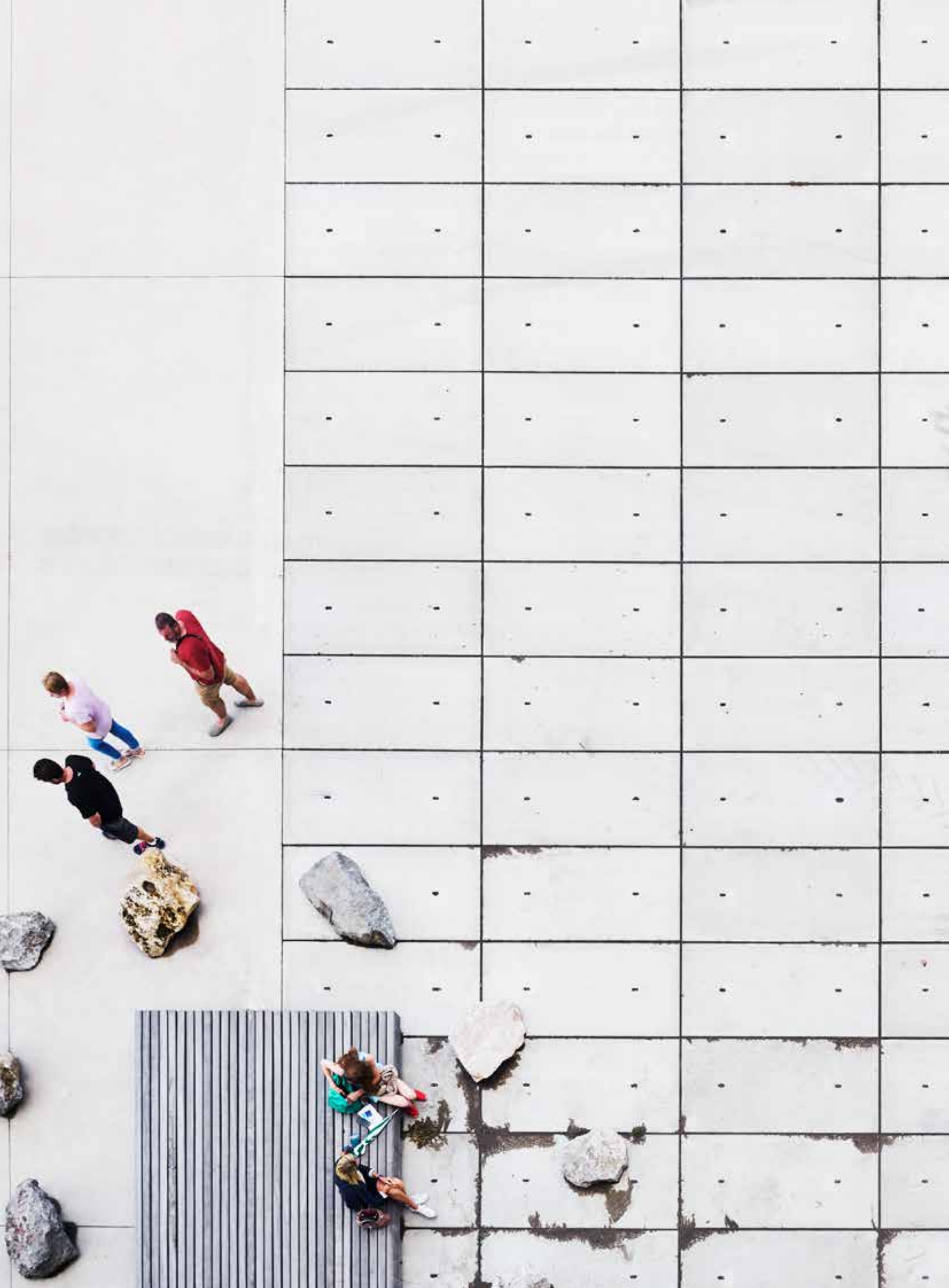


# DA

DAYLIGHT & ARCHITECTURE MAGAZINE BY  
VELUX GROUP AUTUMN 2017 ISSUE 28 10 EURO  
DAYLIGHT CONNECTING COMMUNITIES







# DAYLIGHT CONNECTING COMMUNITIES

Winston Churchill once acknowledged the fact that not only do people shape buildings, but buildings also shape people. Can buildings and spaces, then, also affect how groups of people interact with each other? Can they foster a new team spirit of togetherness in our society?

This issue of Daylight/Architecture takes a closer look at buildings that re-interpret existing typologies, that hold surprises and that enable new kinds of collective use. In these buildings, daylight plays a central role. This is by no means a coincidence. Natural light has a decisive impact on the way in which people perceive spaces and how they behave in them.

There have always been places where people come together to perform collective rituals as well as exchange goods and ideas. Providing a built framework for such peaceful gatherings is one of the basic needs of our species. And this has not changed in the digital age.

The American sociologist Ray Oldenburg has conducted ground-breaking research on the meaning of social meeting points away from the home and the workplace, coining the term 'third places' to denote them. In his view, these places give a society stability; they promote the integration of newcomers and nurture democracy. It is here that the cohesion of different generations is strengthened, it is here that the individual receives mental and spiritual stimulation, and it is here that friendships begin. However, the conditions of our living together in a community are changing. Whereas collective rituals used to remain the same for centuries, the use of public places changes much more rapidly today.

Architecture can support this by remaining adaptable to social changes and providing an inviting atmosphere in which everyone is welcome. Daylight is one of the most important means of creating such an atmosphere.

In Daylight/Architecture 28, the journey to the places of collective experience begins in the Pantheon in Rome, a magical location that has been fascinating people for centuries. In his article, Adrian Carter forges a bridge between the former Roman temple and two more recent buildings that embody a radically new kind of social gathering place – Jørn

Utzon's 40-year-old Bagsvaerd church near Copenhagen and the Newport Islamic Centre from 2017 by Glenn Murcutt in the vicinity of Melbourne. Australia's first genuinely modern mosque is shown in Daylight/Architecture with brand new photography, taken just days after its opening. Both Utzon's and Murcutt's building are open to the entire community and bring people of all origins together. They are both deeply embedded in the local context, yet full of surprises, enabling their visitors to experience daylight in new and unprecedented ways.

This connects them to the next two buildings featured in this issue. The Naoshima Hall in Honmura, created by Hiroshi Sambuichi, is a venue for sports and cultural events and is part of a greater transformation strategy for the islands in south Japan's inland sea. Alex Hummel Lee describes how Sambuichi cleverly uses 'moving materials' (i.e. daylight and fresh air) to create an optimum indoor climate for the users of the hall.

In a similar way, the FRAC museum in Dunkirk also embodies the transformation of an entire region. The twin building designed by Lacaton & Vassal integrates an abandoned dockyard hall in its monumental dimensions in order to create a space for future and unforeseen uses. Karine Dana talked to the staff and visitors, and found out for herself how the building's light-flooded, lightweight envelope makes it possible to experience the sea climate on the coast of the English Channel even inside the building.

Taken together, these examples illustrate how daylight in buildings moves people – psychologically and physically, individually and collectively. Dedicated architects can use this potential to connect communities and improve their quality of life. Regardless of any social and cultural change that our societies will undergo in the future, this will be a vital contribution to our peaceful and happy living together on Planet Earth.

Enjoy the read!  
The VELUX Group

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## GATHERED IN DAYLIGHT: BAGSVÆRD CHURCH AND AUSTRALIAN ISLAMIC CENTRE

Daylight has a remarkable influence on the individual well-being and collective behaviour of people. In his article, Adrian Carter describes two buildings that bring people together regardless of their cultural background: Jørn Utzon's Bagsværd Church near Copenhagen, and Glenn Murcutt's Australian Islamic Centre in Newport near Melbourne. In both cases, the architects used daylight to connect the architecture and people together, establish a sense of place and time and draw people's attention to the beauty of nature.

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## OPEN TO THE WORLD : FRAC NORD-PAS DE CALAIS IN DUNKIRK

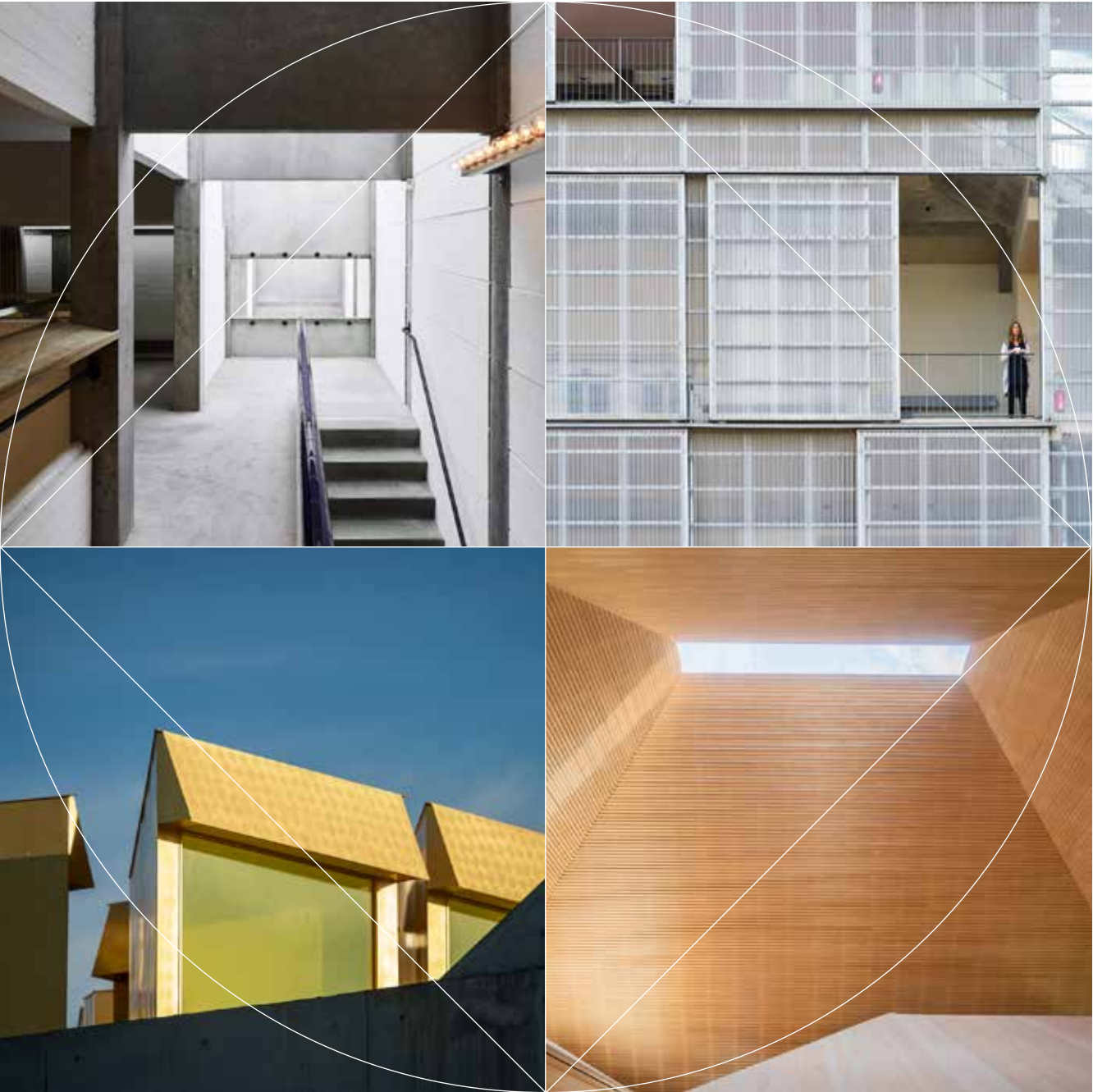
Architects Lacaton & Vassal have a habit of giving their clients more than they expect from a building. They also pursued this strategy with the new regional museum of contemporary art (FRAC) in Dunkirk. Karine Dana describes the twin structure that incorporates the former AP2 dockyard hall with all its potential for unexpected uses. Speaking to the employees and visitors of the museum, she also noted how the building puts them not only in close contact with each other, but also with the climate and landscape on the coast of the English Channel.

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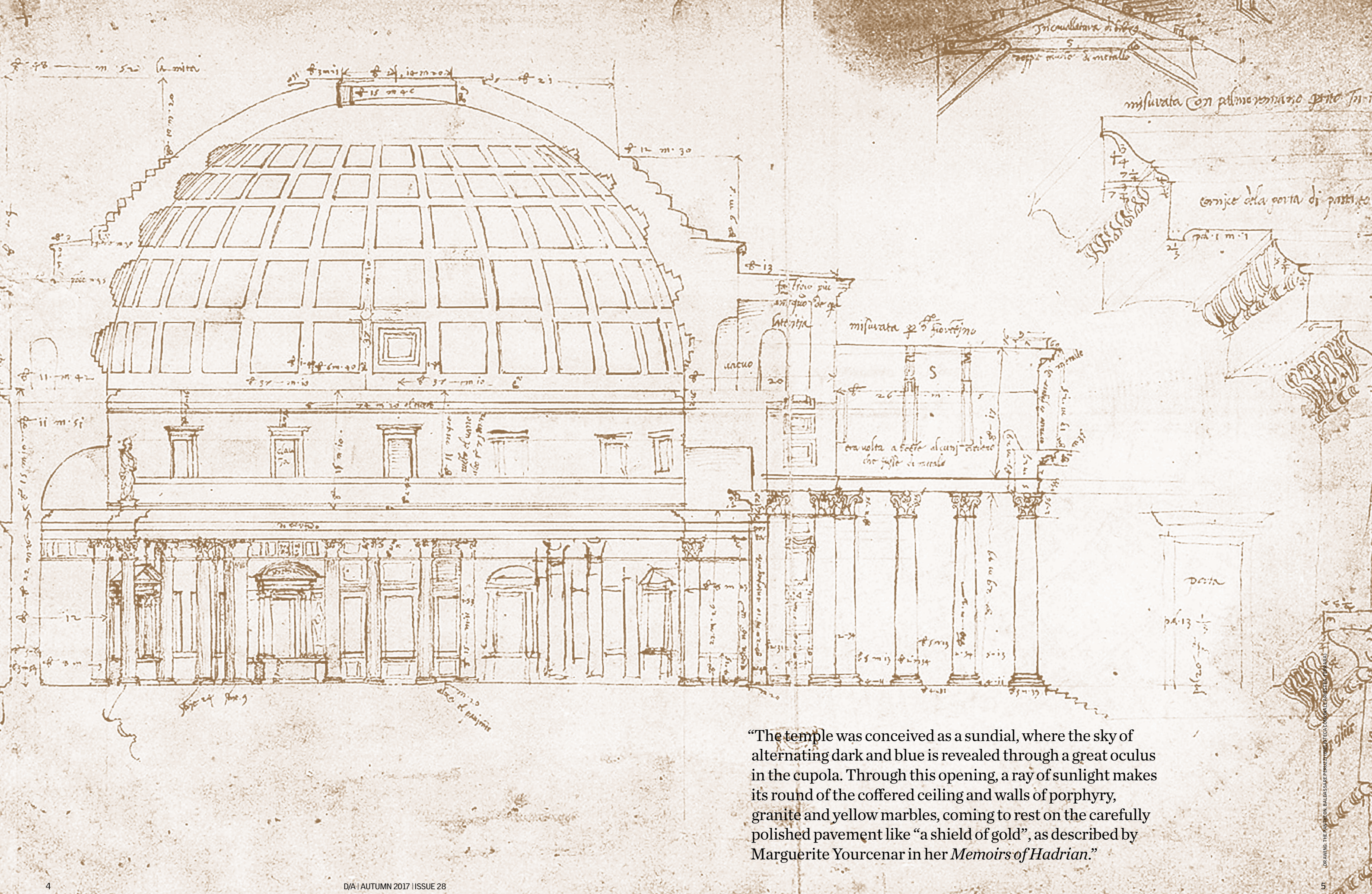
## BEACON OF REVIVAL: NAOSHIMA HALL IN HONMURA

Architect Hiroshi Sambuichi has created a new central space of gathering and representation for the island dwellers on Naoshima in southern Japan. Part of an overall strategy to revitalise the island, the community centre and sports hall are intended to foster social and cultural life in the village of Honmura. Alex Hummel Lee describes how Sambuichi cleverly used natural light and the prevailing local winds to create an optimum indoor climate for a wide range of building uses. These range from badminton to a traditional form of Japanese puppet theatre.

