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Cover: detail of the
agricultural plastic sheeting
and rubble walls that
comprise RCR Arquitectes'
Banqueting Pavilion at
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'I may feel the need
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genetic material with
yours so humanity
continues in the
same fine style'
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'Just as we were about
to submit our scheme,
the country in question
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'I was asked to bring
in beauty and I refused.
Beauty dropped there
in the middle of the
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have said *Merde!* to
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'Quite how the "innate
life force" of "treeness"
is articulated through
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on paper I've no idea –
and Pallasmaa doesn't
let us into the secret'
Richard Weston, p94

'In the Renaissance
homosexuality was
so rife and deemed
so sapping of the
strength of the army
that the authorities bade
female prostitutes wear
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Paul Davies, p102

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Peter Buchanan will be back with his final salvos in the Big Rethink campaign early this year

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THE ARCHITECTURAL REVIEW

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- Stage Two Tender Submission Deadline
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- Stage Two Jury
2013/08/29 ~ 2013/08/30
- Announcement of the Winners
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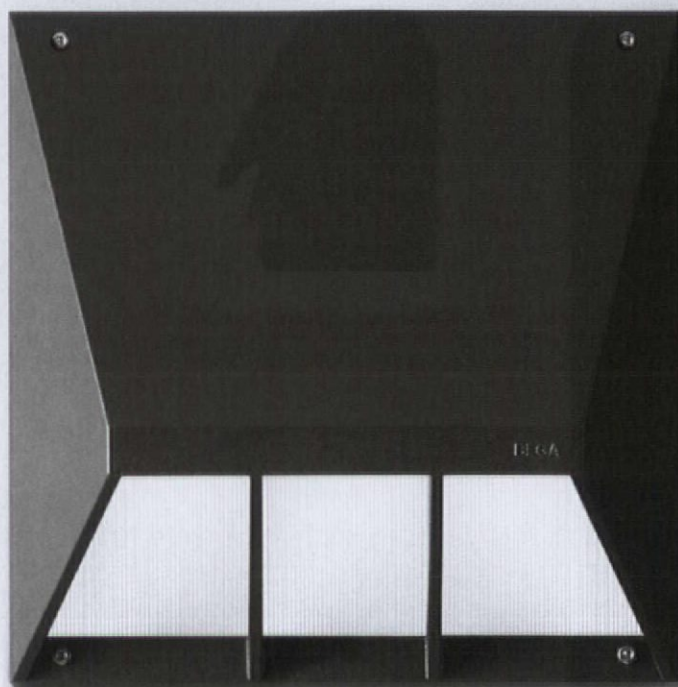


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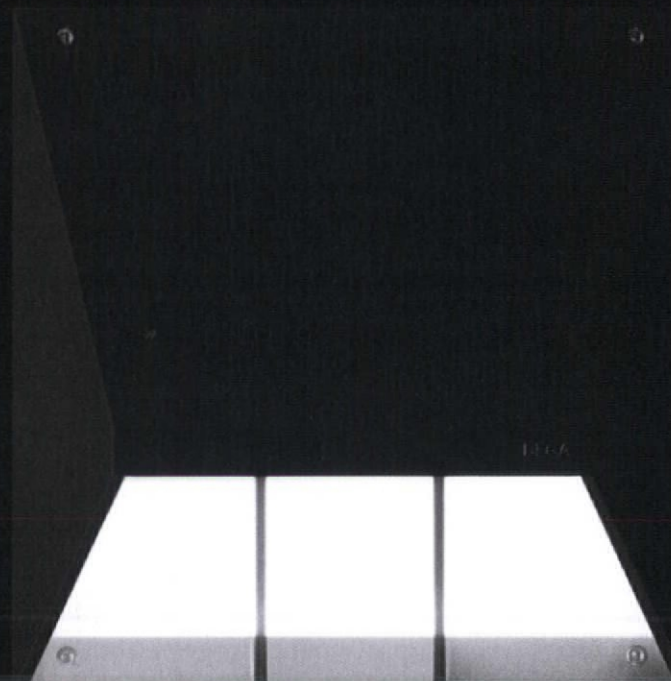


