Abe, who said the cost had "ballooned too much" after almost doubling to US\$2bn (£1.79bn, £1.52bn).

A succession of skirmishes followed, with ZHA issuing a robust defence of their design, blaming the cost increases on Japan's overheated construction market and the tendering process for the building, in which contractors were appointed before they submitted cost estimates.

The Japanese government ignored ZHA's protests and organised a second competition, which Kuma's studio won ahead of a design proposed by fellow Japanese architect Toyo Ito. ZHA then accused Kuma's design of sharing "remarkable similarities with our original detailed stadium layout and our seating bowl [configuration]."

Kuma has always firmly denied the allegation, but the story has overshadowed his vision for the stadium. Throughout our conversation he is happy to talk about the project and explain the situation from his point of view.

"The communication between Zaha, the Japanese partners and the client was very bad," he says. "I think it's a problem in Japan. For foreign architects to work there is not easy because the system is totally different and a language barrier exists between the Japanese and foreigners. Zaha was very frustrated with that kind of miscommunication. I understand that difficulty, of course, but I was not happy to hear her claims about our scheme. It is totally opposite from Zaha's design."

Kuma concedes that there are shared elements, but claims such similarities are unavoidable given the nature of the scheme and building type.

"The site is very limited and the track has to be an Olympic size, so that determines a lot of things," he explains, calmly. "The escape evacuation points and the position of the stairs for example. This is unavoidable. But the design is totally opposite." [For ZHA director Patrik Schumacher's response, see p46.]

Despite the media attention and scrutiny, Kuma talks with great excitement about the stadium; the sort of project he says he's been waiting his whole life to do. Once the government re-opened the competition, his studio dropped most of their other projects to concentrate on their submission "because the brief was to create a symbol for a new period for Japan."



STADIUM IMAGES: TASEI CORPORATION, AECOM, SHIBUKI CO. LTD. & KENGO KUMA & ASSOCIATES

Kuma's wooden lattice Tokyo Olympic Stadium design was chosen by the Japanese government in December 2015

For Kuma, building such a venue for the Olympics has a personal resonance.

"We had our first Olympics in Japan in 1964, and those Games were very important for me," he says. "It was a year of economic expansion in Japan. Really we hit a peak. Everything was going well and the architect Kenzo Tange perfectly symbolised that period by building a beautiful gymnasium [the Yoyogi National Gymnasium]. He was my hero. I was so impressed by that building, even at the age of 10, and it was after visiting it that I immediately decided to become an architect."

Now given the opportunity to leave his own mark, Kuma wants his stadium, and the 2020 Games more broadly, to symbolise today's Japan, a country "whose culture and direction is totally opposite to what went before" due to a slowing down of both economic growth and the pace of life.

"This new direction can be called the age of maturity," he says. "People are finding a new, slower kind of lifestyle. But slowdown is not bad. Slowdown is creating new types of culture, new types of lifestyle. Actually, when you look at Japanese history, it is not a history of expansion. We're basically very slow and very quiet, and I'm happy to see us go back to that time of quietness."

"For the stadium, I have used a lot of wood because I think it's an appropriate material to symbolise this change."

Indeed, the Olympic Stadium will feature an almost unprecedented amount of wood for a major sporting venue – from the steel and wood structure to the wooden façade and the trees that will be placed around the perimeter.



Kuma says the design captures the spirit of Japan by evoking the country's traditional timber structures and wooden cities: "We once lived together and aged together with wood. I want to go back to that kind of natural circulation with my work."

Connecting with nature

At its best, Kuma believes his built work creates this type of a strong connection with nature.

"Before me, especially in Japan, architects were working with concrete and steel," he says. "But I've always tried to build with natural materials. In that sense I revolutionised the way materials are used, because now the young generation have all started to use wood for their small projects."

"If you open a Japanese magazine, you can see the change. Before me the architecture featured was quite grey. After me, it has tended to be the colour of wood. The tone is very different."

As evidenced by the excitable students waiting for a photo, Kuma continues to inspire the next generation of Japanese architects. He enjoys mentoring and teaches at several Tokyo universities. So what message does he want to pass on to the future creators of our built environments?

"Developers often try to make short-term profit, but architects should always think of history and creating long-term benefits for people," he says. "The problem of our period is the developers have huge money and influence. Governments are getting very weak and are letting these short-sighted people design cities by themselves."

He thinks carefully before continuing. "I think the winner in a project should be the building and the environment. Architects should never be the winner. We should respect the places where we work and respect the people who live there. That's our philosophy, simply put." ●



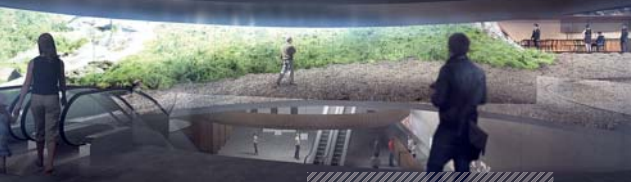
KENGO KUMA'S MUSEUMS

In his own words

The architect reveals the inspirations behind three of his most exciting museum designs



The Museum of Indigenous Knowledge in Manila features a tropical plant-covered arch



The museum will explore the Philippines' cultural history. The design features jungles, streams, waterfalls and ponds



The Museum of Indigenous Knowledge, Manila

The 97,000sq ft museum will cover 4,000 years of history, enabling visitors to experience the cultural and religious heritage of the Philippines' indigenous peoples, starting from the Neolithic age. Kuma has created a jungle-inspired building seemingly located inside an enormous cave. Visitors will walk from the street through a soaring rock arch covered in tropical plants and into a large void. Inside, they'll continue through a wild environment of jungle, streams, ravines, ponds and waterfalls to reach a central atrium, replicating the mountains and valleys where local people sought refuge following the arrival of Spanish colonisers.

“The location of the museum is in an industrial park with a big factory there. The thought came to us that in this kind of industrial environment we should create nature ourselves.

The client told me about the value of the very first cultures of the Philippines. I was so impressed because I didn't know that kind of really strong culture existed there. I thought the Philippines was a beautiful country, with beautiful nature, but the history was not all that interesting. On the contrary, I've discovered that its history is very long and very rich. I want to symbolise that strength through a design that is very much integrated with the beauty of nature.

In Manila, the new buildings are mainly shopping centres and that kind of thing. I want to create a strong cultural core for the city.”



The Hans Christian Andersen Museum, Odense, Denmark

A peaceful garden and tall trees will surround cylindrical timber-clad volumes that house 6,000sq m (64,600sq ft) of new floor space, including an underground level. The complex, which will also include the city's Tinderbox Cultural Centre for Children, is designed to create empathy, imagination and play while inspiring learning about the author's famous fables.

“As with the Manila project, we have explored the beauty of nature. But the nature we pick up for each project is different. In Manila it is very tropical. Here, I found beauty in the small hedged gardens of the city. Odense is not big. The scale of the space and the scale of the garden villages is very similar to a Japanese townscape. When I visited, I felt ‘ah this is very similar to my home.’ I wanted to take that emotion, and the shared vocabulary of these places, and translate that to a cultural building.

I love Hans Christian Andersen's fairy tales. For kids, they're very different from normal fairy tales which try to teach you something. Andersen tried to show the new world. I still remember many of them and I've always found them so exciting. Like some Japanese fairy tales they are surprising and sometimes scary, with a feeling of 'wow' at some of the endings!

My design tries to create some of that sense of involvement. We've contrasted between small spaces and big spaces, and straight spaces and spiralling spaces. That kind of contrast can create big surprises and big excitement for kids. That is the basis of the idea. ”



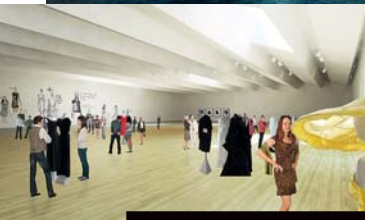
Kuma's designs for the new Hans Christian Andersen Museum in Odense feature green roofs



Two thirds of the building will be underground, allowing for the creation of a large 'magical garden space' above ground



The V&A Dundee will be Kengo Kuma's first UK building. It is currently under construction and is due for completion in 2017



The Victoria and Albert Museum, Dundee, UK

The conceptual design was unveiled back in September 2010 for this landmark museum project on the banks of River Tay in Dundee's Craig Harbour. Construction at the site began in March 2015 and the sculptural main building is expected to be completed by the end of 2017. When finished, the building will feature layers of prefabricated concrete beams and reconstituted stone cladding. It will chiefly house exhibition and gallery spaces for the V&A's mammoth collection of art and cultural artefacts.

“Dundee is not like Edinburgh and not like Glasgow. As a location it is very interesting. The river is beautiful, the bridge is beautiful. But before our project, the city and its beautiful nature were totally separated. The aim of our building is to combine nature and the city

centre so we can achieve the kind of connection that allows the city to get energy from nature.

I was inspired by the ship *Discovery*, and by the cliffs in Scotland. The nature of the country is very tough. It's not so mild. I wanted to translate that kind of natural beauty and toughness to the building.

The V&A people tried to make a very new concept; something different to what they had done before. It is very different from the V&A in London, which is mainly an example of architecture from the 19th century. Our new museum is a mixture of contemporary design and traditional and natural features. That combination can create a new type of chemistry and – I hope – a new type of design culture which will stimulate architecture and design in Scotland.”

Kengo's design was inspired by the "tough" Scottish landscape and features concrete beams and stone cladding



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Bruno, NYC**

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75 Seats and Under*

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Renzo Piano Building Workshop Untitled, NYC

*Outstanding Restaurant Design
75 Seats and Under*



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76 Seats and Over*



**JAMES
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PEOPLE POWER

A man with a beard, wearing a light grey t-shirt and dark pants, is sitting on a wooden pallet next to a large, cylindrical industrial steam ring generator. The generator is wrapped in silver insulation and has a blue control box attached to its side. The background shows a chain-link fence, trees, and a clear blue sky. The text 'PEOPLE POWER' is overlaid in large white letters at the top of the image.

BIG turned to Kickstarter to raise funds for a steam ring generator at the Amager Bakke Waste to Energy Plant in Copenhagen

Using crowdfunding as a way of getting a project off the ground can allow architects to be proactive, but it does have its pitfalls. Kath Hudson finds out the pros and cons from the people who've done it

In times of austerity, with cash-strapped local authorities and banks frequently reluctant to lend, many projects languish on the drawing board. However, crowdfunding offers an alternative access to funds and is becoming an increasingly influential way to breathe new life into old buildings or get brand new projects and kooky ideas off the ground.

Bjarke Ingels, who used crowdfunding to finance the steam ring generator (see boxout), is a fan:

"Often architects are the last ones to enter the game of imagining the future of our cities, because they have to wait for someone to announce a competition, or a developer to give them a project," he says. "One of the inhibitions of the architecture profession is that it is often limited by the vision the clients put forward. Platforms like Kickstarter are a great place for architects to be proactive and get their ideas out there."

There are a number of other advantages to crowdfunding. A successful campaign, which the community has been happy to buy into, means your idea is a goer and you have a ready-made audience.

Choosing the right platform

On the downside, it's not an easy way of getting cash. Studio Octopi's Chris Romer-Lee, who has worked on a couple of crowdfunding campaigns, says they are intense and hard work.

"I've not worked out a way to do a campaign which isn't completely draining. It's so intense and time-consuming," he says. "For the 30 days of the Thames Bath campaign, I was getting five hours sleep and retweeting in the middle of the night. It's all about keeping the churn going."

Romer-Lee says the choice of platform is important. The Thames Bath project – to create a floating freshwater swimming pool on the River Thames – had global appeal because it was in the heart of London and could also be transferable to other places, so Kickstarter was chosen.

For Peckham Lido, a community project in London, Spacive has a better fit because it's more



It empowers citizens to change their community with a bottom up approach

Harriet Gridley, Spacive

suited to local initiatives, from a few thousand up to about £100,000 (\$131,000, €117,000).