In all the projects shown in this issue, the built form was key to the daylighting concept – from the Pantheon's oculus to the golden triangular skylights of the Australian Islamic Centre. Discover the hidden geometries and proportions of the buildings as you browse through the magazine!







“The temple was conceived as a sundial, where the sky of alternating dark and blue is revealed through a great oculus in the cupola. Through this opening, a ray of sunlight makes its round of the coffered ceiling and walls of porphyry, granite and yellow marbles, coming to rest on the carefully polished pavement like “a shield of gold”, as described by Marguerite Yourcenar in her *Memoirs of Hadrian*.”

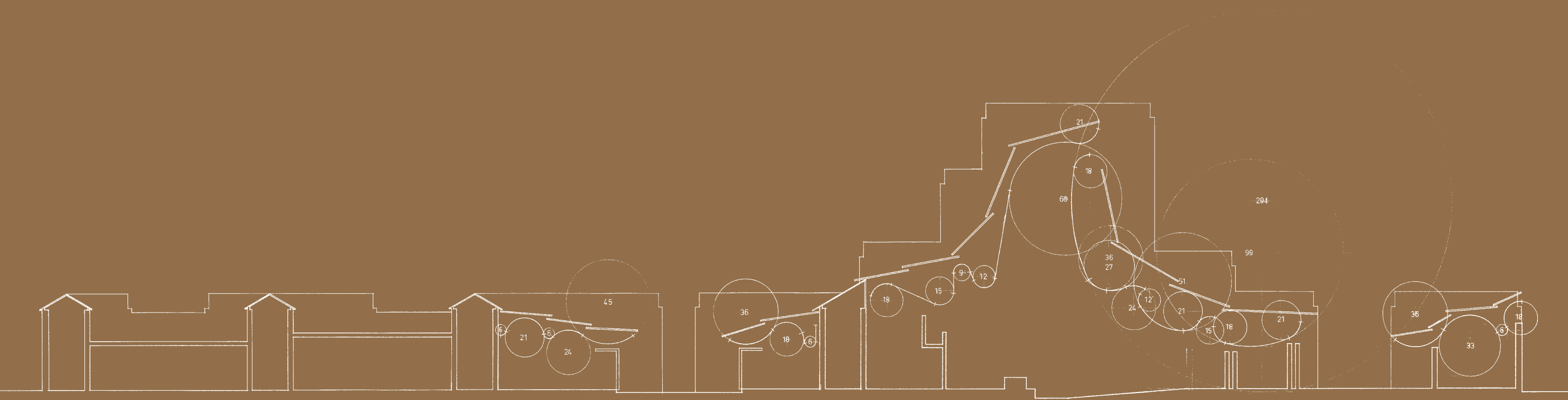




PHOTOGRAPHY: © THOMAS STRUTH, PANTHEON, ROME 1990



Geometrical analysis of Bagsværd Church.  
Jørn Utzon cleverly combined a regular grid  
of columns and beams with softly-curving  
concrete ceilings based on circles with  
different diameters.







# GATHERED IN DAYLIGHT

## JØRN UTZON'S BAGSVÆRD CHURCH & GLENN MURCUTT'S AUSTRALIAN ISLAMIC CENTRE

In the past two millennia, the world has seen a marked cultural shift in the use of daylight in buildings, away from the magic symbolism of earlier ages. In contemporary masterpieces of architecture, the light of the sun and sky is used as a means of connecting communities, establishing a sense of place and time and drawing people's attention to the beauty of nature. Occasionally, light even serves to quietly subvert traditional notions of power and divinity. This is exemplified in two great buildings that, despite being located on opposite sides of the globe, share many common features: Jørn Utzon's Bagsværd Church near Copenhagen, and Glenn Murcutt's Australian Islamic Centre in Melbourne.

By Adrian Carter  
Photography by Brendan Austin (Bagsværd Church) and  
Anthony Browell (Australian Islamic Centre)



“You have shown how to turn motion into form,  
matter into luminance, and gravity into flight ...  
Your poetic alchemy enriches the imagination  
of all of us.”

Juhani Pallasmaa about Jørn Utzon

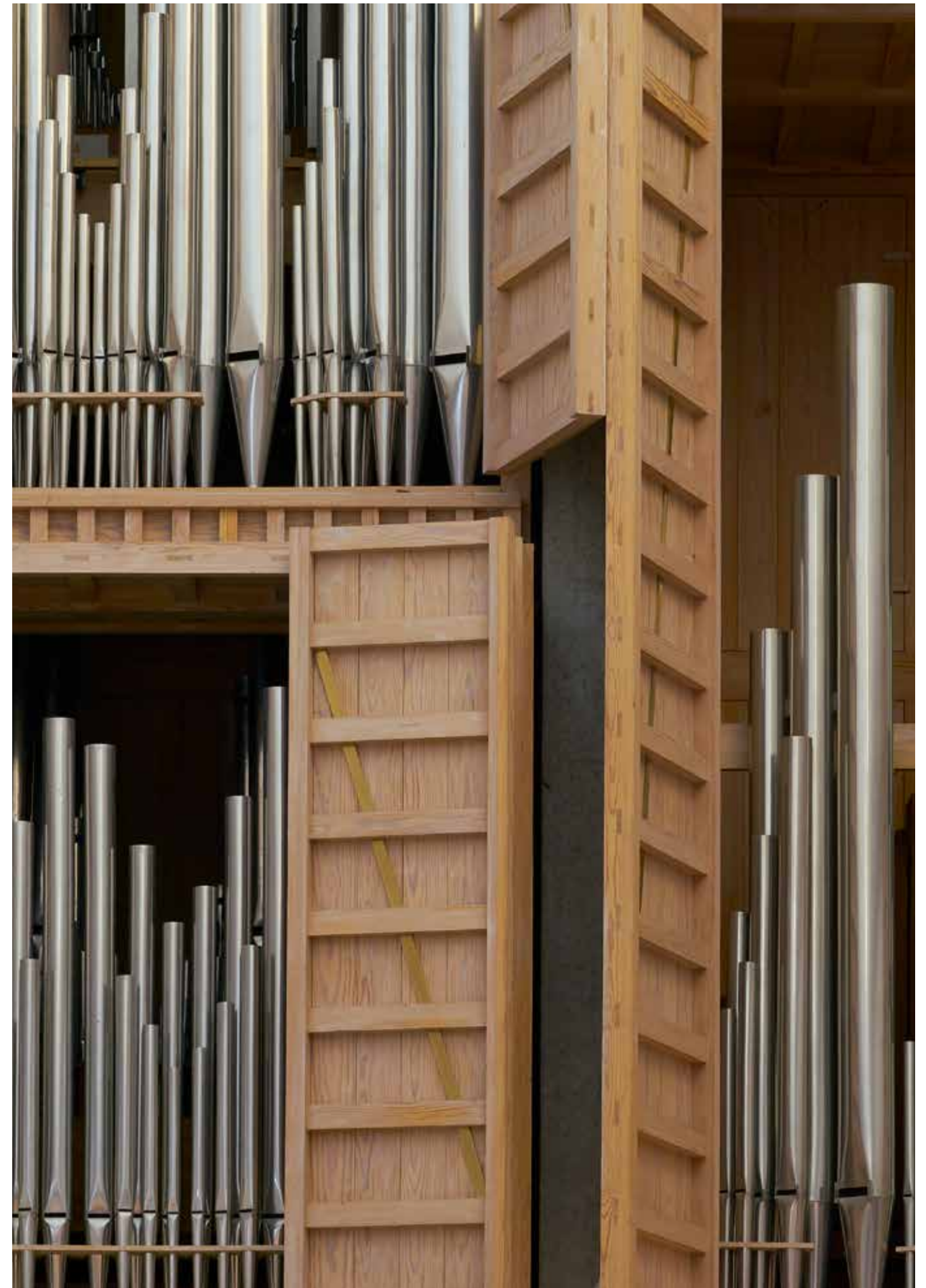
IT IS REMARKABLE how architecture can transform our appreciation of daylight, a natural phenomenon that, on a daily basis, we take for granted. Profound architectural experiences are created through the manipulation of daylight. As Le Corbusier so eloquently expressed, “Architecture is the masterly, correct and magnificent play of masses brought together in light”.

In significant architecture, such as the Pantheon in Rome, the cosmic dimension of light is extenuated and experienced as being sublime. In its present form, as a circular building with a portico of Corinthian columns, it was rebuilt during the reign of Emperor Hadrian. Earlier temples on the site dating back to 27 BC had previously been destroyed by fire. It was Hadrian’s intention that this sanctuary for all gods should represent both the “terrestrial globe” and “the stellar sphere.” The temple was conceived as a sundial, where the sky of alternating dark and blue is revealed through a great oculus in the cupola. Through this opening, a ray of sunlight makes its round of the coffered ceiling and walls of porphyry, granite and yellow marbles, coming to rest on the carefully polished pavement like “a shield of gold”, as described by Marguerite Yourcenar in her *Memoirs of Hadrian*. It is an architecture where notably the interior was clearly intended to outshine the exterior.

The Pantheon was also designed as a forum where the emperor could make public appearances and thus remind the gathered audience of his own divinity. In 609, all vestiges of pagan idolatry were removed by Pope Boniface IV and the building consecrated as a Christian

church, Santa Maria ad Martyres. This continued use as a church has undoubtedly contributed to the Pantheon’s survival, saving it from the abandonment and eventual destruction that was the fate of so many of Rome’s other ancient buildings. This has allowed the building to remain a source of inspiration to architects, from Brunelleschi through to the present day. For Louis Kahn, the Pantheon was a particularly significant influence. It served to define a poetic understanding of silence and light that underpins his architecture. According to Kahn, “Inspiration is the feeling of beginning at the threshold where Silence and Light meet. Silence, the unmeasurable, desire to be, desire to express, the source of new need, meets Light, the measurable, giver of all presence”.<sup>1</sup> Light is thus that which, by giving presence, brings a work of art or architecture into life, from the poetic idea into reality.

Kahn’s articulation of light in his design of public buildings often has a divine quality, akin to that of the Pantheon. Le Corbusier, on the other hand, as an avowed agnostic, went beyond the religious notions and symbolism of light as divinity in his sacred works of architecture, to a more sublime poetic experience of our place in the cosmos. As Henry Plummer writes of the transformative power of light in Le Corbusier’s architecture, “Instead of serving as a tool of religious persuasion, as it generally has in the past, light has become a quiet force to visually resist and elude, erode and outshine, the Church’s mandate. Light eats away and weakens institutional discipline, while exerting its own dazzling powers to draw attention out to the sky











“Never have I seen white light have so many nuances as in Bagsværd Church ... The light enters everywhere so that you avoid the feeling of darkness, and also the feeling of conclusion. A clever interpretation of the concept of eternity.”

Henrik Sten Møller in Politiken, Søndagsmagasin 4.4.93

and its commonplace marvels – in effect using light to consecrate the natural universe”.<sup>2</sup>

#### In Different Light

To this pantheon of architects who are masters of light and whose sacred buildings go beyond religious tradition and dogma, one can add Jørn Utzon with his Bagsværd Church near Copenhagen, Denmark, and Glenn Murcutt with the just recently completed Newport Mosque near Melbourne, Australia. Both are outstanding examples of poetic notions of daylight as the creative driving force for spiritual works of architecture. In these buildings, the articulation of light is the essential idea underpinning the architectural expression and serves to bring the community together.

Despite being from opposite sides of the globe, Utzon and Murcutt have much in common as architects. In Bagsværd and Newport, however, they were operating not only within very contrasting cultural but also very differing natural environments, particularly in regard to the contrasting qualities of daylight. As Murcutt explained, in Australia the light is so sharp and intense that it visually separates all the elements in the landscape. It is therefore good for outdoor sports where one has to keep one's eye on the ball, for example, but less conducive, he says, for contemplation, in contrast to the Northern European light, which is soft and muted, thus uniting elements.

Both Utzon and Murcutt have been greatly influenced by the Nordic master of humane modernism and sculpted skylights, Alvar Aalto, as can be evidenced in their respective works, most notably in Bagsværd Church, with its sensually

undulating light-reflecting ceilings and the skylights of Murcutt's own home. Utzon and Murcutt's acute understanding and appreciation for light have also been heightened by their close associations with artists, on occasions working together on the artist's own projects. However, as Murcutt makes clear, a very different quality of light is required to make and display art than to create a space for spiritual contemplation.

#### Through drawing comes imagination and emotion

For both Utzon and Murcutt the act of drawing is the most direct means of connection with the imagination. Utzon initially presented two conceptual sketches to explain his intentions for the Bagsværd Church. One is an image of a gathering of people on a beach beneath rolling clouds, and the other is of a congregational procession towards a crucifix beneath cylindrical ceiling vaults. The sketches evoke a quintessentially Danish experience of an open, horizontal landscape beneath ever-present clouds that diffuse the light and occasionally part, allowing the sun to break through. However, the actual cloud formations that inspired Utzon in his sketch were the high vertical cumulus that he experienced at the beautiful Lanikai Beach, close to where his family were living at the time on Oahu, Hawaii. The experience of towering, cylindrical cloud formations that were formed every afternoon by the prevailing trade winds, Utzon likened to “a colonnade on its side”.<sup>3</sup> The dramatic manner in which light penetrated between the clouds provided Utzon with a powerful conceptual design idea for the interior of the church hall. As Utzon him-







self described, “I have architectonically attempted to realise the inspiration that I derived from the drifting clouds above the sea and the shore. Together, the clouds and the shore formed a wondrous space in which the light fell through the ceiling – the clouds – down on to the floor represented by the shore and the sea, and I had a strong feeling that this could be a place for a divine service.”<sup>4</sup> Certainly this remarkable interior evokes a return to an almost pagan form of worship of natural phenomena.