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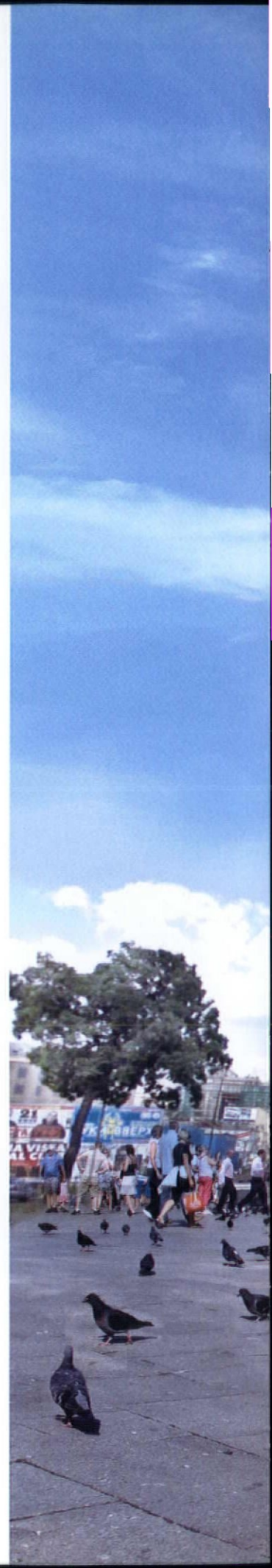
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
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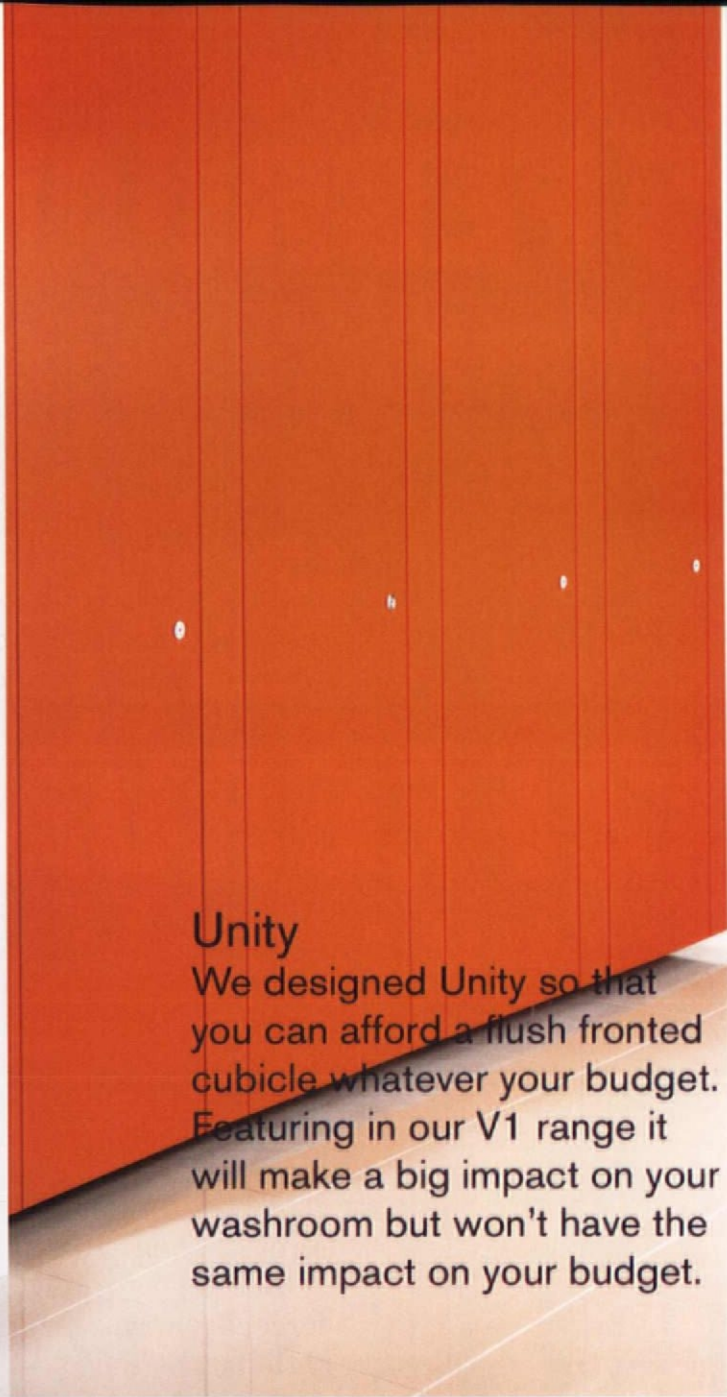
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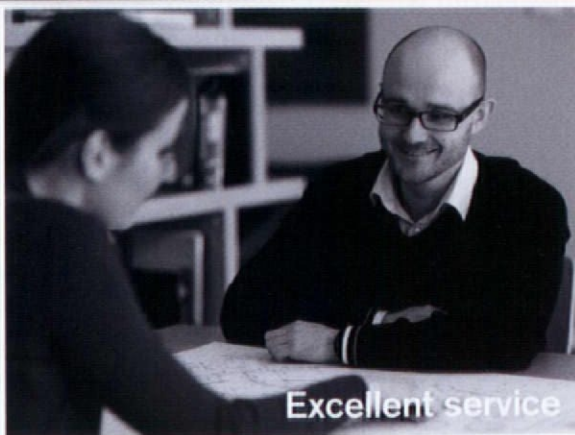


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Editorial view

Competitions are frustrating and wasteful of resources – but they are vital to architectural creativity

Combining glamour and ruthlessness, architectural competitions are the profession's beauty contests. Yet they have shaped architecture to a profound and often surprising degree. An imaginative competition can catalyse a paradigm shift in architectural culture, allowing something totally new and unexpected to break through, whether or not the winning entry is eventually built.