Kickstarter requires rewards for pledges, so a five-tier system was put in place for Thames Bath, including free swims for life for the platinum membership, down to the lowest tier of 12 free swims and a swimming cap for a £50 (\$65, €59) pledge. "Rewards have to be carefully calculated so that you don't give away more than is pledged," says Romer-Lee. "We aimed for 7-10 per cent."

Hitting the tipping point

The risk with crowdfunding is that if a campaign is unsuccessful then you don't receive any of the money pledged. Spacive runs this model to safeguard the individuals who are pledging money: if a campaign doesn't hit its target, it's less likely to happen and people will receive nothing in return. However, even if a campaign is unsuccessful, at least it's a learning experience.

"If a project isn't successful it's because either the public don't want to buy into it, or you haven't sold it well enough, so you have at least learnt that," says Harriet Gridley, community development manager at Spacive.

Gridley says the tipping point for a successful campaign is 59 per cent. "If they hit that they tend to go on to be successful," she says. "It's crowd psychology: if one person ran out of a room screaming you'd think they were weird. If two more left you might think something is happening, but if more than half leave, you might join in."

Reaching the community

She says to be crowdfunding a project needs to be novel, have a strong design element, capture the public imagination, appeal to different audience groups and be deliverable.

"Crowdfunding campaigns can get the seed funding to attract attention to a project. You can use the money to demonstrate it to a community. If the public likes it, then local businesses come on board, the council and the corporates," she says.

"It empowers citizens to change their community with a bottom-up approach. We are seeing lots of green space projects, such as cleaning up a lake or a forest education centre, as well as repurposing old buildings. Governments like it because it takes the issue away from them."

Like many platforms, Spacive gives a lot of support to its clients, including running webinars. There are a few golden rules according to Gridley. Restrict the campaign to four to 12 weeks, so the momentum and excitement can be maintained.

"Do 90 per cent of the work before the launch. Warm up contacts, have all the visuals, graphics, video and promotional material ready to use on social media. Each day do something to push it."

Romer-Lee warns it's crucial to be clear in the campaign because weakness will be picked apart. He also says celebrity endorsement goes a long way. Actor James Norton, who lives in London, backed the lido campaign and artist Tracey Emin – a keen swimmer – came on board for Thames Bath.

Platform:

MichiganFinders

Amount raised so far:

\$725,500



The \$3m makeover of Detroit City's grounds is the largest crowdfunding project in US sports history



Crowdfunding allowed us to leverage the connections we had made with the local community



Detroit City Football Club

When it needed a new home, fast-growing, semi-pro soccer team Detroit City Football Club decided to go the crowdfunding route to raise the funds to renovate a 79-year-old stadium in Michigan.

The largest community-financed project in US sports history, the \$3m (£2.3m, €2.7m) renovation will replace the artificial turf with real grass, update the lighting and renovate the restrooms and locker rooms. Hosted

by MichiganFinders.com, the campaign raised \$250,000, (£190,799, €224,315) from 125 investors, in the first month.

The club chose this route after being unable to borrow sufficient funds from the bank and reluctant to give up equity in the business to raise capital. "Crowdfunding allowed us to leverage the connections we had made with the local community to create this private-public partnership, where we invested in the renovation of a community asset and offered investors a meaningful financial return as part of the process," says Todd Krupp, co-owner of the club.

Krupp says there are a number of advantages to crowdfunding: investors help to tell the story of your business and it gives the community an opportunity to contribute.

However, he warns of some potential pitfalls: "Depending on business case and risk level, you may have to offer a higher rate of return than what you would pay in interest for traditional financing. In our case we were receiving funds from local people, so it was extremely important to us that we could deliver on our promise to pay people back in the timeframe we stated in our offering materials.

"Also provide enough time for people to consider the investment and sign up. Our campaign stretched across four months and we were nervous right up until the very end as to whether we'd hit our funding target."



Crowdfunding gives the community a chance to contribute

Platform:
Spacehive

Amount raised:
Peckham Coal Line
£75,757
Peckham Lido
£65,000

Peckham regeneration

If everything goes according to plan, the South London borough of Peckham will be transformed thanks to community-led crowdfunding. A crowdfunded feasibility study is currently underway to create a 1km elevated urban park on the site of some coal sidings which have been derelict since the 1950s. The Peckham Coal Line would provide some valuable green space in a very urban area and link into the national cycle route.

A second crowdfunding campaign, launched in May, raised £60,000 (\$78,500, €70,407) to resurrect the Peckham Rye Lido, which closed in 1987. Plans include the creation of an Olympic-sized pool and a wild swimming pond channeling the River Peck, which runs directly under the site. The site will include a "Peckham Beach", gym, yoga studio, café and community space as well as an outdoor cinema.

After seeing the community invest in the Peckham Lido, Southwark Council pledged £10,000 (\$13,082, €11,734) and the Mayor of London £7,500 (\$9,825, €8,814). The largest individual contribution was £3,000 (\$3,930, €3,525), from a local tech entrepreneur and the smallest was a few pounds.



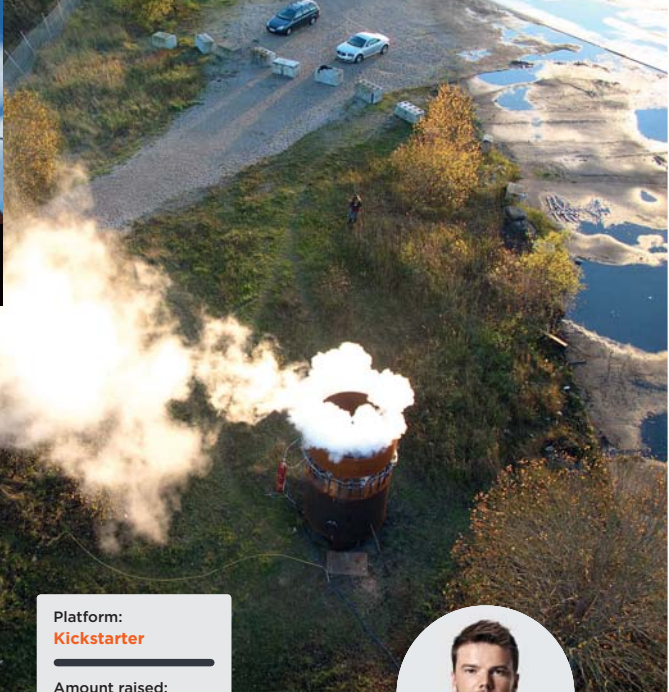
Actor James Norton (second from right) and the Peckham Lido team



Plans include the creation of an Olympic-sized pool, a wild swimming pond, "Peckham Beach", a gym and a yoga studio



The generator sends a symbolic ring of steam into the sky every time the power plant emits a ton of CO₂.



“
If done with good intentions and in a smart way, the rewards are great
”

Platform:
Kickstarter

Amount raised:
\$29,520



Bjarke Ingels

BIG's steam ring generator

BIG launched a \$15,000 (£11,447, €13,458) campaign to finance the prototype of a smoke ring generator: a tower fixed to a power plant in Copenhagen, to emit a symbolic ring of steam for each ton of CO₂ the plant emits. The plant, also designed by BIG, incinerates trash to generate power, and includes a functional ski slope, complete with trees and half pipes.

Currently being prototyped, the smoke ring generator is slated for completion in 2017. Each of the 399 backers, who pledged a total of \$29,520 (£22,528, €26,487) to bring this project to life, will get their name engraved on the generator.

BIG went the crowdfunding route because there were no takers to finance it: it's a piece of public art not essential

to the plant, with a radical message. "Architects don't have access to the same grants as artists. We managed to get half of the necessary funding, but the rest we decided to pursue through Kickstarter," says head of communications at BIG, Daria Pahhota.

"Bjarke Ingels gave a talk at their offices in Brooklyn and it seemed like an interesting way to go about it. It's also very close to the concept of the steam rings - the idea of radical transparency, so it made sense to let the public decide the project's destiny.

"We would absolutely do it again, but like everything else, it needs to be done well and with consideration and respect. It's not a PR tool, but if done with good intentions and in a smart way, the rewards are great."



BIG is working with Rumlaboratorium's Peter Madsen on the project

IMAGE: ARBENT VATAJAPETI

The crowdfunding proceeds will pay to replace the stadium's seats, the first step in its transformation to a concert and events venue

Platform:
Indiegogo

Amount raised so far:
\$109,800

Miami Marine Stadium

The National Trust has been working to restore Miami Marine Stadium since 2009, when it was added to the annual list of America's 11 Most Endangered Historic Places, but it was the partnership with Heineken which spurred the crowdfunding effort.

"We were inspired not only by Heineken's enthusiasm for the stadium and its iconic status in Miami, but also for their desire to engage a younger generation in the movement to save it," says Jason Clement, director of community outreach at The National Trust. "We are hopeful this partnership with Heineken proves crowdfunding is a viable tool for engaging more people in our work to save places."

A fully restored Miami Marine Stadium would cost more than \$30m (£22.9m, €26.9m), too much for a crowdfunding campaign, so the National Trust settled on a project which was achievable with Heineken's support. They decided to replace the stadium's seats, as the first step in its transformation into a world-class concert and events venue.

"Crowdfunding requires a very specific project and equally specific funding goal that's attainable in a short period of time," says Clement. "Crowdfunding engaged people who have probably never donated to a preservation campaign. Not all platforms work the same way and for some, if you don't reach your goal, the funds raised might not be awarded to you. It takes a lot of work to run these campaigns, so it's important that you know exactly how your platform does things - win or lose."

The stadium is one of the US' most endangered historic places

PHOTO: ROBERT HISSON

INVESTMENT



We went to dozens of families, across the globe, who individually each contributed a small amount



More than 100 investors helped fund Powder Mountain

Powder Mountain

A group of young US entrepreneurs crowdsourced a Utah ski resort, Powder Mountain, in 2013, persuading 110 investors to pay between \$1m (€0.76m, €0.9m) and \$2m (€1.5m, €1.8m) for one to two acre plots (see CLAD 2016 issue 1).

Co-founder of Summit Powder Mountain, Elliott Bisnow, says they chose this route in order to bring in as wide and diverse an investor and supporter group as possible, rather than be held hostage by a traditional private equity firm or institution.

"The experience was time consuming, because the majority of investors had not gone through a process like this before. While they believed deeply in the project and had an understanding of the possibilities, the actual process of making this happen was long

Platform:

Private funding drive

Amount raised:

\$40m

and complicated," says Bisnow. "In a normal scenario you would go to one investment firm and they would fund the project. We went to dozens of families, across the globe, who individually each contributed a small amount.

"However, in the end the process was a tremendous success and allowed us to build momentum with incredible backers who believed in our vision and put community first, rather than profits." ●



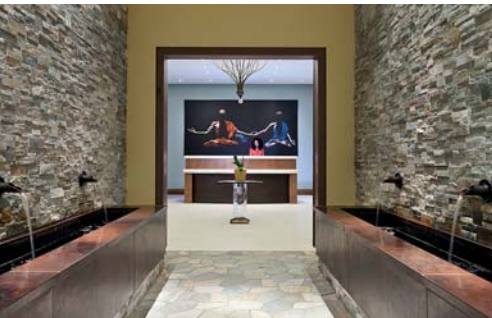
The Utah ski resort was the brainchild of a group of young US entrepreneurs, including Sam Arthur (above)





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The future for healthy buildings

The impact of the built environment on our health and wellbeing is under the spotlight more than ever. Atelier Ten's Younha Rhee talks us through the latest thinking in the design of healthy buildings

When I was a student at Yale, I used to attend lectures in the School of Art And Architecture, a building designed by famous brutalist architect Paul Rudolph, and I, as well as many others, used to fall

asleep in Hastings Hall located at the basement of the building where most of the lectures were held.

As an architecture student pulling all-nighters, I attributed the fact I often fell asleep in the hall to my tiredness and excused everyone else for the same reason. I never questioned whether it might be due to bad ventilation or air quality in the space.

Having become an environmental designer focusing on the design of 'healthy buildings', I now realise that my sleepiness was probably the result of high CO2 levels due to poor ventilation in the basement, and that the design of the building did impact my levels of alertness.