Explaining the quality of the light entering the interior, Utzon says, “the light in the church itself comes mainly from the very large, highly positioned, west-facing sidelight. It is reflected down the whitewashed, curved surfaces of the ceiling and provides a shadowless light that decreases slightly lower down. The room acquires a softness that produces an elevated, optimistic feel”. As Henrik Sten Møller, architecture correspondent of the Danish national newspaper Politiken, has commented, “Never have I seen white light have so many nuances as in Bagsværd Church”. He goes further to explain that “the light enters everywhere so that you avoid the feeling of darkness, and also the feeling of conclusion. A clever interpretation of the concept of eternity.”<sup>5</sup> With poetic phenomenological understanding, Juhani Pallasmaa has stated that Utzon has “shown how to turn motion into form, matter into luminance, and gravity into flight. I can touch the chiaroscuro on the ceiling folds of the Bagsværd Church.”<sup>6</sup>

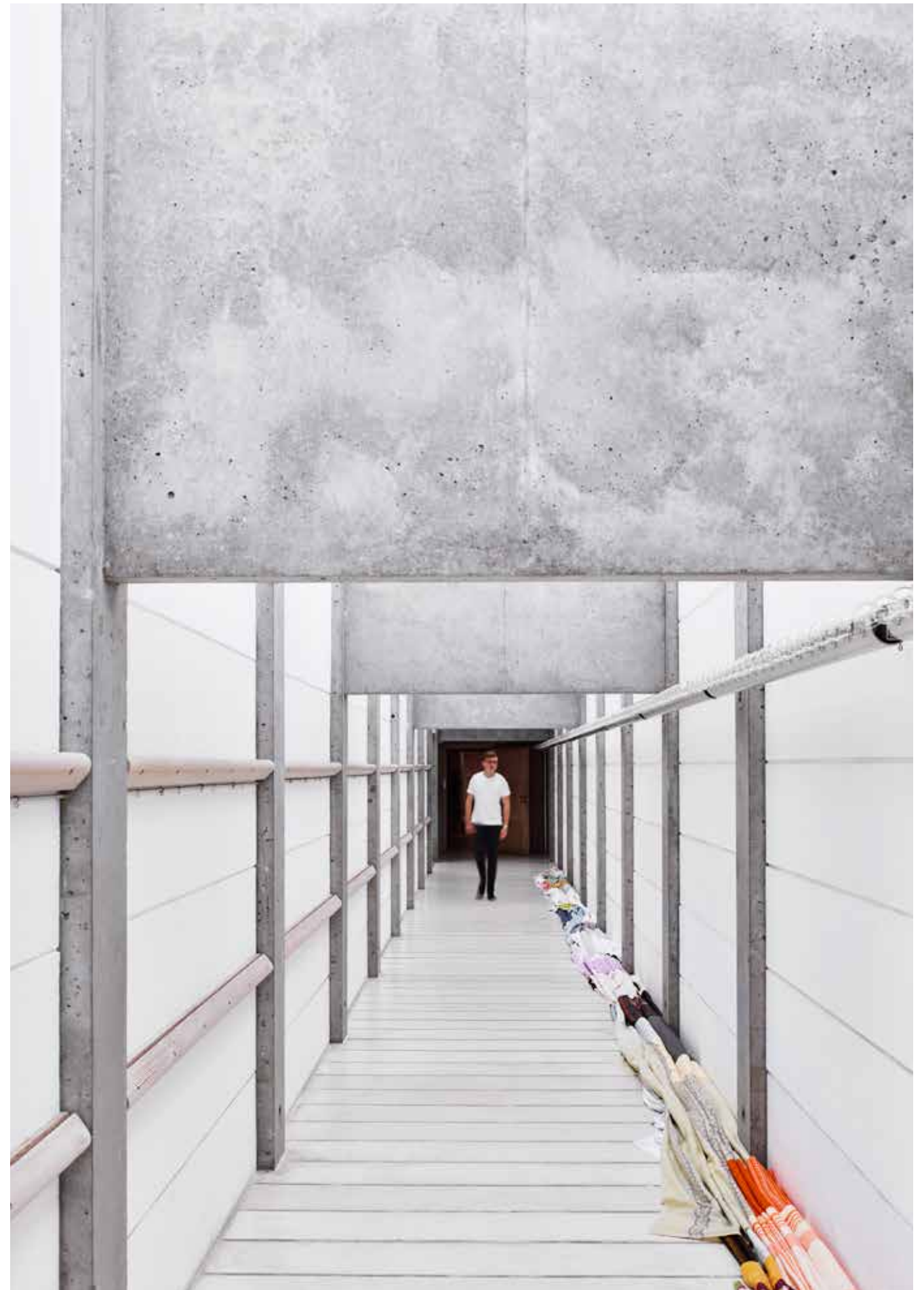
For Utzon, Bagsværd Church is about a universal celebration of light and life. In early sketch sections, Utzon’s cloud motif ceiling is drawn with the sensual

fluidity of Arabic calligraphy, as Utzon’s own artistic evocation of an Islamic text celebrating Allah as the light. It is a poetic translation of a universally understood metaphor for the sacred, but still remarkable as a catalyst for the design of a Lutheran Church. This transcultural synthesis is indicative of Utzon’s openness, across cultural boundaries, to the inspiration of what he simply considered beautiful ideas. While Utzon subtly subverted cultural norms and stereotypes in Bagsværd, Murcutt in Newport more overtly confronted existing orthodoxy and prejudices, bravely using his professional recognition to gain acceptance for and actually realise an architecture that will actively counter those tendencies.

#### A Spectrum of Meaning

In Newport, Mohamad El Hawli, the local president of the Newport Islamic Society, was seeking to build a contemporary mosque for their expanding, predominantly Lebanese immigrant community in the early 2000s. El Hawli was convinced by Michael Zaar, a very supportive non-Muslim local resident and invited member of their building committee, that they should engage the then recently Pritzker-awarded Murcutt. Murcutt had chaired the Aga Khan Award for Islamic Architecture and was, therefore, clearly appreciative of Islamic culture. He agreed to the commission in 2004, but to ensure that the mosque was rooted in respect for Islam’s cultural traditions, Murcutt asked that a younger architect from the Muslim community be found. He was partnered with Hakan Elevli, a local architect of Turkish immigrant background, who was fully committed to the local community’s brief, “to de-

Previous spread: The lateral wings of Bagsværd Church display Jørn Utzon’s lifelong fascination with modular, additive architecture. A system of modular skylights provides the corridors inside the building complex with natural daylight from above.





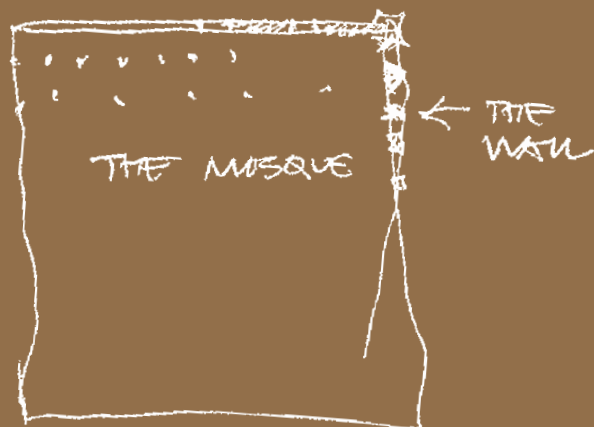
Almost denying the sacred character of the building, the outside walls of the church are made of prefabricated, off-white concrete panels inserted into a concrete skeleton.





Glenn Murcutt's design sketches for the Australian Islamic Centre show how the building's geometry and daylighting design were conceived hand in hand.

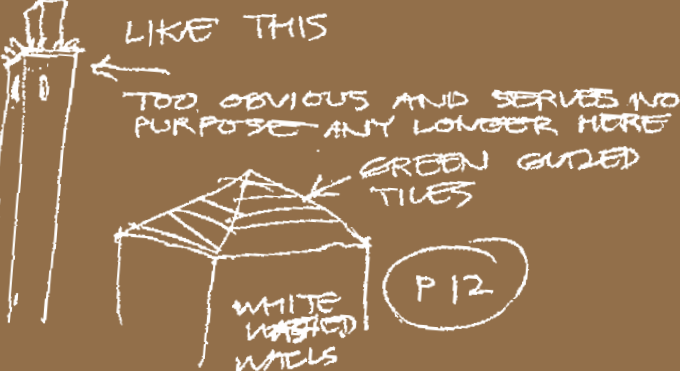
ALL SURROUND MOSQUE



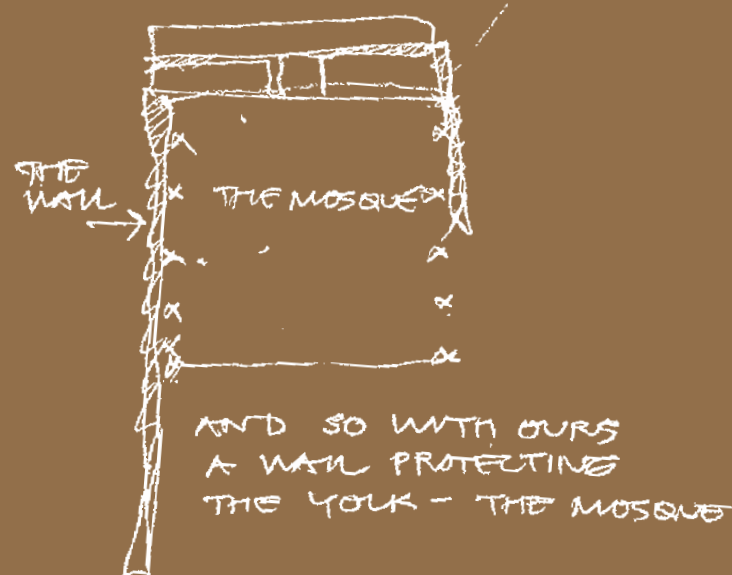
IN A WAY THE MOSQUE IS NOT A BUILDING BUT SPACES WITHIN A WALL - LIKE AN EGG - A SHELL THAT PROTECTS A YOLK

ET,

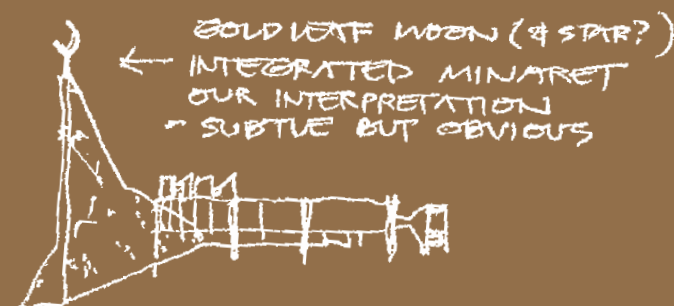
ALL MOSQUES HAVE A MINARET



NOTE MOST OF THE ROOF LANTERNS FACE NORTH AND A FEW FACE EAST FOR FIRST LIGHT AND WEST FOR LAST LIGHT



BUT BEING AUSTRALIA WE HAVE OPENED ONE SIDE TO THE COMMUNITY - EXPOSING THE "HEART" & "INSIDE" OF THE FAITH ALTHOUGH SUBTLY



P3



P2

P4



P1

STRUCTURE

GEOMETRY

ORDER

COLUMNS / ARCHES / LINTELS IN A STRICT GEOMETRY

LIGHT

P5

P8

P9

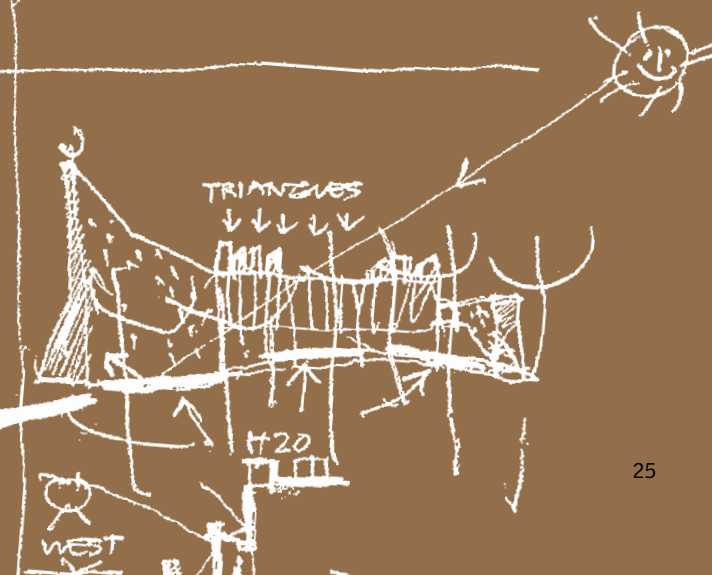
LIGHT SHAFTS



TREES WATER - MEDITATIVE, REFLECTIVE

P2

P3









“If you go and look at the Great Mosque of Cordoba, you get through into the garden, and then you get into the mosque. And so, symbolically, I am doing that, but instead of the exclusivity, this one is inclusive.”

Glenn Murcutt



sign the first true Australian mosque for non-Muslims, for new Australian Muslims – that’s inclusive – that’s going to be transparent”.

Murcutt’s concept for the mosque was that a wall should extend from the street all the way around the building, giving it its strength and that, like outstretched arms, “invited the community to come out and see the mosque” and to realise, since the entire width of the entrance level is all glazed and transparent, “that it is not exclusive, but inclusive.” To further this understanding, the mosque is combined with a community centre, a library for Islamic studies, a café and restaurant that are designed to attract the wider community. For Murcutt this has been an opportunity, within a society where there is anti-Islamic sentiment, to “bring Islam back into our community” and for it to become “an addition to the culture” in a more truly multi-cultural Australia.

In Australia, Murcutt felt that a mosque did “not have to replicate the mosques of the Arab world” and should not specifically have a minaret any more, as this was archaic and redundant in this context. This met with some resistance from the older traditionalists within the community, but was embraced by the younger members who, as the coming generation, were given the final say. Murcutt was able to persuade them of the need to create an Australian mosque, just as the Ottoman, Middle Eastern and Malaysian mosques have their own character. Rather than a minaret, the surrounding wall rises at angle to greet the visitor, with a crescent moon at its apex.