As Farshid Moussavi writes: 'Competitions are driven by the desire to go beyond what already exists – unthought-of architecture – whereas commissions are mostly demand-driven and often by those of the market' (p27). Moussavi's Yokohama Port Terminal (AR January 2003) is a case in point, a physical manifestation of hitherto conceptual propositions about a new form of topographic architecture that came about as the result of an open, international competition.

But they can also descend into farce. The wrong brief, wrong winner, rethinks, redesigns, secrecy, scandal, corruption and worse. History is full of missed chances. As Niall Hobhouse recalls (p97), the competition for Napoleon's Tomb, the defining commission of the age, fell by default to a middling architect because the jury could not decide between the rival heavyweight proposals of Victor Baltard and Henri Labrouste. The more recent saga of Zaha Hadid's Cardiff Bay Opera House, repeatedly redesigned and then rejected, is especially shameful, although Hadid has since claimed that the experience only made her more determined to succeed.

Architects have become wearily resigned to the frustration and expense of producing work that goes nowhere. Moussavi notes that in 20 years she has taken part in 218 competitions, with a success rate well below the supposed average of one in 10. But contestants still keep hoping for that elusive tiara. The 1983 competition for the Bastille Opera attracted 750 entries, and today, even the most modest brief is hotly contested. All of the buildings published in this issue were the outcome of competition processes, some more convoluted than others, such as Robbrecht en Daem and Marie-Jose van Hee's scheme for Ghent's new market hall (p30). Their original entry won on the second time round after being disqualified from the initial competition.

What can be done to improve such an admittedly imperfect yet frequently inspired way of making buildings? For Farshid Moussavi, the answer lies in an active opening up of the competition process which would involve publishing all entries more widely, a common enough practice in Europe and Japan, but less so in the UK and America. 'This not only fosters a richer professional culture where we learn from each other', she writes, 'but it also generates publicity and public engagement.' Disseminating a greater range of thought processes would add to the depth and diversity of discourse and restore at least some dignity to the brittle world of the architectural beauty contest. As Moussavi rightly remarks, what have architects got to lose?

Catherine Slessor, Editor

Overview

LONDON, UK

The great divide

The Cartesian split of mind and matter has hampered our thinking about architecture for too long, says *Joseph Deane*, but that could all be about to change

For centuries we have been held back by an outdated scientific paradigm that places the mind above and beyond both the body and the material world. Not only is this view ingrained in our architectural practice and theory, it also defines the very culture in which we live. However, recent scientific research has started to re-centre our environment, our architecture and the inanimate objects around us as formative elements of our cognition.

This is far from new: such beliefs have been at the root of oriental philosophy for millennia. Likewise, over a century ago the phenomenologists made similar philosophical assertions; and, in the late 1960s, the cybernetician Gregory Bateson researched the relationship between cognition and environment and coined the phrase 'the extended mind'. But, despite a wealth of supporting scientific literature being published since then, the mind/body dualism remains dominant.

Contemporary scientists, philosophers and artists loyal to the cause argue that this bias is not only grossly outdated, but that its effects on normative thought are to the detriment of humanity itself. In order to respond to this, the Academy of Neuroscience for Architecture (ANFA) was set up to promote and advance knowledge that links neuroscience research to a growing understanding of human responses to the extended environment. Set up 10 years ago at the Salk Institute in California, John Eberhard, its founding president, insists that only by referring to the sciences and the humanities side by side have we finally begun to understand the effects that the latter have on our neurological composition.

Over the last decade, ANFA has organised a series of collaborations and events with departments of architecture, the latest of which, *Minding Design: Neuroscience, Design Education and the Imagination*, took place in November 2012. Hosted at Taliesin West, the Frank Lloyd

Wright School of Architecture's Arizona campus, the two-day event saw speakers Michael Arbib, Iain McGilchrist, Jeanne Gang and Juhani Pallasmaa come together to discuss recent findings in neuroscience and bring them to the fore of architectural discussion.

Something that has been asserted by numerous artists and scientists, and which went on to form the core of the symposium, is that we urgently need to overcome the alienating and reductive Cartesian division between body and mind. Without acknowledging it, the majority of us still adhere to the idea of the mind residing somewhere in the brain, perhaps detached from the body altogether. This has led us to disregard the significance of the body and favour the brain (and with it the rationalising intellect), as *the* most important aspects of humanity.

The speakers agreed that this is simply not true. 'Our brains don't experience things – *we* experience them. We are not brains in a vat, we are *embodied* beings,' said McGilchrist. Having studied both the sciences and the humanities, and now practising as a psychiatrist, he insists that artists and designers should once again refer to phenomenology (and in particular Maurice Merleau-Ponty's notion of the chiasmatic bind) as an appropriate companion to contemporary findings in neuroscience. Both tell us that the world and the self do not constitute a polarity of distinct elements, but rather a continuum of interpenetration.