CLEARING UP THE CONFUSION

Sustainable buildings and 'green' living have been popular trends in real estate for years now, but the latest buzzwords focus on healthy building and wellness/wellbeing environments. While the term healthy building has become commonplace, it is often interspersed or indeed mixed up with terms such as 'sustainable buildings' and 'green building'.

The World Green Building Council's publication *Health, Wellbeing and Productivity* recognises that there are reputable, robust studies that

“Pushing for more daylighting has led to overglazed buildings in the last two decades where visual comfort has been compromised



suggest the green design features of buildings lead to healthier, more productive occupants. However, the World Green Building Council also warns that low carbon and resource-efficient buildings don't automatically achieve healthier or more productive environments.

PRODUCTIVITY

Addressing indoor air quality could lead to a less energy efficient building, for example. A meta-analysis in 2006 of 24 studies, including six office studies, found that poor air quality (and elevated temperatures) consistently lowered performance by up to 10 per cent on measures such as typing speed and unit output.

This analysis appeared to demonstrate that the optimum ventilation rate is between 20 and 30 litres per second (l/s), with benefits tailing off from 30 up to 50 l/s. As a comparison, the British Council for Offices' *Guide to Specification* recommends 12 l/s. In order to achieve an increased ventilation rate of 20-30 l/s, there is an energy penalty for additional auxiliary power. Fitting additional filters into air handling units to purify air coming into a building can further increase auxiliary power requirements.

However, there are plenty of win-wins. Providing individual thermal control for thermal comfort can create a microclimate zone around a single space (ie a hotel room). In this way the energy is deployed only where it is needed, which can result in less energy usage while the individual's needs for thermal comfort are fulfilled. One study found that individual control over



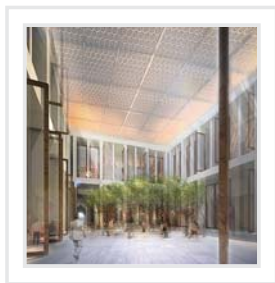
Atelier Ten are providing environmental consulting services for the Downtown Doha masterplan (above and below, right), which includes a hotel, shopping mall and spa

temperature (in a 4°C range) led to an increase of about 3 per cent in logical thinking performance and 7 per cent in typing performance.

THE IMPORTANCE OF GREENERY

Providing natural elements within a building or providing views to natural elements is another win-win. There's a growing volume of research that demonstrates the importance of greenery and the natural environment to health and wellbeing. A recent study in Wisconsin of 2,500 residents showed that across social groups, people who lived in neighbourhoods with less than 10 per cent tree canopy were more likely to report symptoms of depression, stress and anxiety. Introducing natural elements within or outside buildings can lead to increased biodiversity, which improves environmental and human health.

“ People who lived in a neighbourhood with less than 10 per cent tree canopy were more likely to report symptoms of depression and stress



“ Among leisure and public buildings, hotel development is leading the healthy building movement

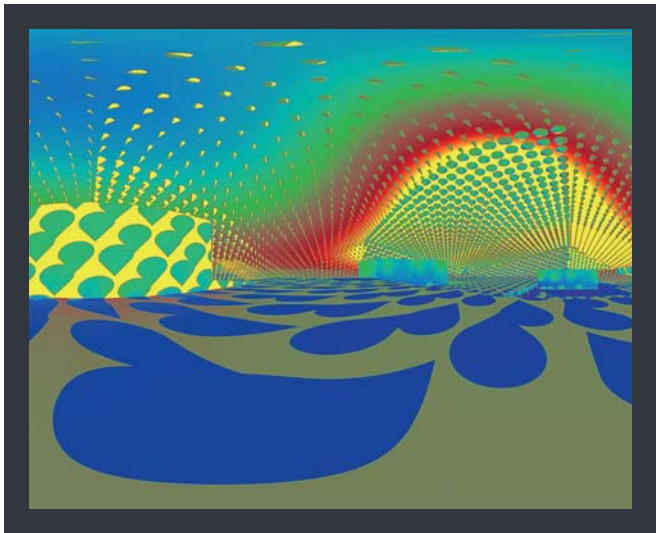
THE ROLE OF LIGHT

Daylighting is another important aspect in the design of healthy buildings.

Maximising daylighting within a building could seem another easy win. However, it's not that simple. Pushing for more daylighting has led to over-glazed buildings in the last two decades where visual comfort has been compromised. Excessive sunlight in these over-glazed buildings leads the building occupants to put up blinds all day, leading to the turning on of electrical lighting, which defeats the original purpose of the design – access to daylight and electrical lighting energy savings. Plus it destroys the view and the associated benefits of any greenery.

LEISURE AND PUBLIC BUILDINGS

Among leisure and public buildings, hotel development is leading this healthy building movement. Hilton and Hyatt hotels, for example, are already providing allergy-free hotel rooms with in-room filtration systems that remove potential allergens or pollutants. Maximising views is the top priority in these high-end hotels. When Atelier One were working on a Park Hyatt hotel in Doha with John McAslan & Partners, we were asked to study views, daylight and energy performance of the building. While maximising



A development render of the predicted daylight inside one of Atelier Ten's projects, showing the difference between direct sunlight and shade

views and daylight with full height glazing, we worked with the design team to optimise energy performance and thermal comfort with high performance glazing, solar shading with setback windows, automatically operated curtains with good thermal performance and individual thermal controls in each room.

We apply our creativity to the critical issue of health. We've long believed that health and sustainability are interconnected, and both must be achieved together. We promote win-win cases such as integrating biophilia and individual thermal controls wherever possible. We also tackle the challenges associated with optimising human health and environmental sustainability, such as indoor air quality, daylighting and the energy performance of the building.

In order to do so, we analyse daylight access, energy saving, visual and thermal comfort with the right level of detail at each phase of design. We help architects optimise their façades and

internal layout to better respond to the climate. We develop our own tools to harness parametric-based approaches to allow rapid assessment of the benefits of multiple alternatives for building envelope and/or systems. We pick the variables and look at how they can be combined to achieve desired or required outcomes in terms of daylight or thermal comfort.

As Winston Churchill said, "We shape our buildings, and afterwards our buildings shape us."

GOING FORWARD

According to the Global Wellness Institute, the global wellness industry is a £2.5 trillion market, or 3.4 times larger than the worldwide pharmaceutical industry. The building sector is one that has the greatest impact on human health.

Atelier Ten are working to improve the health of people and communities in the built environment through innovative design strategies. Our team includes specialists in industrial hygiene, environmental health, building science, lighting design, environmental management, and building systems engineering who understand the relationship between the built environment and human health. We're committed to solutions that protect occupant health, promote occupant wellness, and prevent environmental harm. ●

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An exterior view of the Pulitzer Amsterdam. The iconic Dutch hotel has recently been renovated



GOING DUTCH

The Pulitzer Amsterdam


As the Pulitzer Amsterdam is reborn, its creative director Jacu Strauss tells us how he made sense of the 25 historic buildings that make up the hotel

South African designer Jacu Strauss has a bit of a thing for complicated buildings. His first hotel interiors project, the Mondrian London, was housed in Warren Platner's iconic Sea Containers House building on the river Thames. Strauss was working for Tom Dixon's Design Research Studio at the time, and acted as a senior designer on the project, which saw the huge office block transformed into a cruise liner-inspired hotel with a rooftop bar, restaurant with private dining rooms, cinema and a spa.

"It was a complicated project," says Strauss. "It was quite an unusual building, so it was definitely a challenge. Luckily, I like making my life difficult."

Strauss has since left Tom Dixon's Design Research Studio to go it alone, but his latest project, the Pulitzer Amsterdam, is no less challenging.

Strauss was asked to act as creative director for the restoration of the five star hotel, which is situated along the Prinsengracht and Keizersgracht canals in central Amsterdam. The project involved restoring and redesigning the 25 interlinked canal house buildings that comprise the hotel. The buildings – which were gradually bought up over the years by Peter Pulitzer (grandson of newspaper magnate and Pulitzer Prize creator Joseph Pulitzer) to create a five star hotel – are more than 400 years old, and are situated in a UNESCO World Heritage ►



**We were able
to start from
scratch and
have the hotel
create its own
brand identity**

Jacu Strauss acted as
creative director on the
restoration of the hotel





The Art Collector's Suite
showcases artwork created
especially for the hotel

The rooms, which were previously uniform in appearance, now each have their own identity



It took me about 18 months to really understand this property

► zone, meaning there were lots of restrictions on the building work. The building is a maze of labyrinthine corridors and staircases which open out suddenly onto unexpected open spaces, and it was Strauss's job to make sense of it all.

"It took me about 18 months to really understand this property," says Strauss. "I've come here every week for the past two and a half years, and I have stayed in every single one of the 225 rooms. It was all part of making sense of the property, of living and breathing the city and understanding the context of the hotel."

The hotel was part of the Starwood group until 2015, and an attempt had been made to make the interiors look as uniform as possible. "That was problematic, because the building is so varied - the rooms are all very different, one part of the building is narrow, and then it suddenly becomes wide, you have to go up and down stairs to navigate it," says Strauss. "I find that very charming, and I really wanted to highlight the fact that this building is unique."

So Strauss took a different approach. Instead of trying to unify the interiors, he made each

room very different, meticulously researching the history of each building and working to incorporate that history into the design. The building was stripped right back, so that Strauss had a blank canvas to work with. The result is an imaginatively designed hotel that blends contemporary design with historic features to great effect. Quirky references to the history of the buildings and also to its

location feature throughout - from bicycles on the wall, to panelling in the bar inspired by the front doors of Amsterdam's grand canal houses. Strauss approached the design of the hotel's four Collectors Suites by imagining what previous occupants over the past four centuries might have left behind - the Book Collector's Suite, for example, features its own library, an old typewriter, a cracked leather chair and an amazing curved bookshelf.

The hotel is privately owned, which gave Strauss and the team a certain freedom with the design.

"It was a really nice opportunity, as the hotel isn't really associated with an operator, so we didn't have to apply existing brand values," he says. "That meant we were able to start from scratch and have the hotel create its own brand identity."

Phase one of the restoration was completed in March, with 80 refurbished guestrooms and suites, alongside a new restaurant and bar. The second phase, which has just finished, involved the restoration of the buildings on the Prinsengracht side of the canal, as well as the creation of a new lobby and a courtyard garden

The Music Collector's Suite features a huge collection of LP records and a vintage record player



Each room has quirky references to the history of the building and the area, such as the bicycle and bookshelf in this Collector's Suite

The outside of the building is very beautiful and we wanted to bring some of that beauty and character back inside

Here, Strauss talks us through the project



What was your aim with this project?

The outside of the building is very beautiful and we wanted to bring some of that beauty and character back inside. I wanted to highlight the history of the building, and the fact that it's so unique. Our other aim with the redesign was to get rid of the exclusive feel hotels sometimes have and really invite the local community in. We want to make the hotel part of the fabric here.

What were the biggest challenges of the project?

Trying to understand the building. The complexity of all of the different spaces was a huge challenge. Also we wanted to make sure it worked like a hotel, but didn't look like a hotel. Every room needs to have a mini bar and a coffee making station and telephone but those things can be a bit ugly because they look very modern. We worked hard to bring in old style telephones, and instead of having a traditional minibar we created a kind of drinks trolley, with everything hidden inside. It's something you might associate with having at your aunty's grand house rather than a hotel.

We did away with big espresso machines and instead worked with a local coffee supplier and found cool looking kettles and cafetiers.



The Pulitzer's façade design was inspired by the former canal house

The story of the Pulitzer's new façade

The building housing Pulitzer's new entrance is the first approved new structure on Amsterdam's historic canal belt under the 2010 UNESCO heritage regulations. "Getting planning for it was a very long process, and the whole thing was quite nerve-wracking, but I'm very excited about it," says Jacu Strauss. "It fits in with the rhythm of the other buildings, but it's a very modern building, so it really stands out. I like it because it represents the spirit of Amsterdam

– it's a living museum, where you constantly discover new things."