Inside the mosque, Murcutt wanted a subdued quality of light that would serve

to connect the architecture and people together; as evocation of the Islamic understanding of standing shoulder to shoulder. Within the great hall, men gather on the ground floor, while women are within the same volume of space and beneath similar lanterns on the quieter mezzanine floor above. The entire ceiling comprises 96 triangular lanterns, 2.8 metres high, contained within a diagonal grid of structural beams. The lanterns are painted gold on the exterior, not a colour Murcutt has ever used previously and unlikely to find appropriate again. However, having eliminated a conventional minaret and dome from his design, he wanted to make reference to Islamic culture and more directly to the gold-plated Dome of the Rock, Islamic shrine in Jerusalem. Murcutt is delighted by the resulting golden reflectivity of the lanterns, which joyously suggests paradise.

On one side, the lanterns have coloured glazing and an insect-meshed, ventilation opening. They alternately face the cardinal points of North, East, South and West, with each orientation having a particular hue and symbolic articulation. Towards the East, the glazing is yellow in the morning, representing the future or paradise to come. To the North, during the day is green which represents an oasis and thus nature. In the afternoon, from the West the colour is blood red, symbolising strength, and to the South is the blue of the sky and the sea, that is infinity.

The lanterns not only serve as a solar clock throughout the southern hemisphere day, but also reveal the time of the year. During the hot summer months, with the sun coming up in the South-East, before arcing to the North and setting in









Left: View of the Mihrāb (prayer niche) and the courtyard at the rear of the building. The large glazing at ground floor level, combined with water ponds that reflect rays of light towards the ceiling of the prayer room, constitute the most important source of daylight in the building.

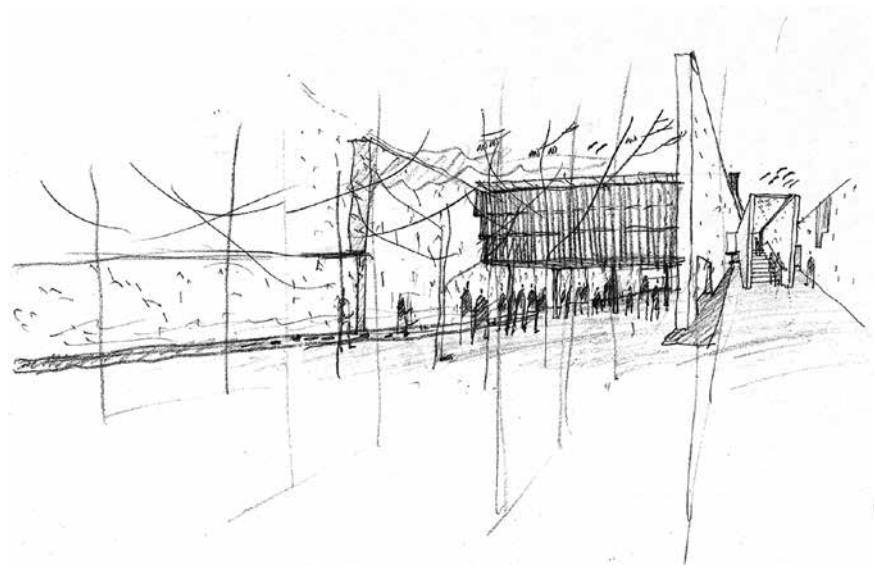
Right: 96 triangular skylights provide the main prayer room with coloured daylight from above.











the South-West; the day will begin and end with a cool blue tone. While during the cold winter, when the sun first rises low in the East and sets in the West, there will not be any blue tones, only the warmer colours of yellow, through green to red. It was from an understanding of the work of Luis Barragan, who Murcutt visited in Mexico, that he came to appreciate that colours should be orientated to the appropriate direction of the sun, in order to achieve the greatest colour saturation.

Murcutt is best known for an elegantly lightweight architecture that, like the Aboriginal people, touches the earth lightly, but in the Newport Mosque the architecture is enduringly rooted in the ground and rather it is about the light touching the earth. Murcutt allows the greatest intensity of daylighting in the building to fall upon the three reflecting ponds with water lilies and water poppies, at the rear of the mosque, towards Mecca in the north-west. As Murcutt says, the beautiful flowers that open and close with the sun, and brighter, shimmering light will draw people, like moths, in that direction.

#### Beacons of Hope

Bagsværd Church and Newport Mosque were both labours of love that each took over a decade to realise. With protracted and often rancorous discussions to gain planning permission and extremely tight limitations on costs, the architects were constantly being pushed to the very limits. To bring the Bagsværd Church within budget and having determined that his plan solution was the very optimum, Utzon took the radical step of having all the drawings reduced by 10% in order to make the necessary commensurate eco-

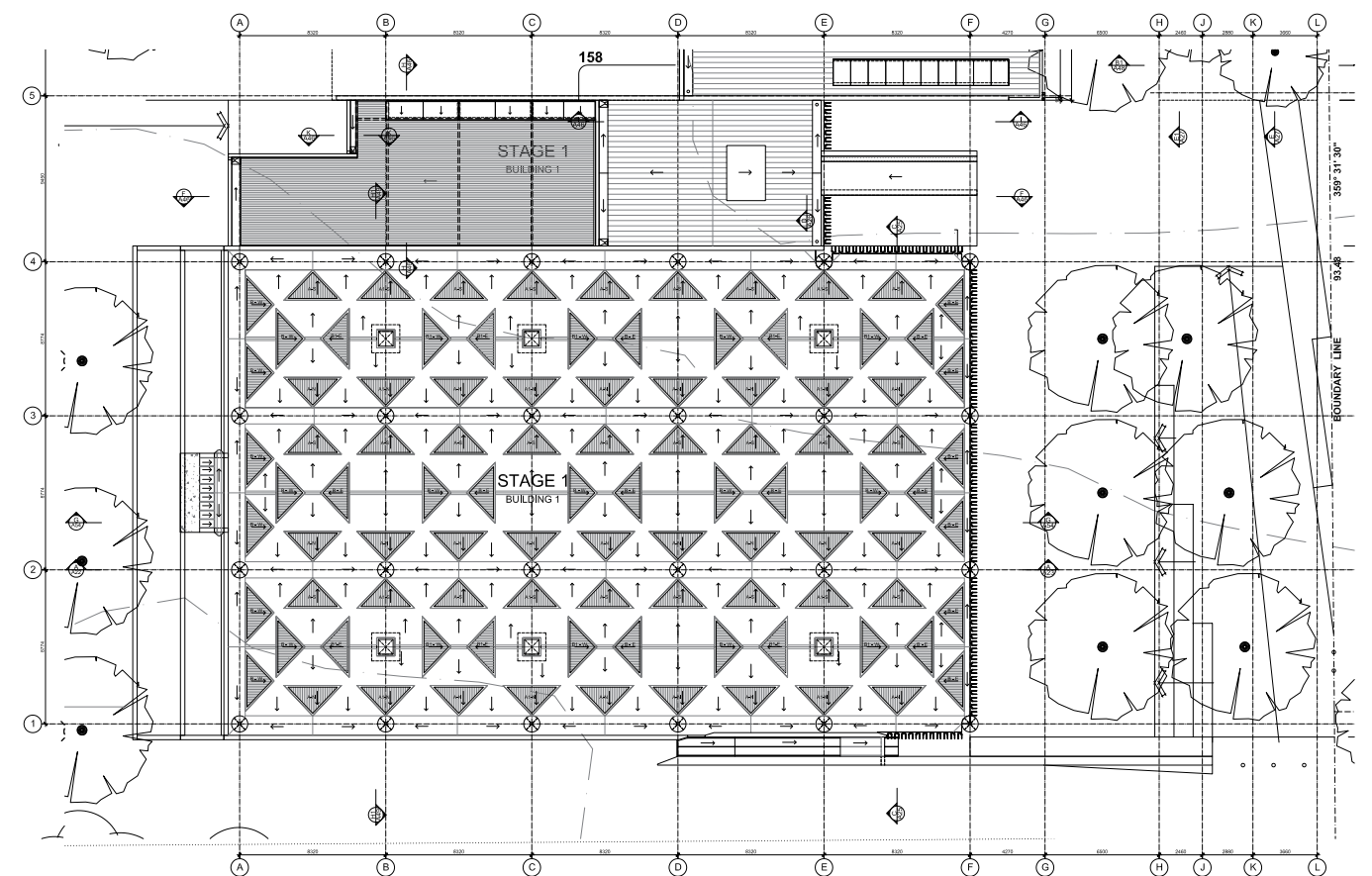
nomic savings. When the building was finally complete, there was no money left for the planned planting of birch trees to provide the desired dappled shading of the building, so Utzon purchased and planted them himself. At the Newport Mosque, Murcutt's vision for the skylights put enormous strain on already limited resources, but it was decided to go ahead nonetheless. Through personal donations from the local and wider community, which gained impetus from the nationally televised documentary 'Spirit of Place' by Catherine Hunter, their collective faith has been rewarded with the project as intended. Now the community is very proud to have the first mosque of modern design.

Utzon's church not only put Bagsværd on the international architectural map, it also bestowed upon a quiet dormitory suburb of Copenhagen a sense of civic pride and own identity. It is a popular choice for weddings for those seeking a spiritually uplifting setting without the overt overtones of organised religion and for couples from differing cultural backgrounds. In its poetic synthesis of transcultural influences, notably including some from the Islamic world, the church stands steadfastly as a positive riposte to the darker forces of prejudice that have surfaced in Denmark in recent years. Similarly, Murcutt's mosque has been embraced wholeheartedly by the Newport community but, more significantly, it has positively influenced the national debate and has the potential to change perceptions, as well as encourage the integration of Muslim communities throughout the world.

As Imam Abdulla Hawari said, following the first celebration of Ramadan in

"I have a very large concrete wall that ... runs horizontally right to the end of the mosque, right around the end and back again. Like big arms held out. And it's all glass between the 'outstretched arms' at the entrance level. So, on entering the mosque space – like insects that are drawn to light – the end of the mosque space will be the higher light level."

Glenn Murcutt

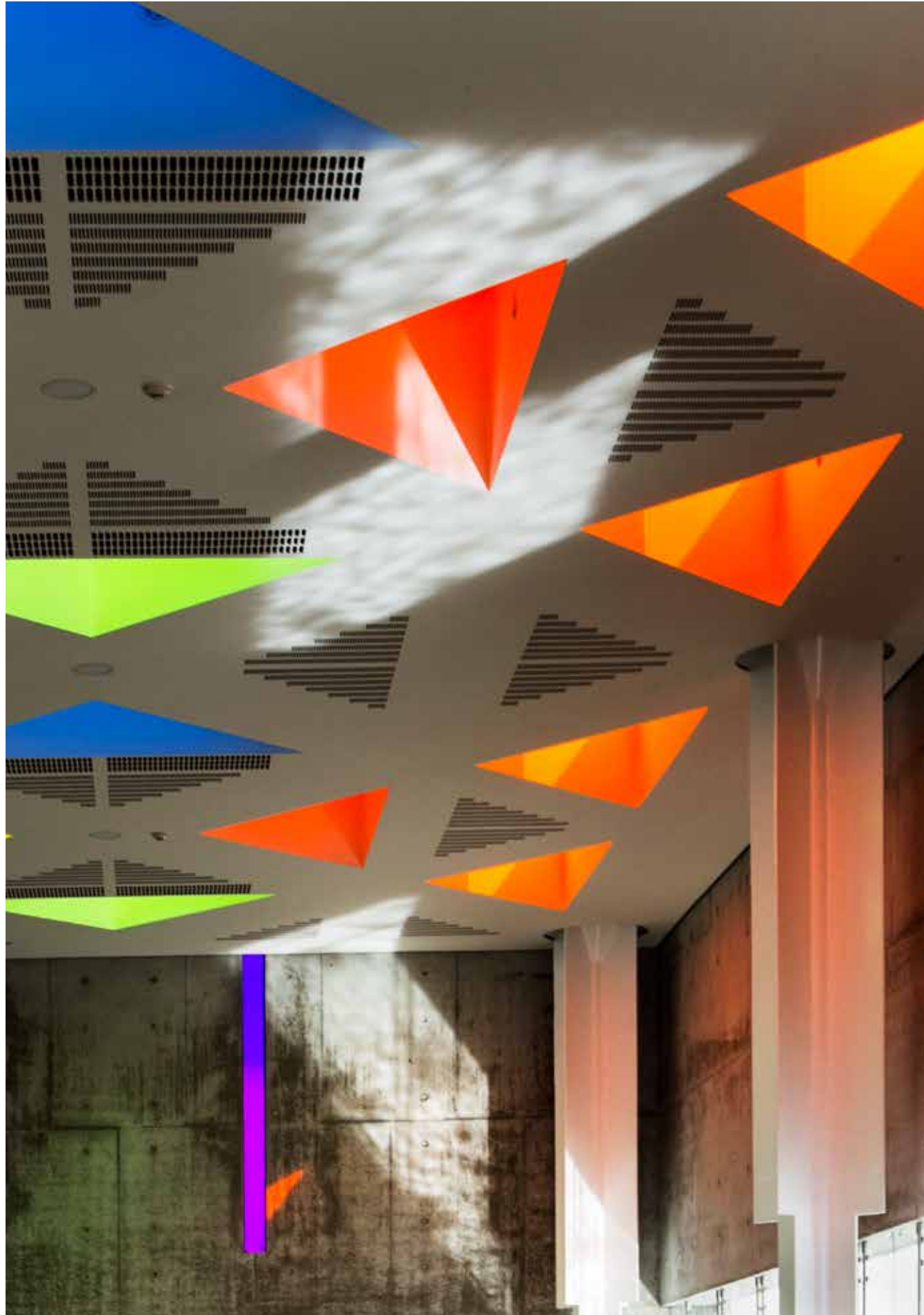


Site plan of Newport Islamic Centre









With its coloured triangular skylights, the building functions almost as a sundial. Depending on where the sun is located in the sky, a different colour dominates the mix of daylight that enters: blue from the south, yellow from the east, green from the north, or red from the west.

“In this way I’m using principles of light, which is incredibly important in Islamic architecture. I’m using water, which is also incredibly important. The difference is I’m changing it from a totally introverted solution to one that has much more connection with modern society in Australia, and the Islamic community is loving it.”

Glenn Murcutt

the then still not fully complete building, “you can see in the faces of the community that their dream has been realised, it is a miracle.” With great openness, the imam has said that he wants every member of the community to come there and pray to whomever they want to pray. For Glenn Murcutt, being an architect is to be “enthusiastic about light and space and how you gift that to people”. In Newport,

Murcutt has gifted the local and wider community what is probably Australia’s most significant cultural building since Utzon gave Sydney the Opera House, and shown a way for society to go forward to a brighter future.