Elaborating on these issues, Michael Arbib said that just as the mind has been theoretically confined to the brain, so too has the body been isolated from its environment and context. This is another long-standing remnant of Linnaean taxonomy – the tradition of isolating and classifying organisms for scientific categorisation. Today's scientists now agree that, while serving as a useful tool, this

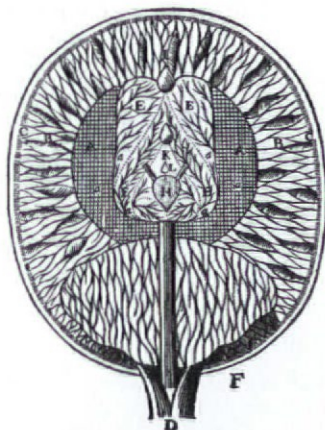
reductive perspective ignores the complex formative influence that surroundings have on cognition, development and evolution.

One manner in which we might overcome this, Arbib suggests, is by exploring the notion of the 'extended phenotype'. Much like Jakob von Uexküll's celebrated theory of the 'milieu' or Head and Holmes' 'body schema' – both of which are now almost a century old – the extended phenotype calls for us to include anything that creates or is created by the organism into its phenotype. Opera might be included in the human phenotype as much as a dam and hydrological systems might be in a beaver's phenotype. Given such a definition, architecture clearly becomes an incredibly influential agent in the formation of the human organism.

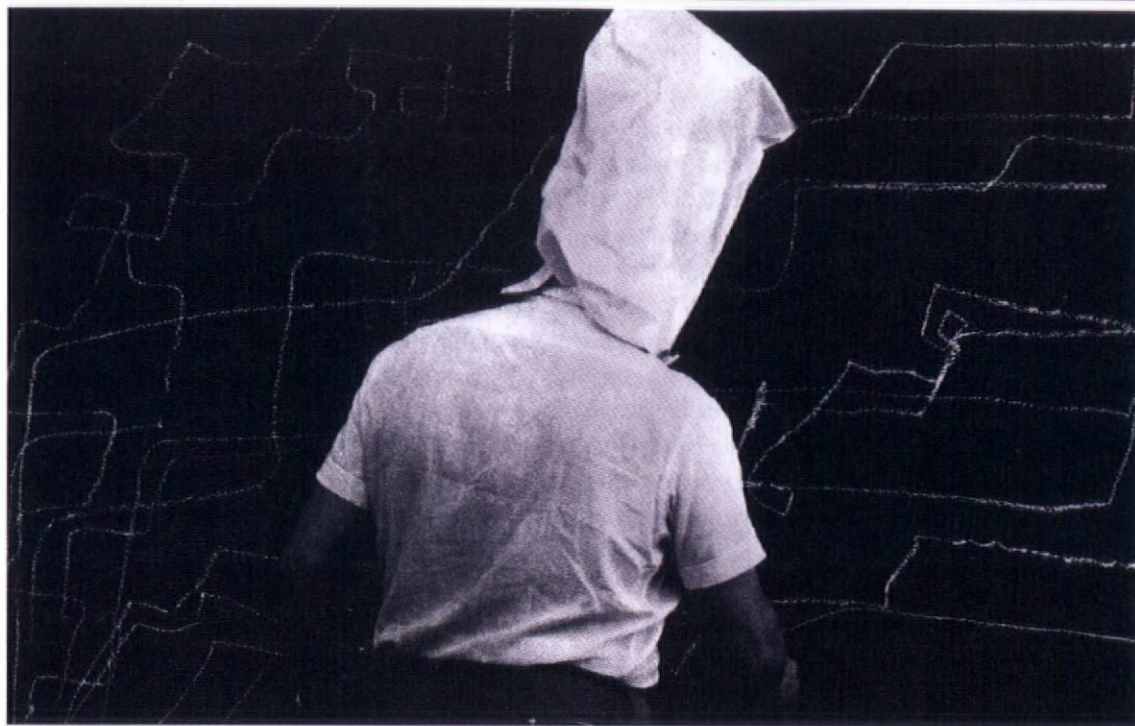
'Architecture is born of the body,' Pallasmaa said, 'and as it is experienced it returns back to the body.' During her presentation Jeanne Gang offered just one example of this relationship in the form of the Malian *Togu Na*, or men's meeting-house. As an instrument of civil action these public buildings reportedly have low ceilings so that one cannot stand and shout. Thus architecture comes to inform both bodily action and culture and vice versa until they form an indistinguishable whole.