The design of the façade was inspired by the previous canal house, which was demolished before the hotel opened in 1970. It contains imperfections that reflect the old buildings around it – it leans forward slightly to "reflect the curiousness of canal houses that have subsided by are still standing."

The new building houses the new entrance and the three guestrooms.

What's your favourite part of the hotel?

I love the complexity of the corridors; sometimes I still get lost even after two and a half years.

What was the most difficult part of the project?

The low point was doing the repiling. I remember walking up and down the corridor during the construction then looking down and it looked like the apocalypse down there. It made me so nervous. I refused to go into the basement for a while – I just didn't want to know about it.

What was the most exciting part of the project for you?

We have built a new entrance building on the Prinsengracht canal, which houses the hotel's lobby and three new guestrooms. That was a long process with the planning authorities in Amsterdam because it's the first new building within this UNESCO World Heritage site since the city was awarded the status. It was quite nerve-wracking but it's something I was very excited about. It's a great addition to Amsterdam; it fits in with the rhythm of the existing



The living room of the
Antique Collector's Suite

buildings, but it's a very modern building so it really stands out. I like that because it represents life in Amsterdam – the city is a living museum, where you constantly discover new things.

What's your career background?

I'm originally from South Africa; I moved to the UK when I was 18 and worked in a bank for two years. I then went to Auckland in New Zealand to start my studies in architecture. I did my first degree there, then did my second and third degrees at the Bartlett in London.

I graduated from the Bartlett in 2008 and sent through a speculative application to Tom Dixon. I met him and some of his colleagues, but they didn't have a position available. Then, one became available just as I was about to sign a permanent contract with a conventional architect, but I decided to go with Tom Dixon.

I was thrown in at the deep end. My first project was Barbeca restaurant for Jamie Oliver. I ended up doing more and more interior work and the projects got bigger and bigger. I led a project in New York for McCann Erickson which

is still one of my favourite projects. I worked for Tom Dixon for four years, before leaving in 2014.

Are you critical of your work?

As a designer you can be happy with the outcome but I don't think you can ever be 100 per cent happy. You always feel like there is something else that you could have done.

I'm very conscious of that. I try and make sure I take a step back and let it go. Getting caught up in the details can be a bit damaging if you forget about the bigger picture – that's the challenge. ●

breaking the mould

Sports centres are mainly known for their functionality, but across Asia, architects are redefining what these buildings should look like, says Christopher DeWolf

Is there a rule that says sports centres need to be ugly? Certainly not, yet somehow the world is littered with athletic facilities that have more in common with suburban office blocks than with any kind of civic landmark. Much of it has to do with public works budgets; when there's little money on the table, some think it's better not to take any risks. Despite the challenges, though, a band of architects across Asia is upending the

sports centre status quo by repositioning health and wellness at the centre of urban life.

"We felt the need to redefine what a sports centre could be," says Borden Tseng, design director of Taiwanese architecture firm Q-Lab. In 2014, work was completed on two new sports centres in the Taipei suburbs of Zhonghe and Tucheng. "We designed them almost simultaneously," says Tseng, after Q-Lab unexpectedly won two different competitions. Though they were conceived at the

same time, they are remarkably different structures, responding to the different needs of their surroundings. "One has a very colourful exterior and the other is more like a geometric exercise," he says.

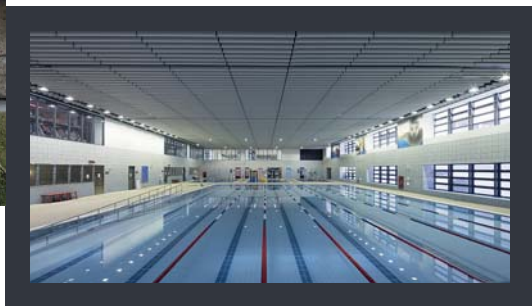
The colourful complex is the Tucheng Sports Centre, a 13,791 square metres facility that includes basketball courts, a swimming pool, an ice hockey rink, a gym and a climbing wall. "Ever since the invention of the elevator, all buildings started to look very mundane, like office



At night the Tucheng Sports Centre in Taipei is lit up internally, giving it a translucent quality



The building's three intersecting blocks are clad in red (basketball) blue (pool) and white (skating rink)



buildings," says Tseng. "In a sports centre, instead of offices, each floor is composed of different sports rooms. It's boring and there's no interaction between people who go there, which defeats the purpose of a public facility. We decided to create a different identity for each section or sport. We rotated, lifted and compressed them so these three boxes would be interlocked together with a central core. With these three interlocking boxes, we created an atrium space where each sport looks directly towards the other two sports. So if you're running on the treadmill, you can see swimming on your right and hockey on your left."

Tseng said the goal was to make the facility seem permeable and accessible. But that approach presented its own set of challenges. "In Asian countries, unlike Western society, the tradition is to be more private, more conservative," he says. "A lot of elderly people don't feel comfortable being seen when they are swimming, so we spent quite a lot of time and energy designing this translucent, transparent façade. During the daytime it's a composition of perforated aluminium with glass,

so you cannot see in from outside, but users from inside can see out. At night, it's lit up internally and the building all of a sudden becomes transparent. It's the interplay between the internal and external space that becomes quite interesting."

Each of the building's three intersecting blocks is clad in a different colour: red for the basketball area, blue for the swimming pool and grey for the skating rink. Tseng says the colours were chosen for more than just their whimsical symbolism. His design team used a parametric design tool called Grasshopper to simulate the solar gain on each side of the building.

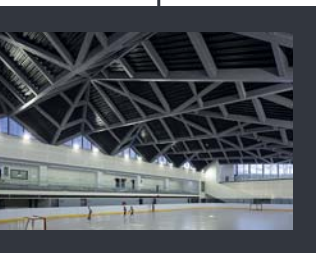
"We made the hottest area a lighter colour," he says. "Each colour has six gradients and they all correspond to the local climate conditions."

The atrium space connects the areas and facilitates access to different sports

The Zhonghe Sports Centre cuts a similarly striking figure in its neighbourhood, though in a very different way. "The site was very narrow and limited, so the only way we could do it was to go vertical," he says. There was just one problem: with 12,090 square metres of space and a brief that called for a hockey rink, squash courts and a host of other facilities, the resulting building would be exactly the kind of 15-storey block that Tseng wanted to avoid. So he buried the hockey rink below ground, with an undulating, load-bearing green roof. "By burying it underground and putting soil, flowers and grass on top, we reduced the head load on the hockey rink by 5 to 7 degrees," he says. "And during the summer, there's this beautiful array of flowers people can see as they walk by."



Taipei's Zhonghe Sports Centre has a curved and faceted exterior form that resembles a giant armadillo



The hockey rink was buried below ground and has an undulating, load-bearing green roof above it

Next to the underground rink is the main building, which has a curved, faceted form that brings to mind the shell of a giant armadillo. "Quite a lot of people ask how we arrived at this form," says Tseng. He says it was the result of the differing height requirements for the centre's various rooms. The basketball court's ceiling needed to be 9.5 metres tall, but the adjacent squash courts only required 6 metres – and the air conditioning room was just 3.5 metres high. "When you connect the dots, you arrive at this curve," says Tseng. "But we realised the construction companies in Taiwan can't really execute the Zaha [Hadid]-type smooth curve, so we used software to fold it like a piece of tin. The end result is quite spectacular because with all these undulating, folded surfaces, the lighting reflects the sun and it's always changing."

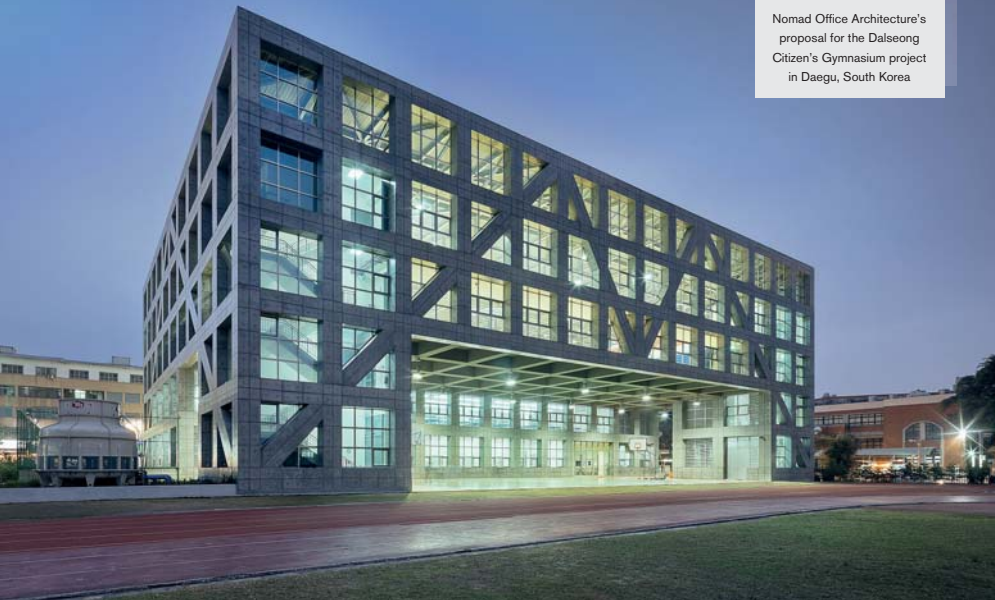
Both the Tucheng and Zhonghe buildings have been greeted with acclaim, clinching two of Taiwan's four nominations for the 2015 World Building of the Year Award. But they aren't the only recently built neighbourhood sports centres that have tried to break out of the box. In Hong Kong, TFP Farrells designed a new swimming

pool in Kennedy Town that was part of a major transportation project that linked the neighbourhood to Hong Kong's subway system. The first phase of the 11,782 square metre facility opened in 2012, with an outdoor lap pool and leisure pool; a multi-purpose pool, training pool and jacuzzi will open later this year. The design brief called for an "iconic structure" and Farrells delivered a streamlined, zinc-clad structure that looks like the snout of a dolphin when viewed from one of the many high-rise apartment towers that overlook it.

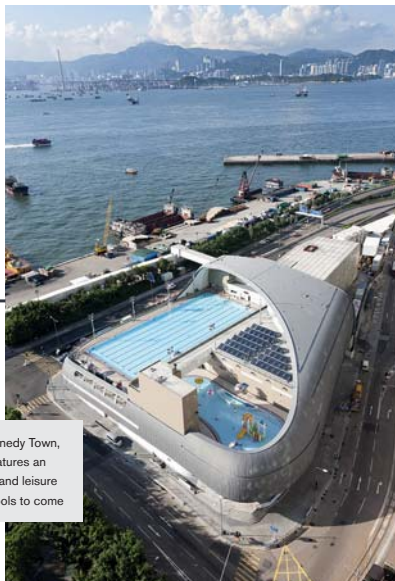
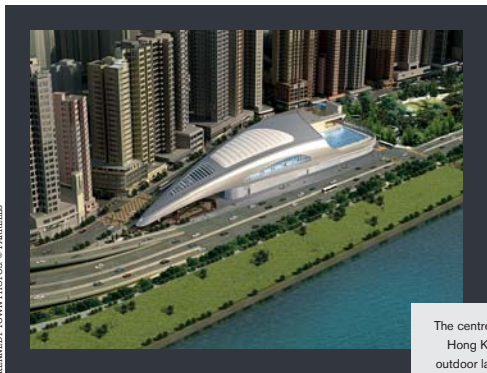
As far as Sir Terry Farrell is concerned, however, it isn't the building's style that makes it iconic, it's the way it has been integrated into the surrounding neighbourhood, serving almost as a counterweight to the MTR station that Farrells designed a few blocks away. Kennedy Town has few public gathering spaces, so the pool creates a spot where the community can come together. "It's about planning and forethought rather than just the design of icons," says Farrell. "You plan the place, not just the buildings."