**Prof. Dr. Adrian Carter** is Professor of Architecture and Head of the Abedian School of Architecture at Bond University in Australia. He studied architecture at the Portsmouth School of Architecture, at The Royal Danish Academy of Fine Arts, School of Architecture in Copenhagen and at the University of Cambridge. As a practising architect, he has worked together with architects Raili and Reima Pietilä (Helsinki), Niels Torp (Oslo), Ancher, Mortlock and Woolley (Sydney), as well as Henning Larsen and Dissing + Weitling (Copenhagen).

Adrian Carter has taught at the Aarhus School of Architecture and at Aalborg University in Denmark, and as a visiting academic at the University of Sydney, Portsmouth University and University of Tasmania. At Aalborg University, he served as Director of the Utzon Research Center and was responsible for the realisation of the Utzon Center building on the Aalborg harbourfront, designed in collaboration with Jørn Utzon. In 2016, Adrian Carter was awarded his PhD for his thesis ‘The Utzon Paradigm’ at Aalborg University.

#### Notes

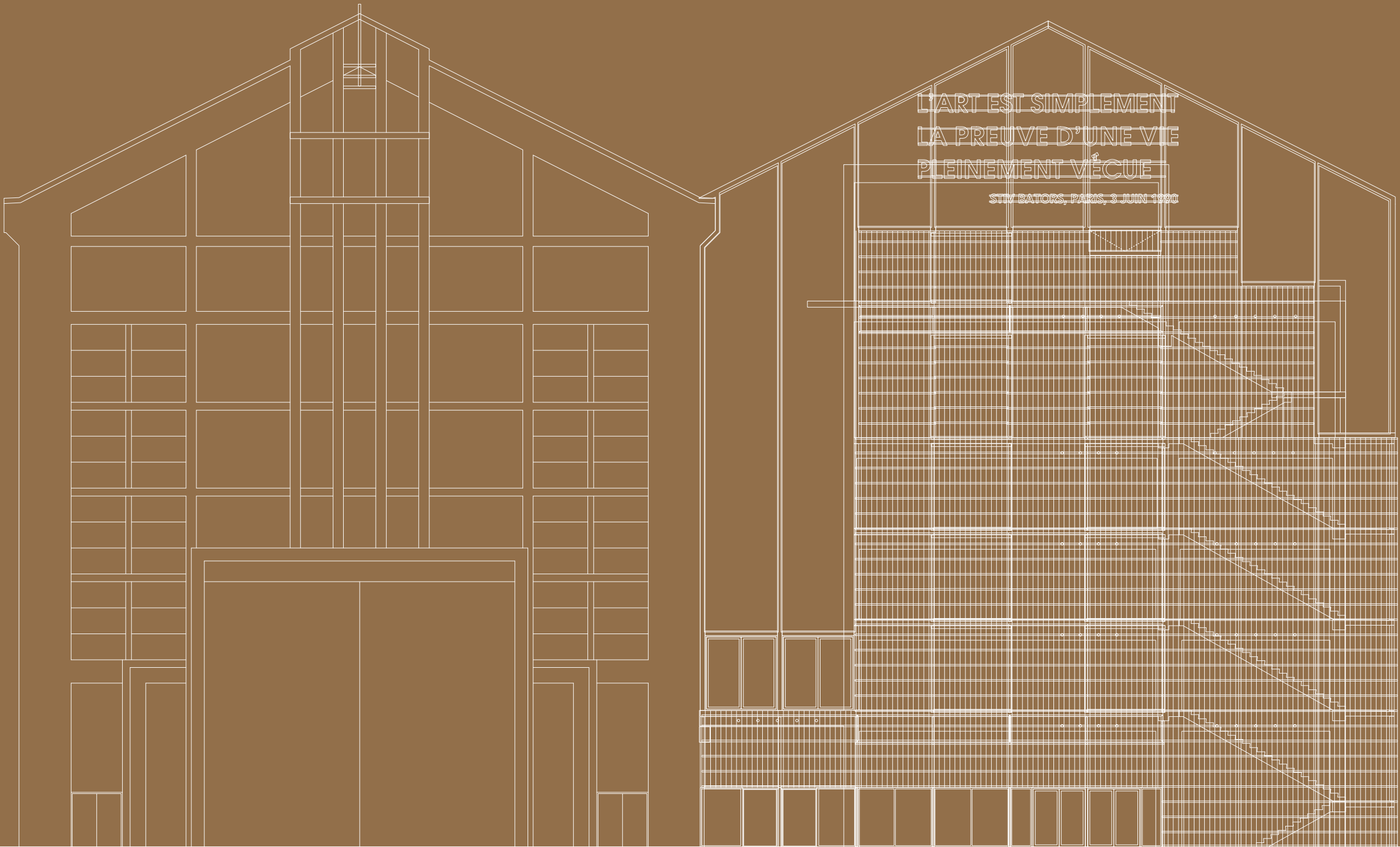
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2. Plummer, H. 2013, *Cosmos of Light: The Sacred Architecture of Le Corbusier*, p.14
3. Weston, R. 2002, *Utzon: Inspiration Vision Architecture*, p.281
4. <http://www.bagsvaerdkirke.dk/in-english/architecture/utzens-article/>
5. Politiken, Søndagsmagasin 4.4.93
6. Pallasmaa, J. in Keiding, *A Tribute to Jørn Utzon*, 2008, p.24







East elevation of the new FRAC Nord-Pas de Calais in Dunkirk. The new volume (on the right) duplicates the existing AP2 shipyard hall, thus creating vast amounts of space with potential for future, as yet unforeseen, uses.







# OPEN TO THE WORLD

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## FRAC NORD-PAS DE CALAIS IN DUNKIRK

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With the new regional museum of contemporary art (FRAC) in Dunkirk, architects Lacaton & Vassal have created a new cultural and social hub on the edge of the sea. The building incorporates the vast volume of the former AP2 dockyard hall, with all its potential for new and unexpected uses. Whereas its permeable outer skin puts users in close contact with the climate outside, its generous yet flexible internal spaces foster social encounter and form an impressive setting for the works of art on display.

By Karine Dana  
Photography by Brendan Austin







“The building allows us to come into contact with a completely new target group that is enthusiastic about architecture. In this way, it expands the range of tasks we once had to perform. In the meantime, we have started to offer special architectural guided tours during which the depot rooms are viewed as well. The moment people consider the building from the viewpoint of architecture, they begin to fully identify with it.”

Adèle Frémolle, Deputy Director

WHEN THE MUNICIPALITIES association of Dunkirk decided to move the Fonds Régional d'Art Contemporain (FRAC) Nord-Pas de Calais to the AP2 factory hall, it wanted to have the former shipyard building converted for the new use. However, architects Lacaton & Vassal won the competition in 2009 with a radically different proposal. Instead of filling the hall with museum spaces and mutilating it in the process, they decided to leave the historic industrial monument empty and to place a new building of the same size – 25 metres wide, 35 metres high and 70 metres long – at its side. This decision had certain advantages, not only functionally but in terms of space as well. It also challenges the expediency of an urban planning policy that is all too often destructive in its approach to industrial heritage.

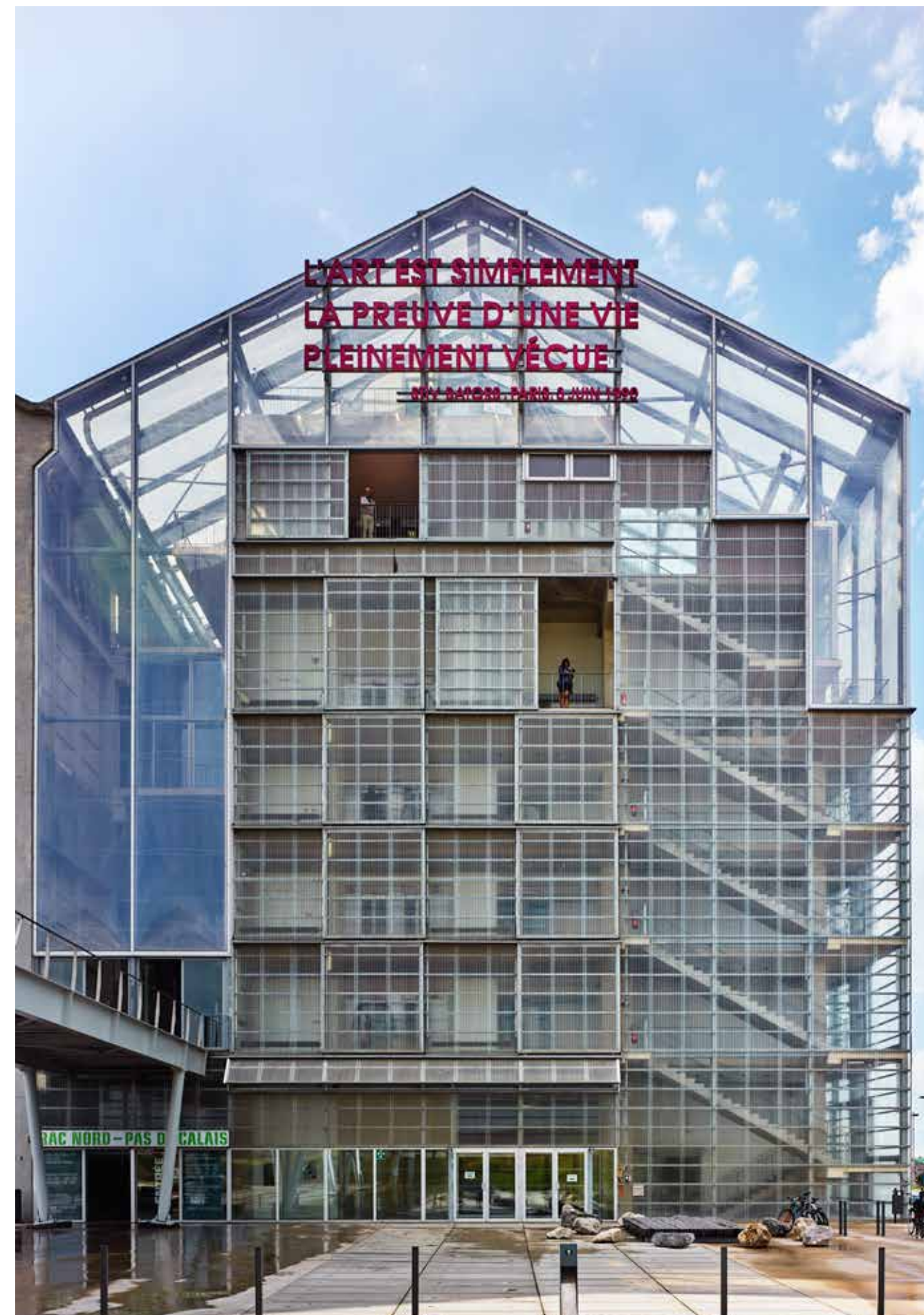
The FRAC is almost directly next to the sea and, at the same time, at the outermost edge of the urban development area ‘ZAC du Grand Large’ in Dunkirk. The latter is a component of the Neptun project initiated in the 1990s with which the city of Dunkirk wants to create closer ties between the former industrial harbour and the urban municipality. In the harbour, nearly all the industrial installations have disappeared in the last few years. Only the AP2 hall has been retained as a last relic of the French ship-building industry.

The huge industrial building, with its steel and reinforced concrete skeleton, appears as if it had been stranded on the outskirts of a new residential district. When the museum opened in 2013, the break between the FRAC and the AP2 hall, and the rest of the urban renewal district was particularly noticeable. The

immediate surroundings still consisted of vast tracts of empty land, and it took some time for local residents to identify themselves with the twin building and its huge dimensions. In the following years, however, the cultural institution gradually coalesced with the urban landscape and new uses for the building eventually became established. With their design, the architects have created the preconditions for a wide range of different social and cultural uses. Now, it is up to the FRAC team to exploit this potential over time by designing an appropriate programme for the museum.

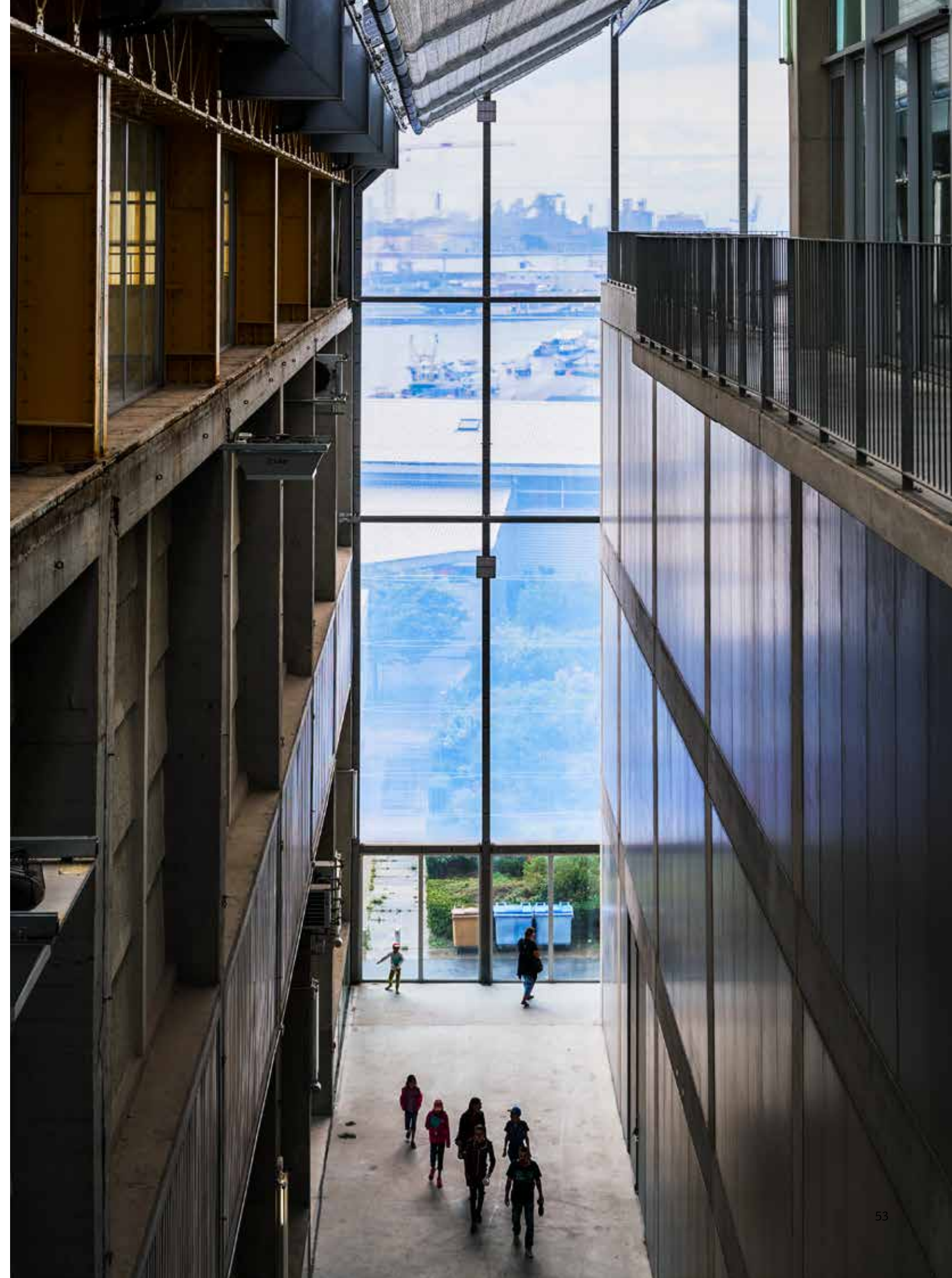
#### The potential of empty space

By doubling, as it were, the existing building, the architects give visitors and FRAC employees a dual opportunity to experience art and architecture in a new way; on the one hand, through the confrontation of an artistic programme with an enormous empty space and, on the other, through the reactivation of a piece of industrial architecture that makes it possible to escape from the conformity of the surrounding new buildings. Although the two structures are the property of the higher-level municipalities association, the AP2 hall will be used by the city sooner or later. Together with the management of the FRAC, the city administration is already working on plans and financing for the future use of the hall, which is to include exhibitions, concerts, sports and diverse other events. At the moment, visitors to the museum still have to content themselves with looking through a large glass window at the old industrial hall, which, for the people of Dunkirk, symbolises a history that is as illustrious as it is painful.