Furthermore, recent experiments with chimpanzees showed that the area of the brain associated with touch and action activated differently when a tool was seen within reach. When a tool became commonly used, the neural connections of the brain would reform. So for humans, we begin to understand the manner in which the tools we use – whether a pen, a chisel or a computer – actually restructure the neural network. They are no longer objects at a distance, but become part of our schema.

These findings coincide with the research of Bernard Stiegler and Lambros Malafouris, whose theories of epiphylogenetics and cognitive archaeology



The human brain by Descartes



Pallasmaa's mentor Aulis Blomstedt draws with a bag over his head to suppress the over-rational coordination of eye, hand and mind

respectively hold that human intelligence itself evolved as a direct result of somatic interaction with external artefacts. Simply put, the brain was born of the body.

Expanding the discussion further still, McGilchrist continued to outline how scientists and philosophers now believe the physical construction of the brain might affect the formation of culture itself. The title of his book *The Divided Brain: The Master and His Emissary* draws on Nietzsche's famous parable to illustrate how the left hemisphere of the brain, once subservient to the right, has been privileged and cultivated throughout modernity. The result of this is a culture of brains that prioritise rationalisation and categorisation above all else. 'Our art, aesthetics, philosophy, technologies, even our legal systems and bureaucracies show these stifling effects, and new kinds of mental illnesses have emerged,' stated McGilchrist.

The recent reviews in UK educational funding that have seen an outright prioritisation of

the sciences only serve to enforce such assertions. Pallasmaa and others are in accordance with such viewpoints, insisting that the mainstream curriculum and its associated teaching methods, even including those relating to the humanities, are becoming increasingly rationalised. This, McGilchrist claimed, is 'death to the mind, to the imagination, in fact to our civilisation.'

The widespread publication of such findings is, however, beginning to have an impact on the education system. More progressive schools are looking to developmental psychologists such as Howard Gardner, whose research suggests that while the Western education system has evolved to cater to one dominant mode of learning there are in fact multiple categories of intelligence that we should acknowledge.

'The existence of our ethical sensibility alone calls for imaginative skills', said Pallasmaa, referring to what we might commonly call empathy. This is not to negate the importance of logic altogether, but rather to re-centre the

significance of the embodied and emotive elements of the mind as equally vital elements of our culture that should be formally acknowledged. When the architect anticipates an inhabitant's emotional and functional needs, they are engaged in an empathetic act. They are designing a body schema of the other.

The repercussions of such findings on both architectural practice and normative culture in general are profound. From how we regard our bodies and the significance of somatic experience, to how we comprehend the agency of the structures, environment and objects that surround us, we are finding that we are not isolated entities but rather the result of an infinitely complex series of embodied encounters.

In light of such findings discussions about politics, design and sustainability could and should take completely new trajectories. However, the traces of obsolete scientific models still persist within the cultural mindset, and it is therefore

imperative for the research of organisations such as ANFA to permeate mainstream education and practice.

At a time when the British government is pitting the sciences and humanities against one another in an unintelligible contest of favouritism, we would be better served by promoting the interrelation of the two disciplines. Architecture, it would seem, stands quite perfectly between the two, existing as what Pallasmaa calls 'a logically impure discipline; fusing irreconcilable ingredients; facts and beliefs, means and goals, quantities and qualities.'

Architects could readily position themselves at the forefront of such a movement. As professor of neuroaesthetics Semir Zeki insists, 'Most painters are also neurologists.' And if that is the case, then perhaps scientists may one day reciprocate and learn to practise as artists. Such an alliance might prove nothing less than the next stage in our cultural evolution.

Juhani Pallasmaa's *Encounters II* is reviewed on page 94

LONDON, UK

A fuller understanding

Roberto Bottazzi

The *Architecture&* lecture series was organised to expose architecture to cutting-edge thinking developed in adjacent fields, to either construct spaces for exchange or to expose inadequacies. In this second event on *Architecture & Ecology*, scientist and artist Rachel Armstrong and sociologist Steve Fuller had the arduous task of casting new light on ecological approaches to building.

Before a packed auditorium, the two speakers took turns outlining their views on the subject. The conversation flowed smoothly benefiting from the long-standing professional friendship linking Armstrong and

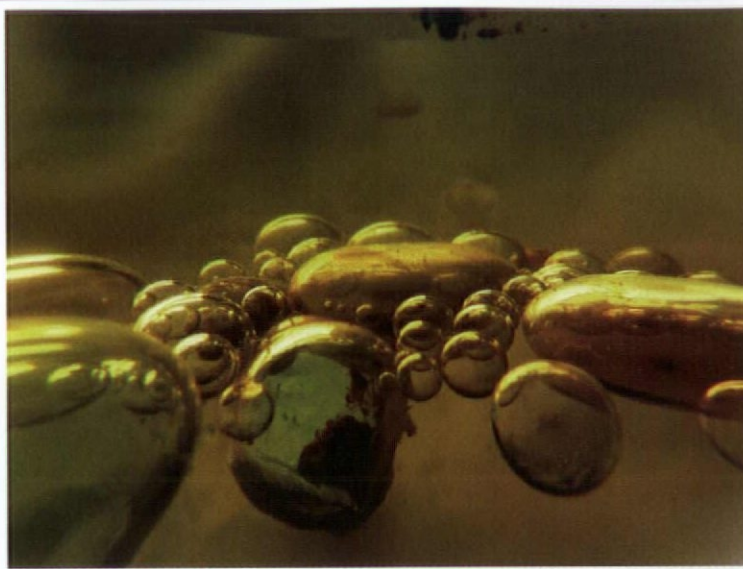
Fuller (his latest book, *Preparing for Life in Humanity 2.0* is dedicated to Armstrong).