That was something that Hong Kong firm Nomad Office Architects had in mind when they

Nomad Office Architecture's proposal for the Dalseong Citizen's Gymnasium project in Daegu, South Korea



Farrells delivered a streamlined, zinc-clad structure that looks like the snout of a dolphin when viewed from one of the many high-rise apartment towers that overlook it



The centre in Kennedy Town, Hong Kong, features an outdoor lap pool and leisure pool, with more pools to come



For the Singapore Sports Hub, an entire neighbourhood with community-based facilities was created from scratch



IMAGE: CBFA



The Sports Hub was built with a generous budget of SG\$1.3bn (£732m)

entered a competition for the Dalseong Citizen's Gymnasium in Daegu, South Korea. Their proposal, which received an honourable mention but did not win, called for some of the gym's facilities to be spread out through a circular structure facing a verdant courtyard. Portions of the circular roof would dip to the ground, creating an amphitheatre-like public seating area. "Connection was the key," says Justin Law, one of the proposal's architects. "There was lots of open space on the site but it was really empty. For people to use it, it needs some kind of structure. A gymnasium should be a part of daily life. It could be a space that is used by the entire neighbourhood."

Singapore Sports Hub

In the case of the Singapore Sports Hub, an entire neighbourhood was created from scratch. When the Singapore government decided to build a new National Stadium, DP Architects won a competition to design it, partly because they envisioned it as much more than a stadium. "It's a more community-based building," says the firm's director, Teoh Hai Pin. In addition to the stadium and retail space, DP suggested the government build a sports library, sports museum, beach volleyball courts, swimming complex, skate park and basketball courts. "Those weren't in the brief," says Teoh.



We really made it a hub with human interaction between the components

Teoh Hai Pin



SPORT

Three bids competed for the project, which was slated for a 35-hectare site on the shores of the Geylang River, at the point where Singapore's city centre meets the eastern suburbs. "The other two were classic Olympic Park layouts, scaled down with tighter space in between," says Teoh. "We made it a hub with human interaction between the components. Using the key component – the National Stadium – we made it a centrepiece and planned all the functions tightly against it, with a circular road which we call the Sports Promenade."

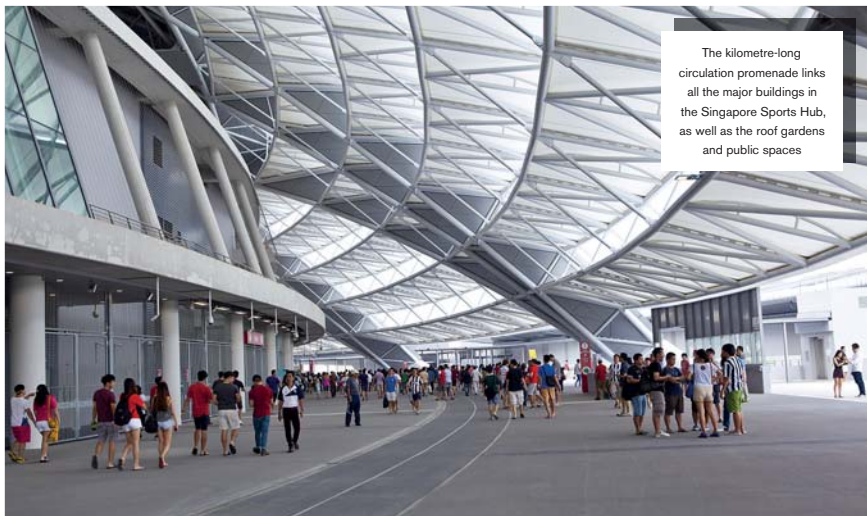
That elevated, kilometre-long promenade links all the major buildings, as well as roof gardens and public gathering areas. Underneath is another layer of public space that Teoh calls the "social plinth." Shaded by the promenade from the tropical sun, the plinth is the foundation of the area, a network of flexible pedestrian areas that Teoh says are designed to evolve over time. "We believe a hub should be sustainable, not just from a green aspect, but also from the user's point of view," he says. "We don't know what we'll need in 10 years' time, so we need space to future proof the hub."

As well as the National Stadium, the Singapore Sports Hub features the OCBC Arenas (pictured) and Aquatic Centre



IMAGE © ARUP

We don't know what we'll need in 10 years' time, so we need space to future proof the Sports Hub



The kilometre-long circulation promenade links all the major buildings in the Singapore Sports Hub, as well as the roof gardens and public spaces

IMAGE © ARUP



Undefined Playground in Seoul is a compact modular concept that offers soccer, basketball, futsal and tennis



undefined playground photos: kyungsoo kim



Teoh says the overall design philosophy is reflected in the way the hub reveals itself as you approach it. "If you look from across [the water], we wanted people to recognise the identity of the hub through the most powerful mass – the main stadium," he says. "But if you come up from the MRT stadium, we purposely want to frame you away from the main stadium, because it is a big mass – 85 metres high. We wanted to give people a friendly feeling that wasn't overpowering.

"We want you to slowly walk down from the MRT station going into the square, and as you go along the water's edge, only when you go back do you actually see the dome revealed in front of you. We wanted to prepare a sense of arrival through discovery rather than the single impact of seeing the stadium."

As you might expect for a project designed to produce a national landmark, the Sports Hub enjoyed a generous budget – about SG\$1.3bn (£732m). But a lot of money isn't needed to create a strong landmark and vibrant community space; the Zhonghe Sports Centre was built for just US\$13,000 per square metre. And at least one

Undefined Playground would help public space be more active. It can be installed anywhere

project delivered four sports facilities for much less: BUS Architecture's Undefined Playground in Seoul. The playground contains a soccer field, basketball court, futsal court and tennis court in less than 15 square metres.

It's a feat made possible by a modular set of polyhedron walls that can be folded and unfolded to suit a number of different sports. It also works as an ordinary playground, with hiding spots for kids and room to string up a large hammock. BUS architect Ji Hyun Park says the project was prompted by the long booking time needed to reserve a playing court in one of Seoul's public sports centres. "Many cities including Seoul

are suffering from similar problems, like lack of space, high density, [wealth] gap," says Park. "Undefined Playground would help public space be more active. It can be installed anywhere."

For his part, Borden Tseng plans to bid for more sports projects, especially as Taipei considers competing to host the East Asian Games. He got his first taste of athletic architecture when he returned to Taiwan in 2007, after studying in the United States, and entered a competition to design a new high school gymnasium.

Though the outcome looks more conventional than the Zhonghe and Tucheng sports centres, it still marked a departure from the dreary norm of sport centre construction, with a truss-like structure and innovations like air conditioning installed below spectator seats, rather than in overhead ducts, which reduced the overall energy consumption while giving the gymnasium a less cluttered appearance.

"As an architectural firm we want to reinvestigate building typologies," says Tseng. And if there's any typology that could stand to be re-examined, it's this one. ●

The Xinhee Design Center in Xiamen, China, was designed for Chinese fashion brand Xinhee. "We envisage it as a building with skin and bones," said Ma Yansong

PHOTOS AND IMAGES: MAD ARCHITECTS (UNLESS STATED OTHERWISE)



MA YANSONG

The founder of pioneering architecture studio MAD tells Kim Megson about studying under Zaha Hadid, developing his organic approach to design and the need to battle conservatism



MAD has offices in [Beijing](#), [Los Angeles](#) and [New York](#) (left). It is now led by [Yansong Dang](#) and [Yosuke Hayano](#). [Chaoyang Park Plaza](#) in [Beijing](#) features towers shaped like [mountains](#) (below)

Chinese architect Ma Yansong is the rising architectural star at the helm of MAD, the Beijing studio building a reputation for their futuristic sculptural buildings and boundary-pushing ideas.

Ma founded MAD in 2004, but only 12 years on, the practice have already developed a wildly diverse and eye-catching portfolio of built and unbuilt work, and opened offices in Los Angeles and New York. Generally accepted ideas about what is architecturally possible are gleefully cast aside; in MAD's world, art museums are imagined as vast water-borne islands, tree-topped forest towers can stretch far into the sky and high-density high rises are sculpted to climb and fall like rolling hills.

But if there's madness at MAD, there's certainly method in it. In fact, the studio are on a roll. Last December they finished the acclaimed Harbin Opera House, their largest completed project to date. Since then they have won a competition to design their first European project – a curving, asymmetrical residential scheme in Paris – and exhibited at the 2016 Milan Design Week. They've completed a kindergarten in Japan, started work on a design centre for one of China's biggest fashion companies, and enjoyed the continuing support of Star Wars creator George Lucas – who is trying to build their sci-fi-tinged vision for his Lucas Museum of Narrative Art.

[The Urban Forest tower](#) in [Chongqing](#) in south west China features [gardens at each level](#).

[It is designed to bring nature and open space into a dense urban landscape](#)



Creating form

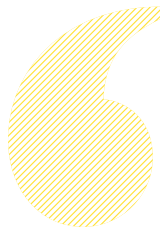
Despite being hotly tipped as an architectural superstar in the making, Ma's success hasn't gone to his head. When we meet he's polite, thoughtful and generous with his time; a figure of composed cool in his open white shirt and designer sunglasses.

Nothing much seems to faze him. We've scheduled to meet after a panel discussion where he's due to speak, but a mishap with his taxi means he arrives late to the event. He seamlessly and articulately joins the debate halfway through, injecting some much needed interest into what has been a fairly dry affair. Later, after our interview, he's asked by a potential client to present a design on the spot, which he promptly sketches out on a nearby napkin.

So what guides Ma's design journey as a project evolves from napkin to drawing board to a building of bricks and mortar (and, in MAD's case, a hundred materials besides)?

"Architecture is creating an experience, and I think the experience is like a narrative," he explains. "That is something very fundamental to this profession. It can channel your hate, your love and all the other universal human emotions.





We as humans can learn from nature and then move beyond it

So being an architect is like you're an actor, and you control how you want people to feel. For me, creating form is like an acting technique."

For MAD, whatever the size of the project, form has always been key; from the mountainous exterior of the opera house to the undulating curves of the China Wood Sculpture Museum in Harbin, the horseshoe-shaped Sheraton Hot Springs Hotel in Huzhou, and the forthcoming Xinhui Design Center in Xiamen, which will be shaped like a star.

"We should always be talking about the shape of the buildings around us," Ma says. "And the buildings around us should be more elegant. Some people say that the space you create is the most vital part of the architectural experience. While I agree it's very important, it is the visual aspect of buildings that is unavoidable. We can't forget that."

Moving beyond nature

One theme that unites most of Ma's projects is their interaction with the world around them; particularly the way in which they reflect the natural world, even in the densest of urban environments.

"Our relationship with the physical environment and nature should be the main topic now," says Ma. "The challenge is to make built environments more human and yet make sure nature can co-exist with the high density structures."

Of course taking inspiration from the natural world is nothing new – I've seen many hundreds of press releases describing how a planned resort, museum, stadium or spa is "inspired by nature", usually without much justification – but few architects approach the concept in the way that Ma does.

"Nature" in my sense of the word is a cultural thing," he explains. "It's more than just thinking

about green architecture and sustainability. Instead it has a more spiritual and poetic meaning. I'm talking about referencing nature even if there are no trees and there is no grass – and at the current stage I'm actually trying to not put many trees in my buildings. Instead it's all about the space. What can you see? How does it make you feel? How does the architecture itself make the urban skyline more nature-like?"

Harbin Opera House is a case in point. Ma imagined the building as a mountain surrounded by the wetlands of the Songhua River. The façade was designed as a response to the region's untamed wilderness and chilly climate, with its smooth white aluminium walls twisting and turning as if sculpted by the water and wind. Meanwhile, hidden pathways carved into the building were added so that even non-paying visitors can ascend the structure as if it was a natural form.

Ma says that rather than copying a specific mountain or hill, his idea was to draw upon the unpredictability and abstract shape-making of the natural world. He compares his approach to traditional Chinese painters, "who painted mountains without ever directly copying nature."

"This is what architects should do," he elaborates. "We can learn from nature and then move beyond it. If you look at the ocean, it's beautiful. But if you live by the ocean you will get tired of it eventually.