Daylight floods the access areas of the new building even on a dull day. The extremely lightweight and transparent facades consist of a double layer of ETFE foil stretched over a steel skeleton.





“In the exhibitions, the sea is ubiquitous. This alters the way in which a museum visit takes place and also changes our relationship to everyday work. I can no longer detach myself from it.”

Élodie Condette, programme manager

In contrast to conventional museums, the FRAC has the task of building up a fund of contemporary art in the French regions and making it accessible to as wide a public as possible. As if they wanted to emphasise this opening gesture, the architects gave their new building three entrances. The staff have their own entrance in the north. Visitors enter the ground floor from the east via a courtyard or gain access to the first floor over a 300-metre footbridge designed by Brigitte de Kosmi. This pedestrian walkway is an extension of the city beach and promenade further east and passes over a canal before leading into the building. Once inside, it crosses the FRAC lengthwise in the form of an interior ‘street’, from where it is possible to experience the neighbouring hall in all its dizzying grandeur.

**Two kinds of climate, two kinds of spatial experience**

Large, open floors and rooms of different heights characterise the inside of the FRAC. On the ground floor, there is the visitor reception area and a bar designed by Lang/Baumann artists. The museum administration offices are on the second floor. The exhibition rooms occupy all four levels in the east half of the new building; in the west half, the collection depots are accommodated on three floors. This spatial arrangement is favourable for visitor routing and for frequent replacement of the works on show. Moreover, the different areas are completely interchangeable as far as use is concerned. “Mobility and flexibility are linked to the availability of space rather than the movability of building elements”, explain the architects. “If a lot of space is available, things can take

place simultaneously and interactions can result. In addition, the rooms allow different forms of interpretation.”

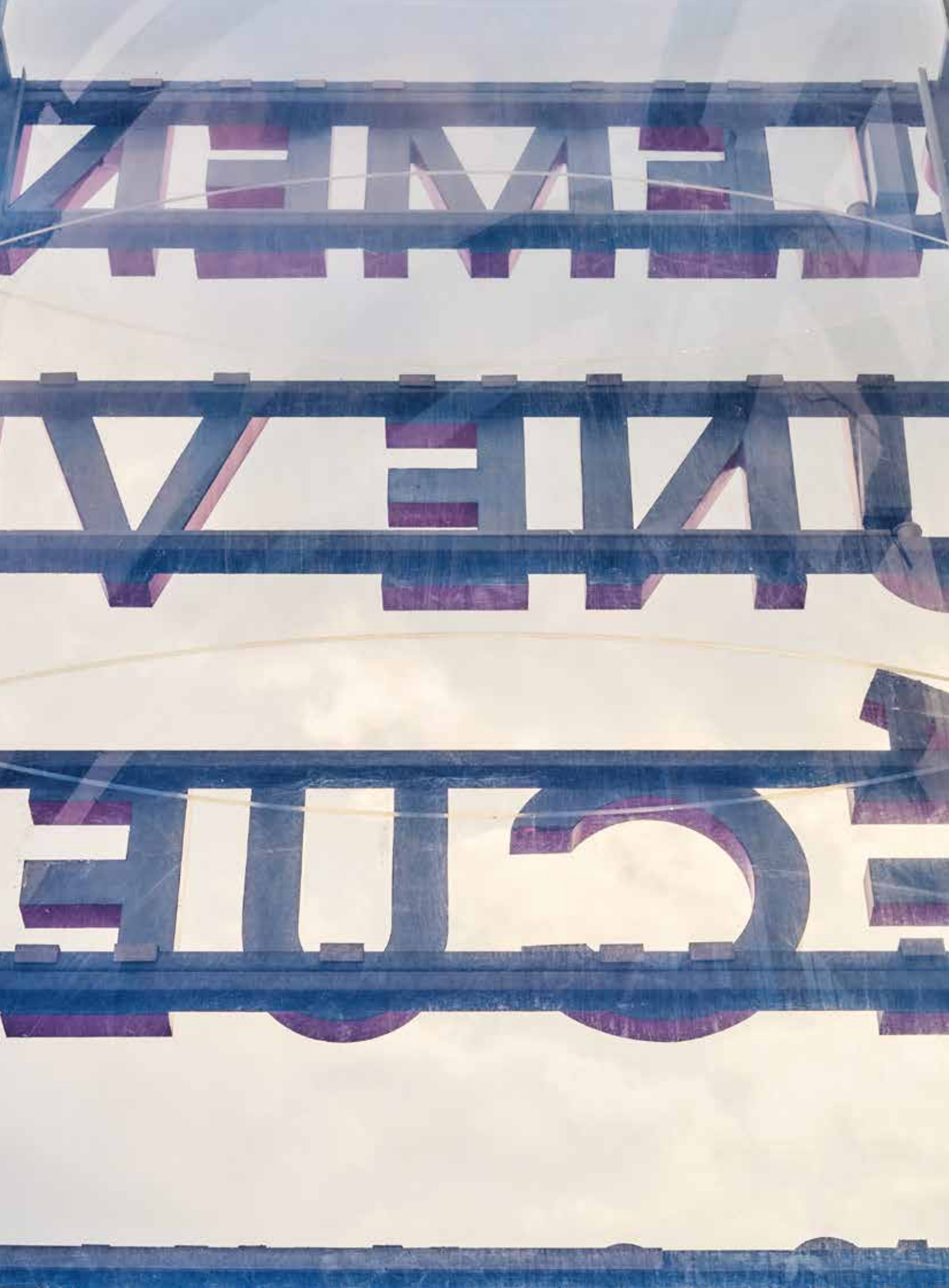
The useful areas are housed in a skeleton construction made of prefabricated concrete parts. In order to adapt the spaces to the frequently changing exhibitions, they are equipped with a system of light, mobile partition walls that the architects had previously designed for the Palais de Tokyo in Paris and used again here. On the outside, a lightweight bio-climatic envelope that lets in light and air encloses the solid core of the building. Between the core and the shell, spacious access areas are accommodated. Automatic doors separate the exhibition and office spaces from this intermediate area, which functions as a climatic buffer.

This means that the public and staff are always in contact with the outdoor climate. The employees tend to dress in multiple thin layers, as museum director Keren Detton explains. “In this way, we can simply put on an article of clothing and then take it off again when we go from one floor to the next. I like this idea very much. We are always connected to the seasons and the weather outside in some way or another. It is very pleasant when the body becomes part of a natural cycle in this way.”

For visual perception too, the access areas are a double asset. Two parallel landscapes unfold before the eyes: that of the sea to the north and that of the works of art on the exhibition levels. Flooded with daylight, the intermediate climate zone provides space not only for the movement of visitors but also for the superimposition of worlds of imagination and chance encounters. Its effect is based on a very permeable facade made













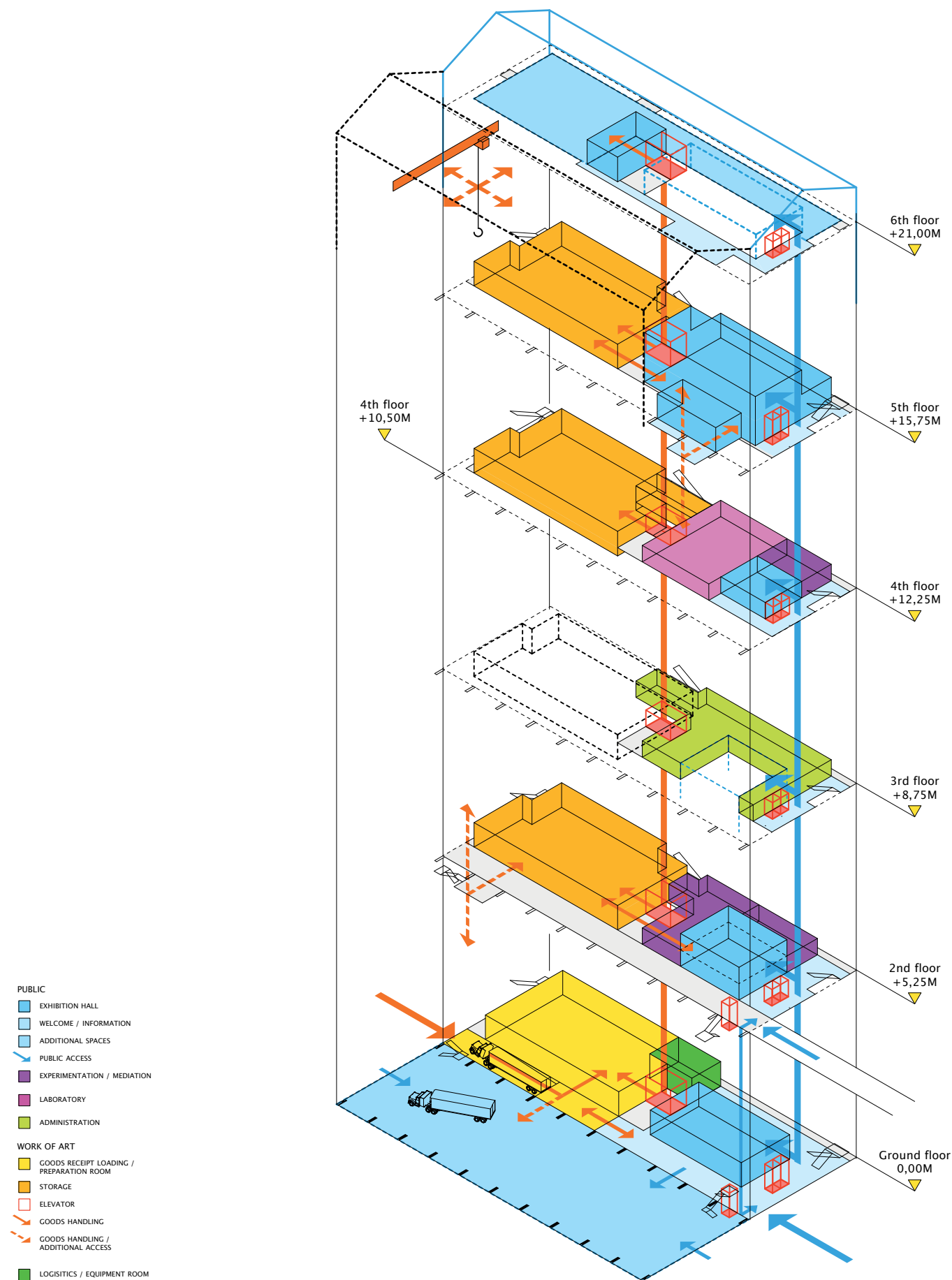


“The AP2 hall is a singular and symbolic object. Its internal volume is immense, bright, impressive. Its potential for uses is exceptional. To implant the FRAC as a catalyst for the new area and to keep the hall in its entirety became the basic idea of our project.”

Anne Lacaton & Jean-Philippe Vassal, architects







Client:	Municipalities association (Communauté Urbaine) of Dunkirk, FR
Architects:	Anne Lacaton & Jean-Philippe Vassal, Paris, FR
Location:	503 Avenue Bancs de Flandres, Dunkerque, FR

“Movement in these open, spacious rooms encourages people to approach each other and enter into discussions. This applies not only to visitors but also to the entire FRAC team, which works in an open-space office here. People encounter each other and begin to talk because the spaciousness of the rooms allows it.”

Élodie Condette, programme manager

of polycarbonate panels on the lower part of the building and a metal skeleton with a double ETFE membrane on the upper part. The membrane envelope is fitted with automatic openings that are controlled by temperature, wind and moisture sensors. The sensors come from the professional horticulture sector and enable easy control of the intermediate area's temperature.

The spatial and atmospheric circumstances, of course, influence how the museum is used and also how the rooms connect people or keep them at a distance. “For us, daylight is always a natural component of any concept developed for exhibitions. Do we want to block it out or use it to set the scene? The relationship to light is always present in our work and is subjected to close scrutiny in the positive sense,” declares FRAC's programme manager Elodie Condette. Likewise, the dimensions and the acoustics of the rooms have an effect on the exhibition concepts and the behaviour of the visitors. “There is a great deal of space on the different levels but the entrances to the exhibition rooms are rather on the small side. This means that the visitors often get into conversations with each other at the entrances and exits of the exhibitions,” says Condette. “The contrast in scale and the ways in which people move around result in relationships of proximity. On the one hand, the visitors are impressed by the size of the rooms; on the other, this closeness reduces their reluctance to approach the museum personnel and ask questions.”

By bringing the landscape and the outdoor climate into the building, the architects created an important framing parameter for the exhibitions. This real,

very actual feature precedes all cultural intentions and all spatial situations. It has an enormous influence on how visitors and staff perceive space and on how they communicate with each other. The special spatial atmosphere becomes most noticeable on the top floor of the new building, which serves as a resting area and viewing platform but does not have any predetermined use. Here, the smell of sea spray, a quiet breath of wind and the continually changing daylight of the north are the most important elements of the architecture and the collective space.