They definitively agreed that in order properly to investigate ecological issues, it would be necessary to ask radical questions that could elevate the debate from immediate pragmatic concerns to a more holistic view. Ecology is here understood as a paradigm-shifting concept equipped with its own technological, philosophical and political means, able to give rise to an original approach to design.

Armstrong elegantly introduced her research on *Living Architecture* – also the title of her latest ebook (AR April 2012) – by polemically arguing that Modernist thinking has for too long portrayed nature and technology as oppositional categories to the detriment of human relationships with the environment. *Living Architecture* literally applies biotechnologies to constructions, banking on Armstrong's research on protocells – microscopic material compounds which exhibit life-like characteristics, though bereft of any actual DNA. She advocated a much closer relationship between environment, artefacts and politics, one mediated by highly responsive, interactive materials able to compute external information. It was refreshing to see Armstrong grounding her research in early experiments on biological computing by Alan Turing to remind us that the computing power of our machines is only a minuscule representation of what can be found in nature, even in the most elementary organisms.

Living Architecture as advocated by Armstrong finds a natural ally in the notion of *Humanity 2.0* that Steve Fuller has been articulating. The role of human beings in a world increasingly governed by convergent nano- and biotechnologies will unavoidably fade for at least three reasons.

First, the effects of climate change demonstrate that human



Protocells produce solid substances which may have future architectural applications

actions are problematic: they are causing natural resources to rapidly deplete with the risk of eventually endangering the entire biosphere. Second, the notion of *Living Architecture* implicitly levels out differences between living beings and inorganic matter. Biomaterials react to information whether this has been generated by humans or not. *Living Architecture* takes much greater care of the whole ecosystem we inhabit: botanic life, animals, etc. After all, as Armstrong pointed out, most living creatures share up to 95 per cent of their DNA material.

Finally, the definition of design and designer will also have to radically change. As a plurality of actors and factors begin to 'design' our environment, the architect will recede into the background to become more a designer of systems of interaction rather than fixed objects.

Interestingly, Fuller decided not to stress the obvious parallels between his and Armstrong's work, but rather to accept the general premise of her thesis and speculate what next steps would be required to actually implement such technologies. Swiftly the conversation moved away from technology to investigate the social and political issues posed by *Living Architecture*.

Fuller's argument drew from the influential study *Poor Economics: A Radical Rethinking of the Way to Fight Global Poverty* by A Banerjee and E Duflo, which concluded that in order for innovative solutions to be adopted by local residents, substantial work needs to be done at grass-roots level. Comparing the task of eradicating global poverty to constructing architecture out of living materials appeared appropriate to Fuller: both concern global problems and neither will be implemented without a larger, international political will backing it.

Fuller repeatedly challenged Armstrong to map out strategies in support of the notion of *Living Architecture*, not without suggesting some himself. The most interesting and plausible of these is to rethink school curricula to develop early awareness of ecology and convergent technologies.

As the evening drew to a close, an interesting and perhaps telling gap opened up between the title of the lecture – *Architecture & Ecology* – and the ideas discussed by the two speakers. The more the conversation progressed, the more it focused on scientific and social issues, drifting away from architecture, whose definition

was increasingly implied but never clearly stated. If, on the one hand, this reflects a recent trend through which other disciplines have convincingly included the word architecture in their vocabulary (for instance, software design) allowing some sort of knowledge transfer; on the other hand, architecture itself has been somehow diluted to become an ever more ubiquitous and generic concept. However, the history of innovation in architecture is rich with precedents in this area.

The pattern with which new technologies are assimilated is often characterised by two phases: first a new material is merely applied often to simulate the features of an existing one; then the new material is 'architecturalised', and charged with the potential to redefine the canon. A good example of this is the Domino diagram by Le Corbusier, in which the application of concrete to structures enabled new kinds of spatial arrangement.

At the cultural end of the spectrum, there are also numerous studies on self-built, spontaneous vernacular structures able to strike a remarkable balance between artefacts, inhabitants and environment. The reference here is *Architecture Without Architects* by Bernard Rudofsky, who in 1964 argued that such structures were indeed architecture.