The Chaoyang Park Plaza project topped out in June 2015. The project is located in Beijing's Central Business District and reaches a height of 120m





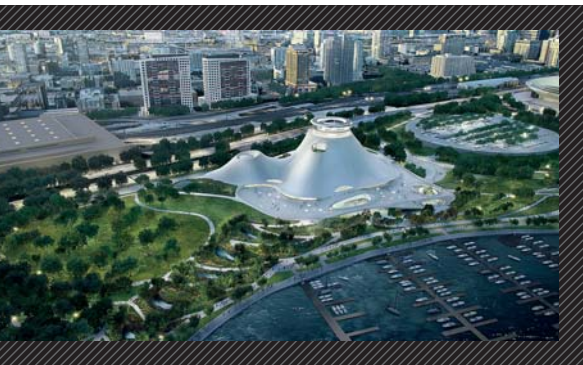
The two asymmetrical towers form a focal point at the Chaoyang Park Plaza development

A NEW URBAN LANDSCAPE

Construction has begun on MAD's Chaoyang Park Plaza, a Beijing project that creates a dialogue between natural landscapes and the urban realm. Composed of over 120,000sq m (1.3 million sq ft) of leisure, commercial, office and residential buildings, the plaza is inspired by the tall mountain cliffs and river landscapes of China. A pair of asymmetrical towers will create a dramatic skyline in front of Chaoyang Park. The shape of the exterior glass façade will evoke ridges and valleys, "as if the natural forces of erosion wore down the towers into a few thin lines." The two towers are connected by a tall courtyard lobby with a ceiling height of up to 17m. At the top of the towers, multi-level terraces shaped by their curving forms will house public gardens where people can gaze out over the entire city.



The Xinhee Design Center in Xiamen has a first floor garden with water features open to the public. This also provides ventilation for the building



MAKING THE LUCAS MUSEUM OF NARRATIVE ART



It's always the same when we're talking about the future. There's a risk, but we have to trust our instincts

We have the ability to be inspired by nature, but then create something a little bit different.

"So with my work, some people say 'oh, he's just drawing a mountain', but you couldn't find a mountain like that in real nature. That's from my imagination, and so it becomes different and unique from other urban spaces. In the future I want to create this on an urban scale."

Combating conservatism

This belief in the power of large organic forms has won MAD accolades, prestige and a lot of work, but also its share of difficulties too. For example, the studio's museum for George Lucas – shaped somewhat like a Star Wars spaceship, or perhaps one of the buildings in Lando Calrissian's Cloud City – has divided opinion, with critics describing it, among other things, as an "amorphous, land-eating colossus" and "a palace for Jabba the Hutt." The building will no longer be built in Chicago following protests from local group Friends of the Park about its impact on the land next to Lake Michigan.

So how does Ma respond to those adverse to his particular style of architecture?

"I think there's a certain community that has become too conservative now, which is a shame," he says, with a shrug. "It's interesting, the same people who are afraid or nervous about certain new things also often criticize conservatism and cities always doing the same things with their

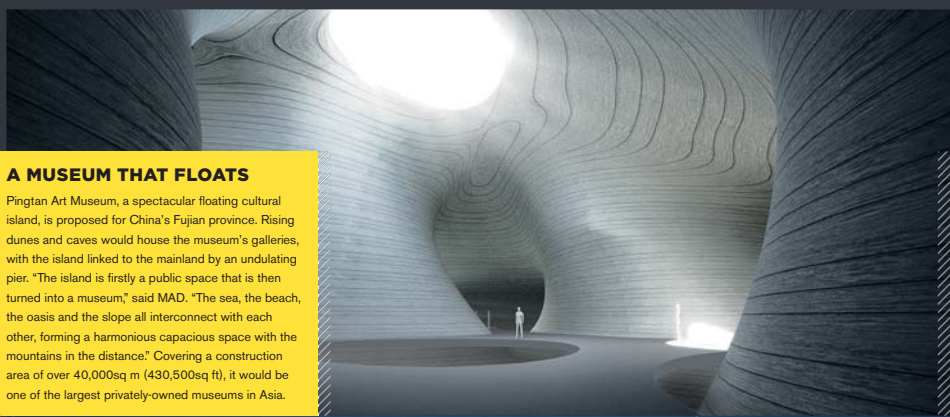
George Lucas is searching for a home for the MAD-designed Lucas Museum of Narrative Art

BRINGING SERENITY TO THE CITY

The five star Beijing Conrad Hotel, which opened in 2013, was designed to "embed itself within the fabric of the rectilinear city much as a plant rises through the crack of a concrete sidewalk." A sinuous 106m-high tower, the building acts as a transition between the serene setting of the nearby Tuanjihu Park and the built-up terrain of the city's Central Business District. The studio wanted to soften the rigidity of efficient and anonymous structures by creating something warm and memorable. With its changing curves, the building's window openings shape the rooms "into bright and soft caves."



The Beijing Conrad Hotel represents the "subtle invasion of nature into our built landscape"



A MUSEUM THAT FLOATS

Pingtang Art Museum, a spectacular floating cultural island, is proposed for China's Fujian province. Rising dunes and caves would house the museum's galleries, with the island linked to the mainland by an undulating pier. "The island is firstly a public space that is then turned into a museum," said MAD. "The sea, the beach, the oasis and the slope all interconnect with each other, forming a harmonious capacious space with the mountains in the distance." Covering a construction area of over 40,000sq m (430,500sq ft), it would be one of the largest privately-owned museums in Asia.



Pingtang Art Museum connects to China's Pingtang Island via an undulating pier





Ma believes people have become too conservative about new architectural ideas

architecture. Progressing beyond that is just a matter of the speed of change, how much these people can take and our ability to judge the right thing to do. It's always the same when we're talking about the future. There's a risk, but we have to trust our instincts."

This desire to push boundaries is perhaps the legacy of Ma's time studying under Zaha Hadid at Yale, and later working at her London office in the days before MAD. Hadid's own bold ambition and uncompromising approach often meant it took years for the rest of the world to catch up and understand what she was trying to achieve.

"Zaha was an artist, so controversy was part of her life and everything was based on how people judged her taste," he reflects. "She had such a strong and independent sensibility, you either like it or you hate it. But Zaha's career – from being very far outside the mainstream to becoming a widely celebrated figure towards the end of her life – already shows the transformation in our society. Her work, as well as the work of others like Frank Gehry, shows that architecture really needs diversity, but also needs to be sensitive to the future."

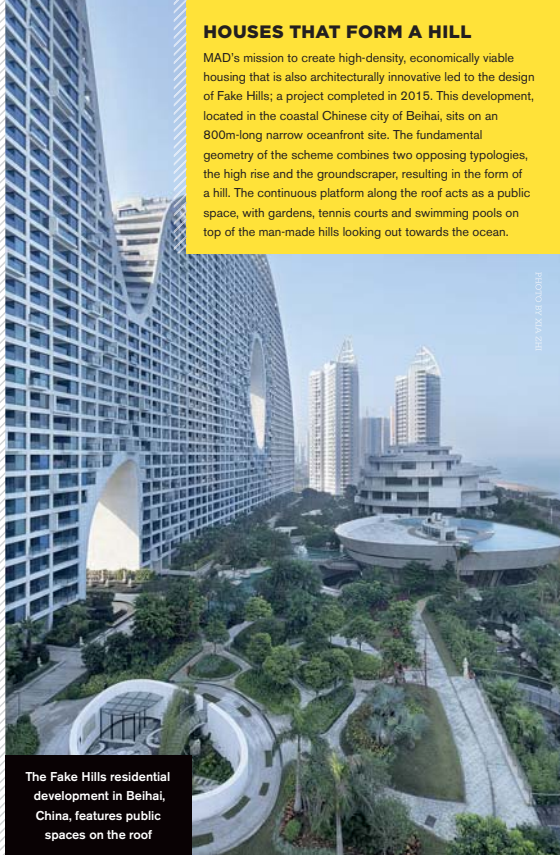
Following Hadid's death, Ma released a tribute in which he praised her battle for progress and remarked that "she loved and embraced the world with sensitivity and criticality." This is something he aspires to achieve in his own body of work.

"We're always looking back and questioning," he offers, when asked to summarise his architectural philosophy. "Questions like why did some fantastic gardens or cities become cultural heritage? What can we learn from them? How can we be inspired by them to create better future cities?"

"I think we at MAD all want to look to the past, and then find another angle to create a fresh perspective on the future."

HOUSES THAT FORM A HILL

MAD's mission to create high-density, economically viable housing that is also architecturally innovative led to the design of Fake Hills; a project completed in 2015. This development, located in the coastal Chinese city of Beihai, sits on an 800m-long narrow oceanfront site. The fundamental geometry of the scheme combines two opposing typologies, the high rise and the groundscraper, resulting in the form of a hill. The continuous platform along the roof acts as a public space, with gardens, tennis courts and swimming pools on top of the man-made hills looking out towards the ocean.



The Fake Hills residential development in Beihai, China, features public spaces on the roof



Hidden pathways carved into the outside of the building allow people to ascend to the rooftop



PHOTOS BY FURUSON + CROUCH AND ADAM HOBBS



CASE STUDY

Harbin Opera House

The opera house occupies a building area of approximately 850,000sq ft (79,00sq m).

Inside, large transparent glass walls span the lobby, visually connecting the curvilinear interior with the sweeping exterior. Above, a supported crystalline ceiling is comprised of smooth and angular glass pyramids, referencing the snow and ice that covers the region in winter and allowing natural

light to enter the lobby.

A swooping wooden staircase takes visitors from the lobby to the 1,600-capacity grand theatre, sculpted from Manchurian ash wood, and a smaller venue for audiences of 400. At the top of the building, both ticketholders and members of the public can access an open rooftop performance space with panoramic views of the city's skyline and wetlands.

How did nature inspire the design?

As you can see, it looks like part of the texture of the landscape. It's a bit strange; you don't find this in the architectural world, as it hasn't come from a computer. I wanted to make this building become part of the landscape. People who go there don't want to see a box. With this design they arrive, see the river and the wetlands, and then they can continue their experience when they arrive in the building. It's something new, something artificial, artistic and unique.

What was the biggest challenge with this project?

The challenge was how to make it an opera house, because the concept wasn't related to the function. The design explores the local context and how humans interact with nature, but at the same time it had to be functional. It's an opera house, and they always need a closed box – when you go in there you need to feel like you could be anywhere, because you're entering a drama. I think it's important that we had a sequence between the nature outside and how it integrates



Visual references to the natural world are present in the building's exterior and its fluid, interior

into the building. So even inside the auditorium there are perfect landscaped shapes and we have natural light flooding in to create the connection to the outside. At the same time, it has to be really good visually and acoustically to perform its function. Getting that balance right was quite challenging.

What's your favourite part of the Opera House?

The rooftop. Because you can see every part of the building apart from the rooftop. You have to be there to experience it. There's a

space for people to look at the sky, changing what is a very horizontal experience to a vertical one. The sky is an extreme of nature. People don't know much about it, so there is much more room for their imagination to take flight.

When you're designing a public space do you start with the form or the function?

I would say we start from the experience we want to create. Controlling the complexity of the project is part of creating the experience. For example, we're

currently designing a philharmonic music hall in Beijing in a very busy commercial district. There are a lot of people, which is good for the circulation, but we want to create the experience of taking people to a different world through the architecture and music. I want to make people think they've arrived in another place. So we started by considering how to realise that experience. To do that we've created this translucent feeling, so you'll be aware of where you are but will also be isolated from the context. ●



Andrew James

China's ambition to become a world football power is coming to fruition. Andrew James from Populous talks to Matthew Campelli about a new deal with Alisport which will turbocharge the nation's infrastructure

Fifteen years ago, architecture studio Populous dipped its toe into the Chinese sports market to work on the design of the Nanjing Sports Park, which would go on to host the China National Games in 2005 and the IOC Youth Olympic Games in 2014.

The practice has had an interest in the vast nation ever since, designing structures such as Zhuhai's International Tennis Centre.