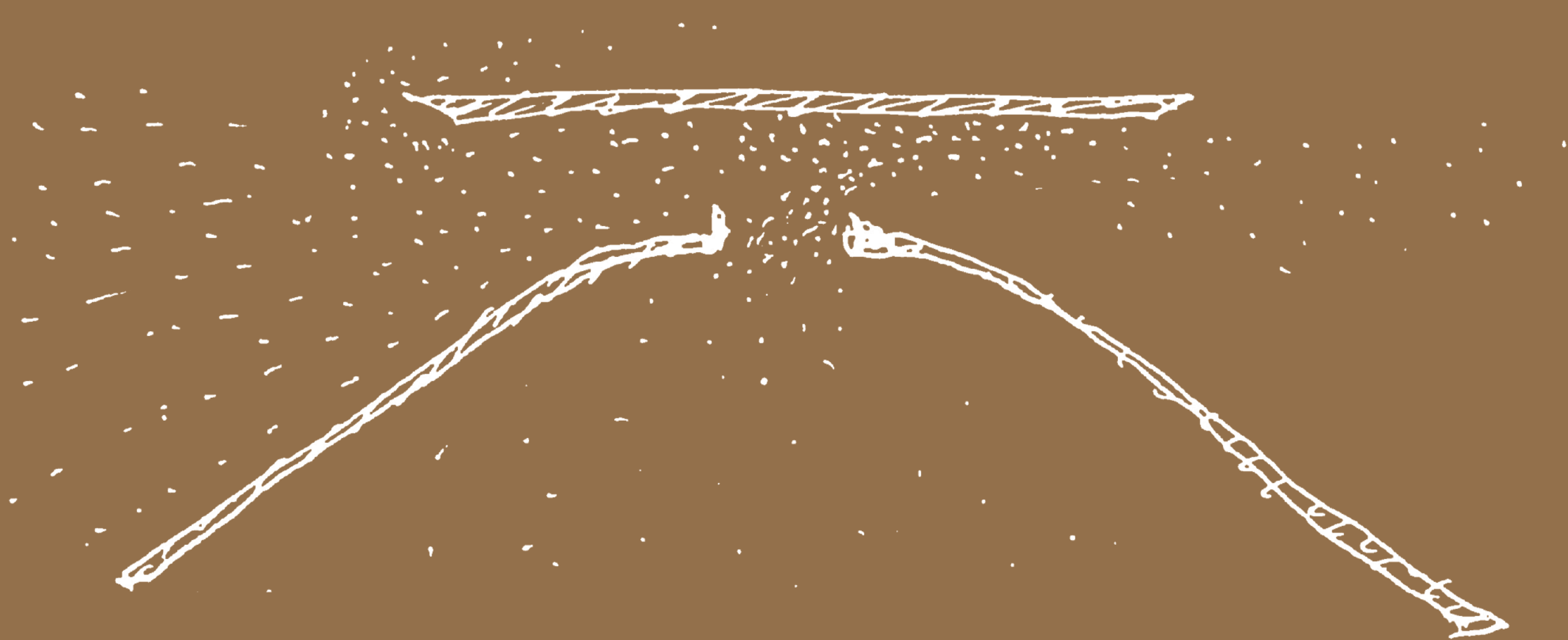
An architect by training, **Karine Dana** works as a freelance writer and journalist in the press sector and publishing, and as a film-maker in the field of architecture. She made the first movie devoted to the approach of architects Anne Lacaton & Jean-Philippe Vassal and Frederic Druot. Her movies can be found at <https://vimeo.com/channels/1254948>







Concept sketch of the natural ventilation at Naoshima Hall. The void underneath the roof ridge acts like a funnel, speeding up the wind that passes through it whilst drawing up used air from the space underneath.







# BEACON OF REVIVAL

## NAOSHIMA HALL IN HONMURA

With his new community centre and sports hall, architect Hiroshi Sambuichi has created a central space of gathering and representation for the island dwellers on Naoshima in southern Japan. Part of an overall strategy to revitalise the island, the new buildings are intended to foster social and cultural life in the local community. Their large roofs make optimal use of "the moving materials of nature", as Sambuichi calls them, in order to provide daylight and fresh air to the building users. The design of the buildings has been based on a combination of experimentation and advanced engineering, as well as a careful reading of the local climate conditions and existing urban patterns.

By Alex Hummel Lee  
Photography by Jérémie Souteyrat









The huge roof of the gymnasium is externally clad with hinoki wood, which has turned silvery grey under the influence of the weather since the building was opened.

ABOUT 400 YEARS AGO on the island of Naoshima in the vicinity of a shrine, a plan for a town was laid out. Called Honmura, literally the origin village, it was conveniently positioned by the calm waters of the strait between Naoshima and adjacent Mukaejima, and it prospered for centuries on fishery and salt production. But with the sudden opening of Japan to the West and its technologies, spurring on the belated but all the more hurried coming of the Industrial Age in the country, the island soon experienced the fate of many others in the Inland Sea. Uninhibited exploitation of their resources for fluctuating economical gains laid waste to the eternal natural beauties of the islands, leaving unerasable scars deep in their landscapes. Subsequently the concentration of power and transition of production to the urban centres meant the gradual depopulation of the Inland Sea. For decades, the cultures of the once-central islands slowly decayed as the remaining aging population dwindled. In an attempt to alleviate this, the local prolific philanthropist and patron Soichiro Fukutake bought large parts of the island to transform it into a new sort of idealistic art reservation, fusing the beauty of the setting and the charm of the islanders and their culture with the dreams of international contemporary art. Some of the traditional abandoned houses in Honmura were gently transformed into entire artworks in themselves, and on the southern side of the island he commissioned Tadao Ando to build museums and accommodation for the growing number of visitors. The project has since expanded to other nearby islands, with permanent galleries designed by famous Japanese architects,

including Hiroshi Sambuichi's Seirensho Art Museum and Kazuyo Sejima's Art House Project on Inujima, as well as Ryue Nishizawa's Teshima Art Museum. In addition to this, Fukutake hosts an art triennial in the area, last time involving 12 islands and attracting a yearly attendance of no less than 1 million visitors, an astonishing feat for such a remote place with difficult access.

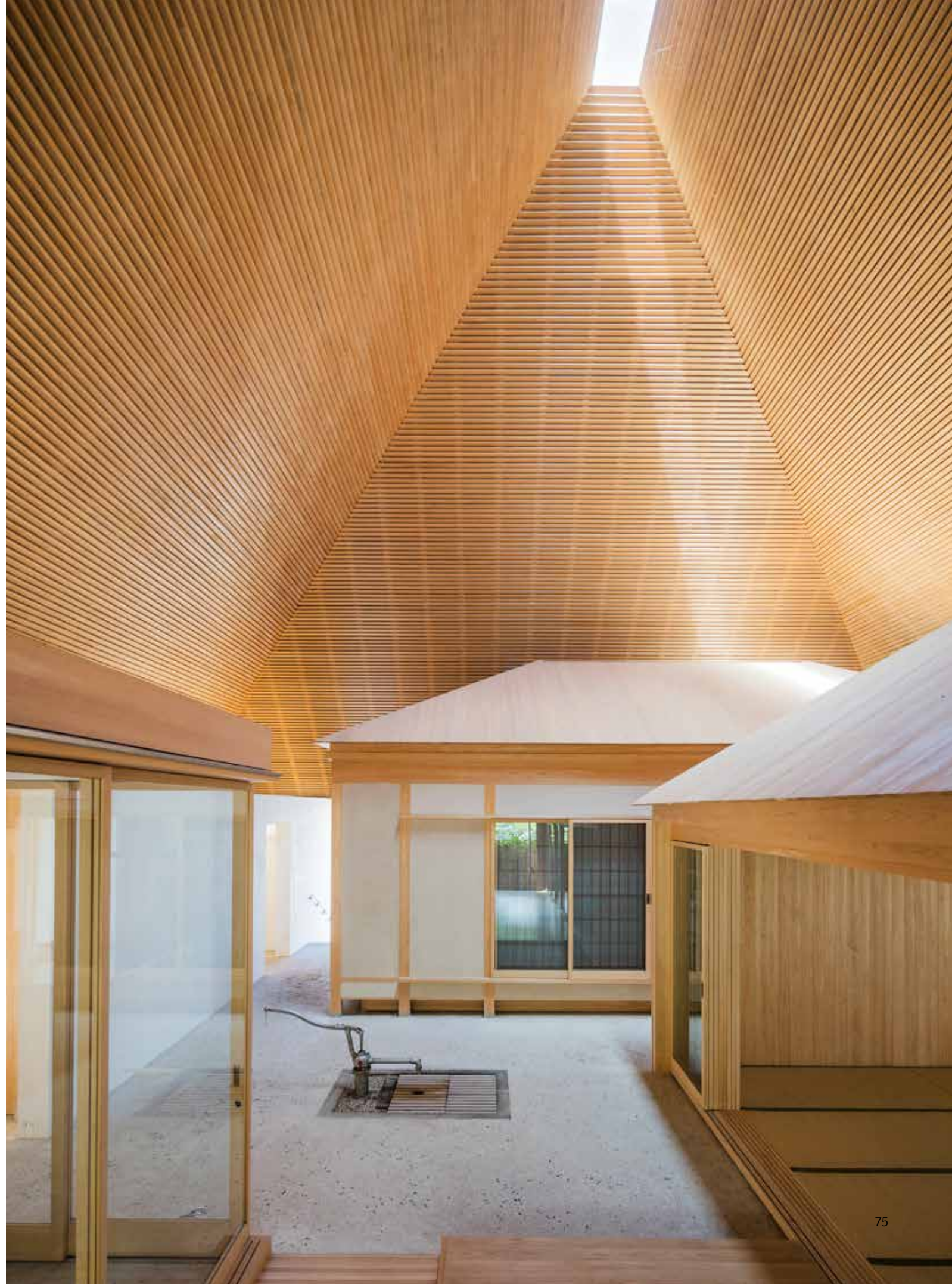
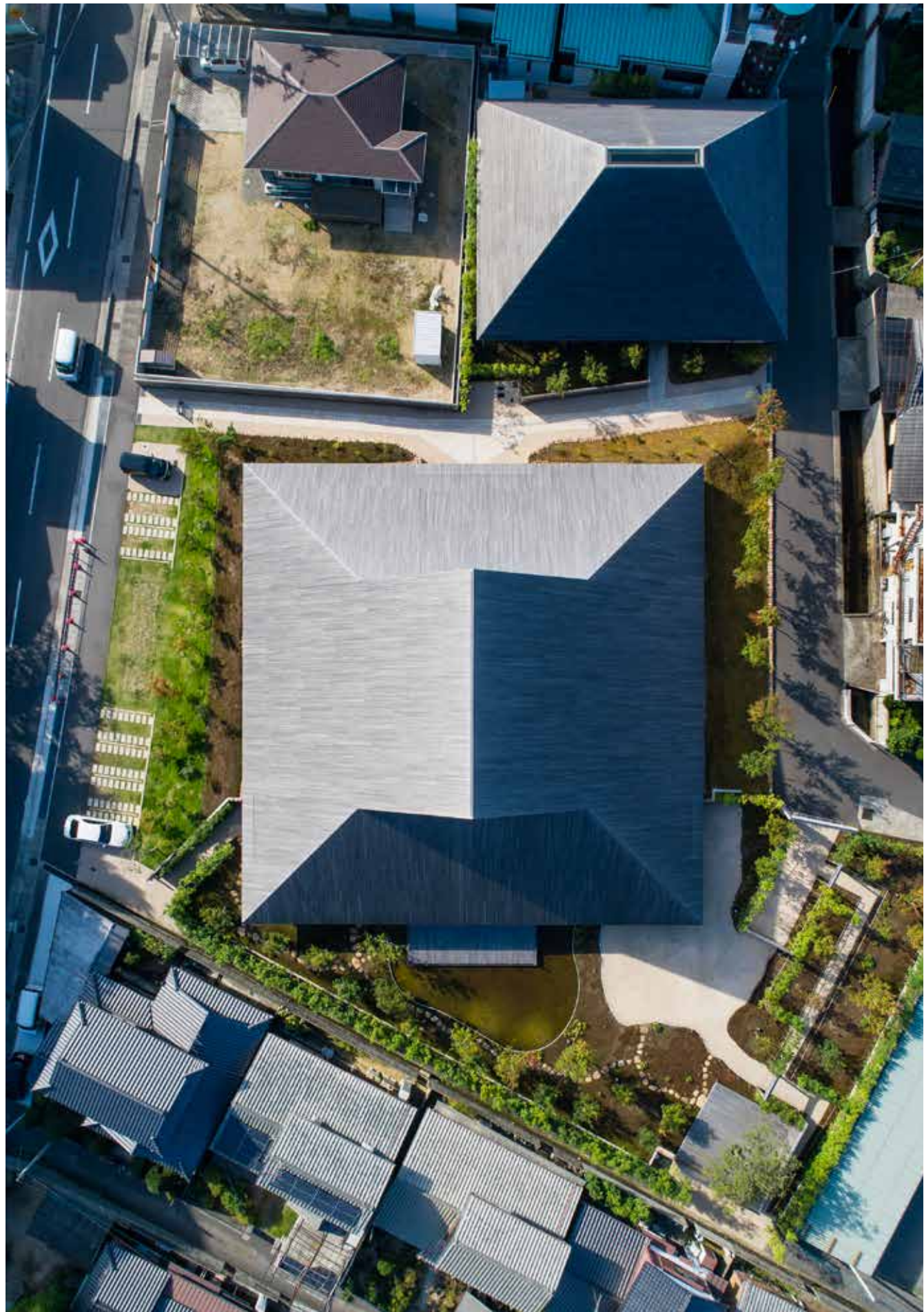
#### Street crossing under a large roof

Despite the overwhelming success, Fukutake has recently endeavoured to influence societal change in the area much more directly. As an example of this, he asked Hiroshi Sambuichi to give proposals for a strategy for the future development of Naoshima, prompting the architect to embark on an ongoing research project that, after 2½ years, materialised for the first time in the Naoshima Hall. Commissioned by the Naoshima municipality, the small complex consists of a community centre and a gymnasium for the inhabitants and visitors of Naoshima.

The streets of Honmura flow through the interior of the community centre, consisting of four separate rooms under one large roof, the apex of which provides daylight through an opening. Two layers of louvres integrated into the opening let rain trickle to the ground while filtering the wind. In addition to a large communal kitchen and a public restroom, the two main rooms are meeting spaces floored with tatami mats, for the occupants to convene during festivities and events.

It is, however, the iconic gymnasium that attracts most attention, with its grand roof clad in hinoki wood. In form, it resembles the traditional irimoya hip-and-gable roof, but with a great void un-













“Thinking about the earth’s details is integral to my thinking about architecture. Reading in minute detail the site’s topography, climate and other environmental factors is among my most pleasurable activities as an architect.”

Hiroshi Sambuichi

der its ridge and eaves so low to appear as if the building grew from the mounded moss landscape surrounding it. But when passing through its latticed entrance, the impressive spacious interior is revealed instantly. Here, the hall appears nestled between heaven and earth – the encompassing narrow band of windows at eye height giving a restricted view to the slender stems of the trees surrounding the hall and the vast, softly luminous white surface of the ceiling as an overcast sky. Onto this, the ambient light, which illuminates the hall in the day, faintly reflects the vivid colours of the sky outside and the almost fluorescent moss of the landscape.