There is a distinct feeling that the debate on convergent technologies would be enriched by confronting more disciplinary, conventional issues concerning architecture, which are too often sidelined. As critic Steve Shaviro noted, this will perhaps promote the formation of 'an aesthetic of decision, rather than the current metaphysics of emergence'.

Architecture & Ecology, RCA/AR lecture, V&A Museum, London, on 4 December. The next lecture in the series, on *Architecture & Beauty*, is on 19 February, with guest speakers Will Alsop and Stephen Bayley.
architectural-review.com/ArchitectureAnd



ARCHITECTURAL AWARDS LAUNCH

Entries are invited for the 2013 European Copper in Architecture Awards – a showcase for architects designing with copper and its alloys to promote their work to an international audience.

All entries must incorporate facades, roofing or other architectural elements of copper or copper alloys. Any scale or type of project can be entered – from major landmark buildings to modest schemes.

Architects and critics, drawn from a panel including some of the most influential designers in Europe, will judge all the entries on their architectural qualities from graphic submissions.

Final deadline for receipt of entries: 31st May 2013

For more information on entering the 2013 Awards-16 and on previous awards entries and results, visit: www.copperconcept.org/awards



Broader view

The ugly truth

Stephen Bayley, best-selling author of *Ugly: The Aesthetics of Everything*, sees ugliness as a necessary corrective that stimulates a deeper appreciation of beauty

What is ugly? Not the magnificent power station. No, the way that Bernd and Hilla Becher photographed the decrepit infrastructure of the Ruhr made sooty industry beautiful, surely?

When the designers were working on the jacket of my new book, someone suggested including a question mark after the title and giving the whole a mirror finish. Curious browsers would be immediately confronted with a deadly question. How beautiful are you? Tact prevailed and we used a scary detail from a Hieronymus Bosch nightmare instead. We put Ernő Goldfinger's Trellick Tower on the back cover.

We all enjoy beauty. But an appreciation of ugliness is necessary to it. The beautiful and the ugly are not opposites, but aspects of the same thing. Concerned what people think of your house? Wish your partner were better looking? In dieting, getting a tan or going to the gym, choosing a Weimaraner over a rescue mutt, visiting an exhibition or shopping, we are trying to acquire beauty to get a personal competitive advantage. But don't worry if you feel ugly: perceptions change.

In 1969, some London advertisers, tired of conventions of their trade, started The Ugly Modelling Agency. They wanted faces with character, not bland perfection. Look at the shots from the time and you wonder what the fuss was about. The agency survives as Ugly Models, whose clients include Diesel and Calvin Klein. Meanwhile, ever since the Francophile Nancy Mitford popularised the expression, we have had the idea of *jolie-laide*, a woman who can be attractive and ugly at the same time. Mitford was herself an example. So too is Jeanne Moreau.

'Beauty', however defined, is not necessarily attractive. And ugliness is not always repulsive. Besides, tastes change, erasing aesthetic certainties. This is a truth so disturbing that most of our assumptions about art are immediately undermined. For

example, two years before it was finished, the great Paris *intellos* of the day railed against the Eiffel Tower, denouncing it as an ugly, hateful bolted-tin column; now it's one of the most loved monuments.

John Ruskin, Victorian booster of Nature's beauty, campaigned manically against the ugly intrusion of the steam railway into the unspoiled, tranquil Lake District. And he despised the introduction of the noisy *vaporetto* into the dignified Venice he regarded as his private intellectual playpen. Now we see each machine as quaint and lovely, even beautiful. Back in Ruskin's London, the Albert Memorial, now a national architectural treasure regarded as fondly as hot buttered toast and the shipping forecast, was described as verminous and crawling. Yet the same Nature that Ruskin thought inevitably beautiful can be repellent. We are now required by custom to admire Alpine views, but mountains were once thought disgusting: dangerous, scary and home to demons and bandits. Nature can be ugly. Not all plants conform to beautiful conventions: the *Amorphophallus Titanum* is a vast, hideous, swollen phallic thing that stinks of death: it is known as the corpse flower.

Darwin believed breeding good-looking children is a survival characteristic: I, for example, may feel the need to fuse my premium genetic material with yours so humanity continues in the same fine style. But there may be a mathematical, as well as biological, basis to conventional ideas of the beautiful. The Greeks believed beauty can be described by numbers. Classical sculpture was based on strict ratios and Classical architecture is pleasing because its proportions are based on the field of vision of the eye.

These rules may still exist. I know a designer in the car industry who keeps a photograph of Claudia Schiffer's face on his laptop. He has an app that allows him to distort the image in any dimension. This he does as a demonstration to show how at

a specific moment, what was beautiful becomes, one millimetre too far, unacceptable.

Besides measurement, another factor changing our perceptions is time. 'Familiarity is a magician that is cruel to beauty, but kind to ugliness' according to Victorian novelist Maria Louise Ramé. This might not be as mad as it sounds. It's beauty that is evanescent, fragile, dismaying a subject of measurements. When something becomes familiar we tolerate it and tolerance can grow into affection. As Serge Gainsbourg remarked, 'ugliness is superior to beauty because it lasts longer'.