Populous now finds itself at the centre of the Chinese government's aggressive drive towards footballing dominance and may create the blueprint for the way football facilities are designed and renovated across the country.

In June this year, Populous signed a deal with Alisports – the sports arm of Chinese global trade platform Alibaba – which has set its sights on operating “50,000 sports venues in China over the next 10 years” to build a connection with its 470 million subscribers.

As part of the deal Populous will consult on how to transform a number of ‘white elephant’ arenas into functioning stadiums, with a focus on fan engagement and experience. The studio is also keen to pick up several projects itself to speed up the nation's desire to create a landscape of world-class sporting facilities.

Football superpower

Andrew James, Populous' Asian and Australian director, is overseeing the strategic partnership, and he is certain about what's driving China's ambitions: “There is a lot of money going into



Alibaba has set its sights on operating **50,000 sports venues in China** over the next **10 years** to build a connection with its **470 million subscribers**



Populous designed Zhuhai's International Tennis Centre

China's football Super League,” he says. “There's no doubt it will rise rapidly over the next five years – when the Chinese decide to do something, they don't hold back, they really do it.”

China has been unflinching in making clear its desire to become a world football superpower, with its domestic football teams spending millions on established foreign football stars and President Xi Jinping making the bold statement that he wants the nation to host – and then win – the FIFA World Cup.


While the government is driving the ambition, private companies such as Alisports are taking control, with an eye on the economic benefits a healthy football industry can bring.

“In a lot of Asian countries, not just China, government and large private businesses seem to work hand in glove,” says James. “Businesses will want to sit at the top table and they will help out on the policies the government wants to drive.”

Aside from relationships with the government, an organisation such as Alisports may see large public venues as a way to get their advertising message across or exploit sponsorship capabilities.

To emphasise the size of the market, James says that Guangzhou Evergrande – one of China's most successful football clubs – regularly sells out its stadium despite the fact the pitch is surrounded by an athletics track and “people can hardly see”.

James adds: “There are so many areas they can professionalise the sport, in terms of the venues, and commercialisation. Right now money is being spent on recruiting the best players, but I expect money to be spent on coaches, and then

A professional studio portrait of a middle-aged man with short, wavy, light-colored hair. He is smiling warmly at the camera. He is wearing a dark brown blazer over a light-colored, button-down shirt. His hands are clasped together in his lap. The background is a soft, out-of-focus blue gradient.

Andrew James heads a new partnership between Populous and Alisports, the sports arm of Alibaba



China has laid out plans to build **70,000 training centres by 2030** to create a **thriving grassroots football landscape**



China is currently investing heavily in its football Super League

clubs will start to be thinking about their venues and their training centres.”

According to James, there are around 100,000 sporting venues in China, with a number of them not being used at all. He expects that “99 per cent of the work” will come from renovating existing stadiums, although there has been an opportunity to design one or two venues from scratch.

One of the few big arenas that has had a “legacy project” benefiting the community is the Populous-designed Nanjing Sports Park, where local people regularly use the football, swimming and ice rink facilities – a factor which helped Populous win the deal.

Populous have already won stadium renovation commissions from two clients in the industrial north of China who want their football teams to represent the communities which surround the stadiums – in the mould of Manchester United or Liverpool. They’re also working on a number of training facilities and have the aim of being involved in 10 projects in “each of the major cities” over the next five years.

Creating experience and demand

However, there are a number of challenges working in the Chinese market. While in “Western cultures” decisions about stadiums and training centres are usually taken by committee, in China “decisions are still generally made by just one person”.

This, says James, has contributed to a focus on the “iconic qualities” of stadiums, instead of their fan engagement and experience capabilities.

“Everyone wants a Wembley,” he explains. “Not many people want that low-profile stadium that sits quietly and fits in with its neighbours. Not yet.”

“We’re not monument builders; we focus on the experiential side of design, so lots of pictures of people with smiling faces really gets us going.”

James also highlights a need to shift mentality in terms of stadium size and the overall functions of a stadium. In a country as heavily populated as China (1.4bn and counting), it’s tempting to build 120,000-capacity stadiums, whereas James is keen to recommend an upper limit of 60,000 to keep experiences high quality and sustainable and also to drive up demand.

Community hub

“You have to offer a great experience, particularly if you’re a football club,” explains James. “People will come back week after week. Every seat has to be great. Above 60,000 seats you have infrastructure issues to deal with. Also, if not

everyone can get a ticket then that raises demand and will be good for the bottom line.”

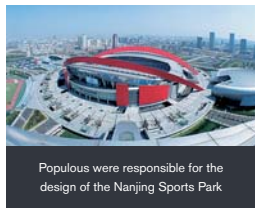
China’s emphasis on multi-use stadiums, with athletics tracks around the pitch, was something which had to be eradicated to create a better experience and commercial opportunities. Although, James believes community-focused training centres could be even more lucrative than stadiums.

China has laid out plans to build 70,000 training centres by 2030 to create a thriving grassroots football landscape, as well as a technically proficient elite league. These centres, says James, have the opportunity to become hubs for their respective communities, with educational facilities such as schools and universities, as well as medical facilities. “We see more opportunities for training facilities to become commercial, profitable centres in the long-term than the main sport stadiums,” he explains.

The bigger picture

Aside from the development of facilities for football, James sees opportunities to design entertainment arenas and for Populous to expand its tennis stadium portfolio. But the ‘beautiful game’ is undoubtedly where it’s all happening for China, says James, and Populous is now in a good position to set the agenda.

“We’ve always known China would happen one day,” he explains. “It’s a fantastic market for us because we can speak the language we’ve been speaking in Europe for the last decade or two and because we already have a reputation there.” ●



Populous were responsible for the design of the Nanjing Sports Park



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oceans of opportunity



Koen Olthuis has been touting the benefits of floating cities for years – and now people are starting to take notice

A

number of high-profile projects have recently brought attention to Koen Olthuis's approach to living on water. Those include the floating Citadel apartment block in the Netherlands and important large-scale leisure projects such as luxury private islands in Dubai, floating hotels and resorts in the Maldives and a snowflake-shaped hotel off Norway.

The potential for floating architecture, Olthuis says, goes far beyond one-off developments: it's an urban planning tool.

"For the past 15 years, I've been designing these floating structures," says Olthuis, who established his design firm Waterstudio in 2003. "When I started, all the other architects thought I was crazy, but now this approach is starting to be adopted by developers. We're also talking to governments around the world about how floating developments can upgrade and improve their cities."

The big picture in all this, according to Olthuis, is that extending cities beyond the waterfront and indeed further out to sea reduces the pressure on overpopulated urban areas – where 70 per cent of people will live by 2050 – and offers flexible solutions for problems thrown up by rising sea levels and climate change.



From CLADbook 2017
www.CLADbook.com/2017



Waterstudio is working on Amillarah floating islands, luxury private properties for Dubai and Miami



How do floating structures work at a city level?

Governments worldwide are looking at how floating developments can improve their cities. I propose a system of modular floating developments – floating urban components that add a particular function to the existing grid of a city. With this system, any question a city asks can be answered immediately. If a city needs parking, bring in floating parking. If it has green issues, bring in floating parks and Sea Trees [Waterstudio's offshore green structures]. The system is responsive to the needs of dynamic urban communities.

Is floating architecture the way forward for urban living?

It's project to product. You'll be able to order buildings in, and sell or lease buildings you don't want or need.



Waterstudio has transformed a shipping container into a floating school

We've only explored a fraction of the possibilities, but in the next 10 to 15 years, more and more architecture will start to explore the possibilities of floating developments and it will grow from something that's a fringe architecture to something that's mainstream.

The stupid thing is that we live in dynamic communities and yet we build static structures. With rapidly changing social structures and technologies, we need flexible cities. I'm not saying we have to build floating cities, but that every city that is next to the water should have at



I mean flexibility on a larger scale, where cities and urban planners are able to move a complete neighbourhood half a mile

least 5 per cent of its buildings on the water. That would create flexibility.

It's not the only way, but it's something that is inevitable. It's about rethinking and finding solutions for major problems.

What other advantages are there?

We believe green is good but blue is better. Water provides many tools to make more durable and sustainable cities. You have water cooling for the buildings, you have flexibility, you have buildings that rise and fall with the water level, you don't have to demolish a building that's no longer needed because you can repurpose it or even sell it.

People, developers and politicians are starting to see that this is something that brings in money and solves problems. It's a feasible way to build better cities.

What do you mean by flexibility?

I don't mean that you'll be able to take your house and move to another city or another neighbourhood. I mean flexibility

on a larger scale, where cities and urban planners are able to move a complete neighbourhood half a mile or bring in temporary floating functions – like stadiums – and use them for one or two years before they leave for another city. This large-scale flexibility makes sense.

Take the Olympic Games. It's so strange that every four years we build so many hotels and stadiums and only use them for a few weeks. Imagine if as a city you could just lease these floating functions from a developer. Cities who don't have as much money as London or Rio or Beijing could also host these types of events because it would cost much less money.

Is it something you can foresee happening in the near future?

Yes, maybe not with stadiums – because we can put them up easily – but with the hotel business, certainly.

Qatar has the World Cup in 2022 and they need 35,000 hotel rooms for that event. But if they built 35,000 hotel rooms, within 10 years they'd be empty. So they're thinking about using cruise ships. As the harbour



Waterstudio is trialling its floating slum school initiative in Bangladesh

Slum Schools

Waterstudio has been pioneering the concept of floating facilities that can be moored at waterside slum communities anywhere in the world. City Apps are floating developments based on a standard sea-freight container. City Apps can be established in water where there is scarcity of space and can be used to upgrade sanitation, housing and communication installations. The

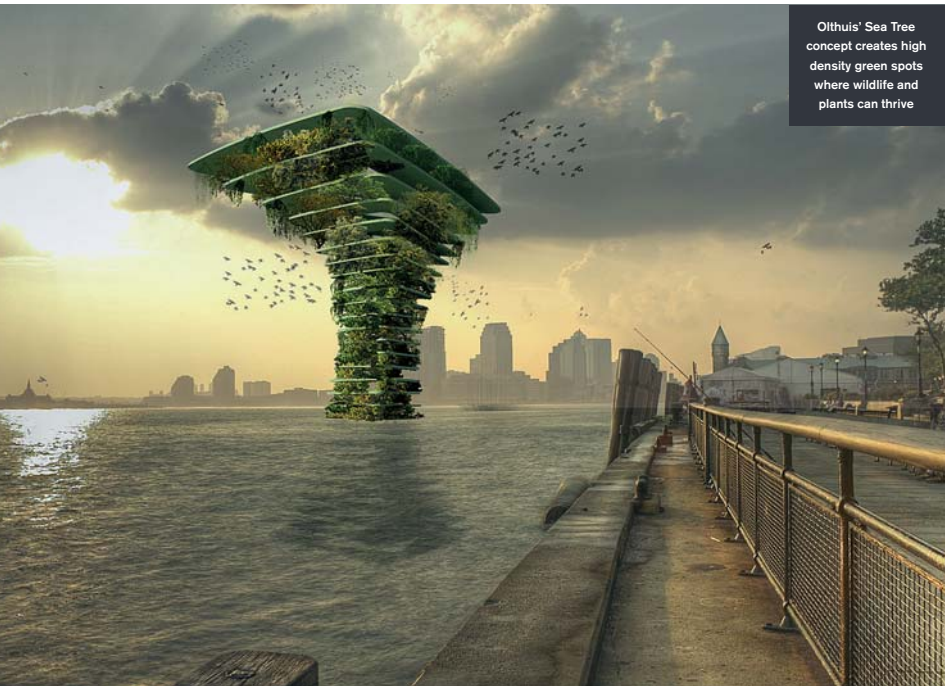
first City App, a floating school, is being built for a slum in Dhaka.

"One billion people live in slums worldwide and half of them are close to the water. We can use City Apps to instantly improve the quality of life there," says Olthuis.

Because governments see these as temporary solutions, it's much easier to get permission to do this than to build a facility on land.