The light was considered with meticulous care. When serving as a gymnasium, the hall hosts badminton, in particular. Though illuminated by daylight, it was important to block the glare of direct sunlight that would blind the players. To keep the space sufficiently lit, traditional Japanese shikkui plaster (reportedly the largest continuous surface of this material ever made) was chosen to reflect and distribute the ambient light softly and evenly. In the centre of the ceiling is an opening through which diffuse light gently pours down from the remarkable triangular void inside the ridge of the roof. The purpose of this feature is however not the distribution of light but air.

For as is customary in Sambuichi’s architecture, the greatest effort in the Naoshima Hall was made by ensuring a pleasant natural ventilation. As the building has two very different and demanding requirements, this was a very delicate task. Apart from being a gymnasium for badminton, the hall also hosts performances of puppet theatre and, as a venue

housing up to 300 seated spectators, requires a significant exchange of air. And while badminton also requires a constant supply of fresh air, it must never move so quickly that it will interfere with the sensitive motions of the main object of attention – the aerodynamic shuttlecock. Eventually, it turns out that the only permissible motion of air is gently upwards. To initiate this, an updraft is created inside the building by the winds of the site. Just as the light of the sun is let in only by reflections and never directly, so the air in Naoshima Hall is set in motion indirectly by the wind, which never finds ingress by itself. Instead, it flows through the large void in the roof ridge, the shape of which acts as a funnel, compressing the air to lend it velocity while lowering its pressure, a phenomenon described by the Bernoulli principle. As it does so, it creates a veritable microclimatic low pressure cell inside the void, which steadily pulls out the air from the interior space of the hall below. This air is then continuously replaced by a flow running from inlets in the surrounding landscape, led underground through a complex of ducts to cool it down by the thermal energy of the earth, and released through vents in the floor. Thus, the only phenomenon pulling at the air at any time is the indirect effect of the local wind.

**Harnessing the moving materials of nature**  
We will get back to this mechanism, but first we must take a look at Sambuichi’s unique approach to architecture. For though it may have related passionate contemporary proponents in various types of sustainability and site specificity, Sambuichi does not read books or fol-











“I think each work of architecture must possess a form and appearance the earth will accept.”

Hiroshi Sambuichi

low ideologies. Instead, he claims to take his philosophical advice from but one source – his relation to planet Earth. He calls his architecture “details of Earth”. This implies that he does not harbour an ideal of saving the planet, rather that he has a profound interest in playing with the workings of earthly phenomena. It is a personal sense of obligation to Earth, not in the sense of spiritual submission but rather with the simple recognition that Earth only nurtures that which suits it. And though this approach is not directed at society, it may, in turn, indirectly become the most earnest obligation to it.

For architects concerned with sustainability today, digital tools and data abound, enabling precise models, statistics and simulations of the conditions of a site; the architect may not even need to leave the comfort of the office to investigate a site. But Sambuichi insists on visiting and investigating his sites innumerable times, with his often self-built measuring instruments and uses himself as an atmospheric sensor. To him, reading the Earth means to read material motions. Often voicing his neologism of “moving materials”, he considers the fluid materials of the environment, such as air and water, before the traditional architectural building materials, as progenitors of architectural form. Sambuichi talks intently of the cycle of Earth and refuses to acknowledge a division between human and nature or man-made and natural. All entities are equally effected by and affecting the moving materials. That is why he insists on describing his architecture as ‘details of Earth’, not as buildings mimicking nature but as architecture that makes use

of the mechanisms of material motion. For an architect to mediate movements of materials in a construction of an architectural phenomenon, a virtual presence by digital data does not suffice; rather it requires that he reads the moving materials with his own body.

That is not to say that he abhors computers. For most projects, he enjoys a close collaboration with Arup Japan, which also provided extensive simulation and advice for the projects on Naoshima. Computers have their strength in the original purpose embedded in their etymology, as machines to compute data, a repetitive task that could be tedious and error prone if done by architects. They are not guided by architectural intuition and only make use of the parameters given. Meanwhile, Sambuichi continues to perform his own experiments in the office, where a wind tunnel has been made with careful precision, although constructed of cardboard, with smoke coming from incense and the fan being of the home appliance type. With this setup, the air flow of buildings is tested to be further refined by the computer simulations done by Arup.

#### **Reading the site and its hidden messages**

This period of experimentation seems to be Sambuichi’s prime time and, if allowed, he extends the research period, continuing his experiments even after the building is made. For these idiosyncrasies, his approach is often met with astonishment from outsiders. And yet, it is evident to all that his method is not mystical or obscure and the appreciation of its fruit does not require the construction of an abstract elaboration – it is evident to those keen to natural sciences, appearing



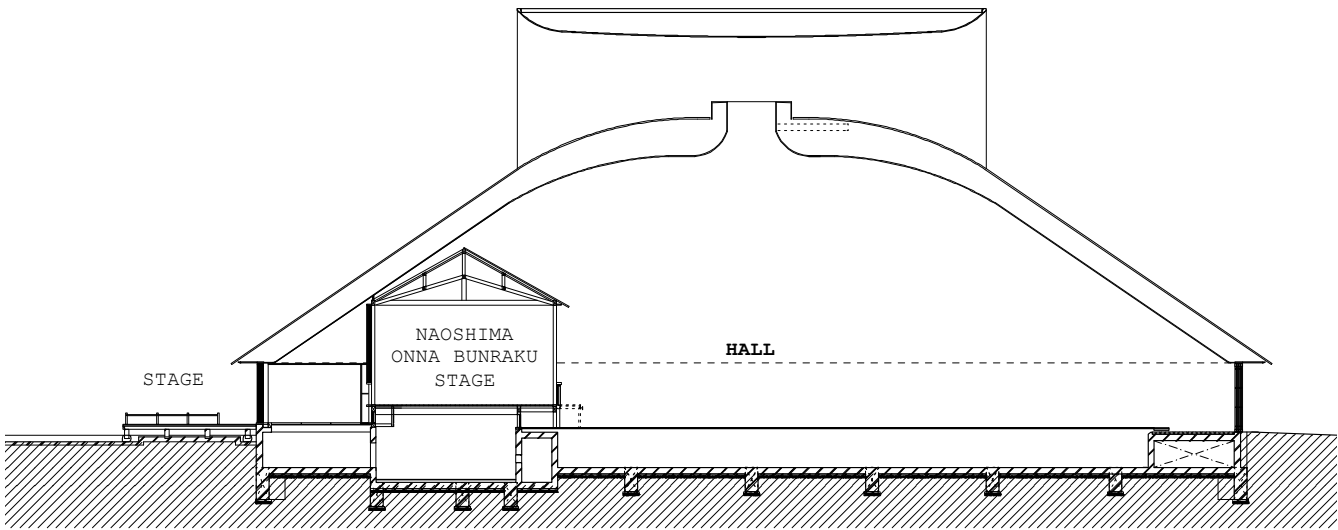




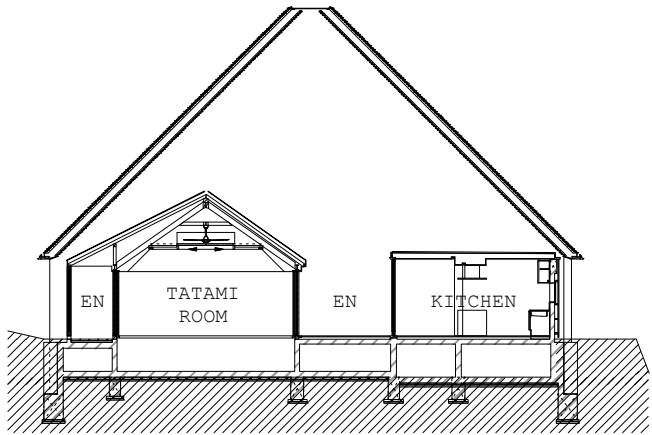


“People love and respect the places where they live; they appreciate these places’ beauty and richness. ... Architecture accepted both by the earth and by the people – this is the kind of architecture I am striving to create.”

Hiroshi Sambuichi



Sections of the gymnasium (this page) and the community centre (opposite)



Client:	Naoshima Municipality, JP
Architect:	Hiroshi Sambuichi Architects, Hiroshima, JP
Location:	696-1 Honmura, Naoshima, JP

more as a recollection of what buildings are originally about.

This isn’t odd, Sambuichi explains. Moving materials are the base of existence. Humans may live without possessions but cannot survive without air and water. And luckily, they are reliable. We may be sure that the sun will rise again tomorrow morning, and that it will make the winds blow and clouds rain as always. Our technologies may not be as reliable. Basing an architecture on the most basic energies is Sambuichi’s endeavour. But energies, in every place, are different in velocities and directions due to countless

factors of their situation; and in adapting to moving materials, Sambuichi’s architecture becomes integrally site specific, one may even say endemic, similar to how buildings of the past relied on local material movements. As such, he sees the moving materials as the origin of cultures, that the livelihood and customs of people rely on the available local energies; the houses and towns of people to be read as diagrams of forces.

This was also evident in Honmura, on which the Naoshima Hall in all its details is based. After years of research conducted by Sambuichi’s office, a pat-

tern appeared, a carefully planned urban layout revealing a prevailing wind direction and a way to make use of it. All houses are oriented similarly, placed with small gardens south and north to create a passage of wind. They are laid out in a grid resembling a folding fan, the southern pivot of which is the source of the wind. This blows gently from a valley, over rice terraces that cool it in the summer. Since the founding of the town, the people of Honmura have shared this wind, relaying it from house to house by the layout of the houses. It is the same wind to which the roof of Naoshima Hall is oriented. Sam-

buichi saw in his discovery of this ancient building custom a letter from the distant past about the moving materials of the island and obliged to continue its tradition born of moving materials.

Thus embedded in the nature of Naoshima, the building has become a contemporary symbol for the people of the island, with which they may understand and represent themselves as they receive large numbers of guests from around the world every year.

They may come to see performances of the unique Naoshima Onna Bunraku puppet theatre, which finally received in

Naoshima Hall a space dedicated to its art spanning centuries. The stage is placed so they may rehearse by using the intimate space of the back of the stage. At night, when the light of the hall seeps through the ceiling to the triangular void of the roof to light it up as a beacon, it gathers the people on the island. And perhaps they may, as is Sambuichi’s dream, contemplate how cultures have gathered across the globe and centuries, relaying cultures based on moving materials from the ancient past to the distant future.

**Alex Hummel Lee** is an architect, architectural writer and currently a PhD fellow at the Royal Danish Academy of Fine Arts, School of Architecture. Born in Copenhagen, he has worked with architects Lundgaard & Tranberg in Copenhagen as well as Hiroshi Sambuichi in Hiroshima, where he became an associate partner in 2011. One year later, he also established his own office, atelier a.lee, in Copenhagen. Alex H. Lee has edited a number of books and special issues of magazines on Hiroshi Sambuichi. He is also a regular author of Arkitekten and Arkitektur DK and a contributor to magazines such as Japan Architect and Shinkenchiku, GA.















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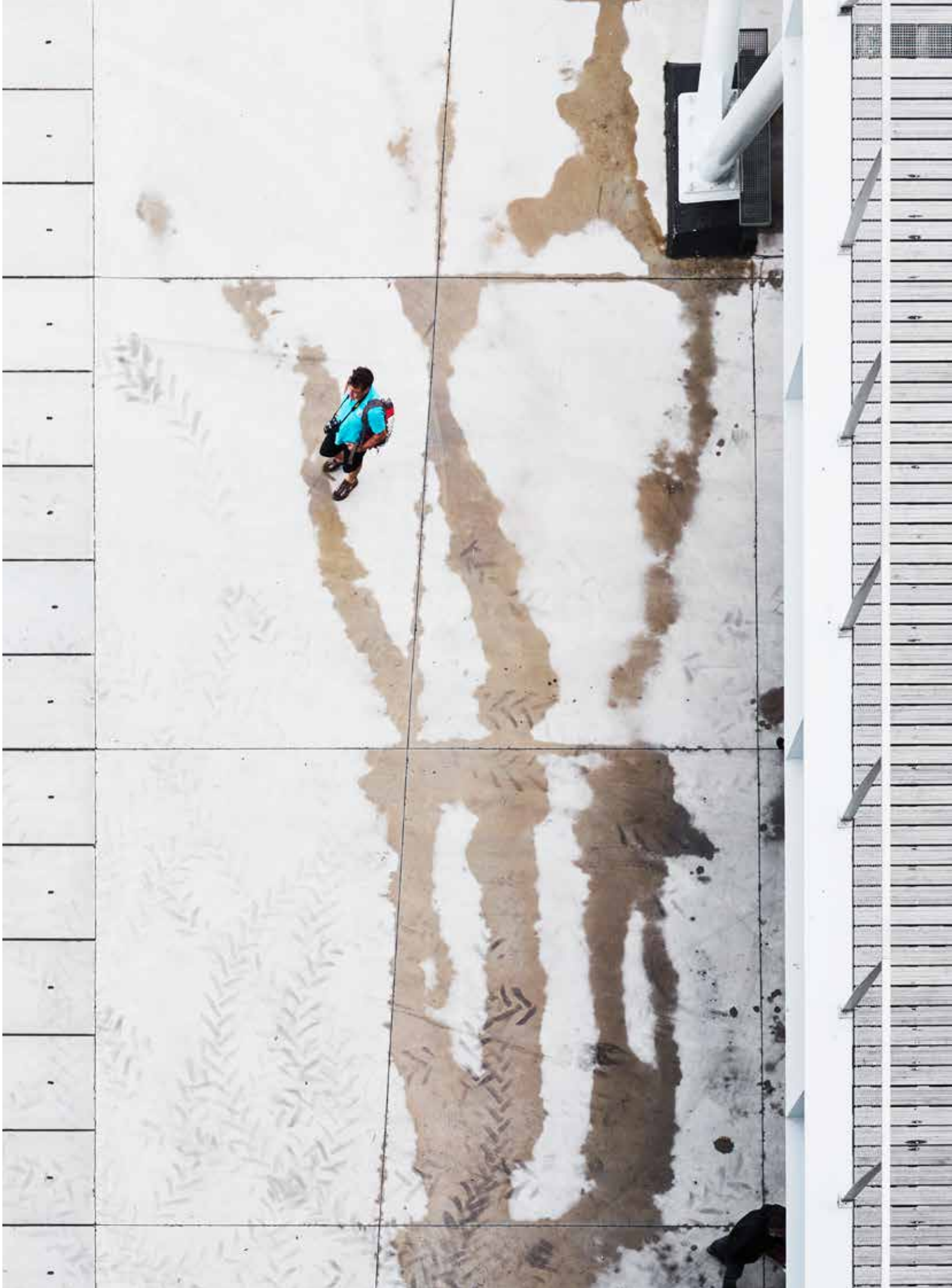
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