Olthuis' Sea Tree concept creates high density green spots where wildlife and plants can thrive



facility is not big enough, they're also thinking about the idea of floating harbours, or floating cruise terminals – something that can facilitate these cruise ships for a few weeks, and then after that you can bring the floating harbours to another location.

Can you tell us about Amillarah Private Islands?

Yes. With OQYANA Real Estate Company and developers Dutch Docklands, 33 private islands are being built as part of The World Islands project in Dubai. The islands are being sold by Christie's International Real Estate, with a starting price of US\$10m. It's a really high-end project.

The floating islands look like tropical islands covered in trees, but in fact they're more like superyachts. They're built in Holland and then moved to the location



The rendering shows an Amillarah Private Island off the Miami coast

in Dubai and anchored there. They are self-sufficient with their own electricity and their own water. Within the next 10 years there'll be more development around them, so we're making it look like its own archipelago. If you fly over, it looks like a series of green islands.

OQYANA has a masterplan around Amillarah that includes shops, hotels and all kinds of leisure architecture. This is just the first step of the development, but the beauty of this floating architecture is that it moves very fast. Once you've built the islands you can just tow them in and

connect them to the bottom, either with cables or telescopic piles and they're ready.

Compare that to the manmade islands at The World. There's still very little built there. It's difficult to get labour there, difficult to build the right foundations and there's no electricity or water, so developers don't know how to build there without losing money.



As well as answering fast-changing urban problems, floating structures bring a certain character to a city – a USP

Have any been sold?

Not yet. We'll have an island there, like a show home, from December this year (2016).

With the history of the property market in Dubai, it's better to have the first islands there so people can have a look and understand what it's all about, especially at the prices people pay in this type of market.

I should add that if I only ever build floating islands for the rich then I'm doing something wrong. The start of this story for me was to create a new tool for cities that are facing urbanisation, overpopulation and climate change – and also for cities that need to brand themselves to attract inhabitants. As well as being able to answer these big, fast-changing urban problems, these floating structures bring a certain character and appeal to a city – a USP.

Why does your concept appeal to resort or hotel developers?

On water, leisure architecture, including resorts and hotels, has the possibility to change. You can adapt and create functions that are not only moveable but also transformative through time, for instance, through the seasons. With seasonal structures you can open up the buildings in the summer, make buildings more dense or more spread out. You can add functions or take them away. To me, it's one big playing field and we're trying to work out what it means for the future of leisure architecture and real estate, not just how these things will look, but the economic effects too.

What kind of economic benefits might there be?

A project we started working on a few years ago was a floating hotel and conference centre for the Maldives – the Greenstar.

Ocean Flower is part of the Five Lagoons development in the Maldives





Five Lagoons, which includes Ocean Flower, is a collaboration between master developer Dutch Docklands and the Maldives' government. Waterstudio is the architect

The star-shaped hotel has five legs, each with 80 rooms inside, but instead of building five legs, we build six. One of these legs will stay in a harbour in India. In five or seven years time, when the hotel needs refurbishing, you bring the sixth leg to the hotel and connect it, sending the others one by one to be renovated. The hotel doesn't need to shut down, and the work can be carried out where it's easy and cost-effective to get the materials and labour to do it.

What other projects are you working on?

We're working in the Middle East, in Abu Dhabi, Dubai and Oman, exploring the potential of ecotourism. We're looking at building satellite resorts for land-sited hotels, that float out at sea where there are coral reefs or mangroves.

Floating resorts don't leave any scars on the environment – they're scarless developments, which can even have a positive effect on the environment. For example, we work with marine engineers and environmentalists to help build floating



Krystall Hotel is designed to allow guests to view the Northern lights from their rooms

structures that attract underwater life. In places like Dubai, it's so hot that it's very difficult to create the right environment for fish and marine life, but the shade of these floating islands can provide a starting point for new marine ecosystems.

We're also working with master developer Dutch Docklands and the Maldivian government on the ongoing Five Lagoons Ocean Flower resort and residences.

Finally, we're looking at developing cities that face troubles with the environment,

density and infrastructure – and seeing how water can be part of that solution.

What are the challenges?

Progress on Norway's Krystall Hotel is slow because of laws that prevent building on the shoreline. Regulations and laws can be a hurdle, and may need to be changed to adapt to floating architecture. But, we are slowly moving to a marketplace where these floating developments are accepted. There's a bright future for this technology. ●

CLADkit

An energy-generating flooring system, Bali-inspired bamboo furniture and a new lamp by Olafur Eliasson...what's new in product design



For full company and contact details of any of the products and services featured here, please visit www.CLAD-kit.net

New lamps for Tivoli Gardens designed by Olafur Eliasson and Little Sun

The Tivoli Gardens historic amusement park in central Copenhagen, Denmark, is collaborating with acclaimed Danish-Icelandic artist Olafur Eliasson and his Little Sun project.

In 2017, a new signature lamp, designed by Eliasson and powered by sustainable energy, will shine at Tivoli Gardens and a special Tivoli Little Sun lamp will be available in the shop for visitors to take home.

Olafur Eliasson is known for his diverse artworks and large-scale installations, which often employ light, fog, and other ephemeral materials.

Eliasson's permanent artistic landmarks in Denmark include the 'Your rainbow panorama' installation, a 150m circular, coloured-glass walkway situated on the roof of the ARoS Aarhus Kunstmuseum, and the 'Opera



house chandeliers' and Cirkelbroen (circle bridge) in Copenhagen.

Little Sun is a social business and global project founded by Eliasson and engineer Frederik Ottesen to bring clean, reliable, affordable energy to the 1.1 billion people in the world living in off-grid areas without electricity.

The project's first product, the Little Sun solar LED lamp, was launched in 2012. The second product, Little Sun Charge, a solar phone charger, has just been launched worldwide.

Tivoli Gardens' CEO Lars Liebst said: 'I am convinced

that by joining forces Tivoli and Eliasson will be able to reach new standards for amusement park design as well as sustainability and enhance the Tivoli experience to the great benefit of our visitors.'



Ibuku's bamboo furniture collection gives a warm, natural feel

Balinese bamboo design specialist Ibuku has revealed a 'warm and tactile' furniture collection.

Designed for people who want to bring a natural feel into their interior design projects, the collection features a selection of seating, shelving and fixtures hand crafted out of bamboo.

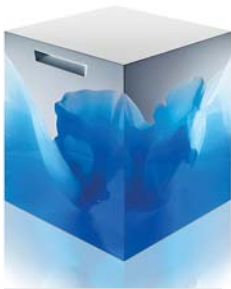
Ibuku, behind the creation of the bamboo-based Green Village in Bali, uses local talented craftspeople and designers to work with the natural resource for its projects and products.

Ibuku's founder Elora Hardy said: 'We have been designing furniture for each of our structures for as long as we have been building them, striving to express bamboo's



strength, celebrate its uniqueness, and to complete the feeling our homes and buildings give, of being both inspired and at ease. The collection we bring you is warm and tactile.'

Collection designs include the Journey Table, Moon Lounge Chair with leather seat, Swan Teardrop swing and Eclipse shelving.



Only 100 tables have been produced

Harow designers spend a month handcrafting each Iceberg table

Painstakingly crafted with fibreglass and resin, only 100 Iceberg Stool and Side Tables have been made as each one takes a month to handcraft at the Harow design studio in Paris, France.

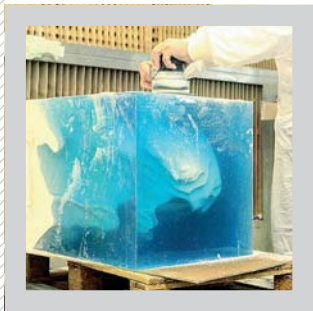
Designed by Harold Sangouard, each side of the table is designed to look like an iceberg as it appears under the water. Sangouard says the design freezes the aesthetic of the Arctic landscape to make it timeless.

"The main idea around the Iceberg was to create a piece of art that lets you feel the beauty, hostility and fragility of those ice giants."

Sangouard added: "We also wanted to highlight the impact that human activities are having on the environment and on future generations. The perfect control of resin has allowed us to express the depth and the gelid glare of the North Pole."

Cuboid at 55cm by 45cm by 45 cm and weighing 40kg, each Iceberg is numbered and comes with a certificate of authenticity.

The creation was on display at the Maison & Objet exhibition in Paris in September 2016.



The GoGo range (above); The Bebop range is by David Fox (right)

Knightsbridge launches designer hospitality furniture collections

Furniture manufacturer Knightsbridge has unveiled its new designer hospitality collections.

Created by four designers for the Yorkshire-based firm, the ranges include Bebop by David Fox, GoGo by John Coleman, Alfie by Sean Dare and ROK by Jim Hamilton.

The designer ranges, showcased at Clerkenwell Design Week in London

in May, are finished in Yorkshire wool tweed and cashmere and can be tailored to requirements.

Alan Towns, CEO of Knightsbridge, said: "Each designer brought something completely unique."

He added: "The ROK was inspired by ancient architecture, whereas the Alfie is a tribute to the 1960s film and features stylish, clean and tailored lines."



The designers launched the collection at London's Clerkenwell Design Week

TECH ROUNDUP



Hip-hop artist will.i.am, pictured here with CEO Laurence Kemball-Cook, is one of Pavegen's celebrity ambassadors

Energy-generating flooring launches in the US as Pavegen's global expansion continues

Pavegen, the British clean-tech company, has launched an innovative flooring system that creates energy from footsteps.

The multi-functional V3 paving provides multiple options to integrate renewable energy production into urban spaces. According to Pavegen, the technology has implications across sectors, including sport, hospitality and attractions. It's designed particularly for public spaces with high foot traffic, including retail and transport hubs, and can be integrated into Smart Cities to power things like street lighting.

The technology works through the transformation of kinetic energy from people's footsteps into electricity through



electromagnetic induction. When used continuously, the paving can generate up to five watts of power, and can be attached to a battery to store energy as it is used.

"Expanding into the USA is not only a huge step for Pavegen, but also for the renewable energy sector - spreading the importance of sustainability across the globe and providing with electricity when and where it is needed," said Pavegen CEO and founder Laurence Kemball-Cook.

Self-shading window breakthrough could make buildings more efficient



A team of researchers at the Massachusetts Institute of Technology (MIT) has developed a "smart self-shading window" that can switch from transparent to opaque in seconds.



The window's rapid transition – which unlike similar systems has been designed to require almost no energy – can block sunlight and save air conditioning costs in buildings which use the technology.



According to MIT, the window only needs electricity when it's required to return to its previous state, rather than all the time.



The switchable material used in the window is made by combining two chemical compounds, an organic material and a metal salt, which self-assemble into a thin film. The result is an electrochromic material that changes colour and transparency in response to an applied voltage.

MIT professor of chemistry Mircea Dinca said the technology could drastically reduce energy bills for buildings with many windows in hot climates.

"You could just flip a switch when the sun shines through the window, and turn it dark, or even automatically make that whole side of the building go dark all at once," she said.

The window's rapid transition from clear to dark requires very little energy

Will the windows of the future be made from transparent wood?



Wood is bleached of its lignin and soaked in epoxy to create a window

One day in the not too distant future, glass windows may be a thing of the past. Researchers in the US have revealed a surprising window material that could be stronger, more energy-efficient and have less glare – transparent wood.

Engineers at the A. James Clark School of Engineering at the University of Maryland have demonstrated through a study how wood could one day provide a shatterproof, thermally-insulated alternative to glass

While transparent wood lets through a little less light than glass, it lets through a lot less heat

Tian Li, lead researcher

for windows in both houses and large public buildings.

The unorthodox window-making process starts with bleaching wood of its lignin – the component that makes it both brown and strong. The material is then soaked in epoxy, which adds

strength back and makes the wood both clear and waterproof.

Tests undertaken by the research team showed that light travelling through the wood is more softly and evenly distributed around a space than it is through glass.

The angle at which light shines through the wooden windows does not change as the sun moves, as happens with traditional glass windows, because the natural channels in the wood direct the sunlight in the same way every time.

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