We get the word 'ugly' from an Old Norse word *ugga* which means 'aggressive', hence the expression an 'ugly customer'. It's this sense of violence that is initially disturbing, but this also means there is much more variety and surprise in ugliness. Beauty is a sedative, predictable and soothing rather than challenging. Is being sedated and soothed better than being stimulated?

The strange truth is, too much beauty would be intolerable, an awful world of meticulously cropped lawns and starched linen. We only enjoy the ephemeral deliciousness of beauty if we have an active concept of ugliness. Heaven needs hell.

A measure of ugliness is essential to keep our appetites alive. So, exactly how much ugliness should we maintain in our world? Should we encourage its production? What's the optimum exposure to ugliness? Should there be quotas?

An even stranger truth is that ugliness fascinates. One of the most popular pictures in London's National Gallery is by 16th-century Flemish master Quinten Massys (right). Known as *The Ugly Duchess*, the sitter suffers from a bone disorder causing facial deformities. In the gallery shop, the *Ugly Duchess* postcard sells as well as Claude Monet's serene *Water-Lily Pond*.

Ugliness deserves to be understood, but when you begin to examine it, the idea disappears.



NATIONAL GALLERY, LONDON

The Ugly Duchess by Quinten Massys sells as many postcards in the National Gallery Shop as Claude Monet's serene *Water-Lily Pond*

It is, for example, possible to look at steaming, suppurating landfill and find a thing of strange beauty. See the A38/M6 interchange from the air and it is surely a thing of transcendent beauty. The murderous atrocity of the B-52 is also sublime. Equally, it is only a matter of time before the Brutalist Trellick Tower, loathed by thatched-roof sentimentalists, acquires an admired period gloss. Already Grade II listed, soon, Prince Charles may speak fondly of its stained concrete.

Ugly cars were once explained by the ignorance or incompetence of their manufacturers. The AMC Gremlin and Morris Marina are just two examples from recent history, but now there is so much design competence in the industry that creating beauty is easy. So Ferrari, with impeccable credentials in the manufacture of gorgeous automobile sculpture, has not made a beautiful car for a long time: its signature curves have been stolen by Koreans.

So, at the end of beauty's road, Ferrari design is seeking confrontation. When Renault entered the large car market, it decided not to compete with the industry-norm of German *Gute Form*, but introduced the ugly Vel Satis. In products, the iPhone's success is to a degree based on a delicious physical appeal that can be no further refined. Whatever Apple does next, it is unlikely to be more beautiful.

Our obsession with beauty and our fear of ugliness goes back to the mid-19th century, when Lewis Carroll, contemporary of Ruskin, coined the term 'uglification' to describe the changes to town and country that industry had forced.

Ever since, we have fretted about what is good and bad. Like it or not, we are all in a continuing debate about aesthetics. US art critic, Peter Scheldahl, said 'Beauty is ... no big deal, but the lack of it is'. Maybe, but if everything were beautiful ... nothing would be.

Stephen Bayley will talk on beauty at the AR/RCA Architecture& lecture at 6.30pm on 19 February at the V&A

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The Arctic Sunrise ploughs its way through the ocean's packed ice, which alarmingly may disappear altogether in the summer months as soon as 2015

NICK COBBING/GREENPEACE

The Arctic

With melting ice caps leading to potentially destructive oil and gas exploration in the far north, *Matt Shaw* and *Will Trossell*, the founders of ScanLAB Projects, join Greenpeace on an Arctic expedition

"This is where the ice comes to die" – did I say that? questions Till Wagner, sea ice scientist from Cambridge University. We're reading the headline in the *Sun* newspaper which we've just downloaded via satellite phone. We agree that he did, and raise a toast to a media coup for our hosts, Greenpeace, and one of the first major reports on climate change in the tabloid press.

We are at approximately 89 degrees North, in the peripheral ice zone that occupies this part of the Fram Strait, north-west of Svalbard, Norway. From the bridge of our ship, Greenpeace's icebreaker the *Arctic Sunrise*, we are searching out individual ice floes, each floe a fragment of the frozen skin of the ocean. The floes we visit will be analysed and digitalised to an unprecedented level, forming part of the leading climate-change research by the Polar Ocean Physics Group at DAMTP, Cambridge University.

Arne, our keen-eyed ice pilot, surveys the horizon, plotting our slow, grinding course through the densely packed floes until we find one of suitable size to provide a mooring and 'safe' working platform. Our role is 3D scanning the top surface of the ice to provide millimetre-perfect models. These scans, when aligned to sonar data for the underside morphology, create a continuous virtual skin of the ice, which forms the basis for computer modelling back in Cambridge.

The precise measures taken here are a momentary snapshot in time. At any minute the dynamic landscape system we are drifting amid can change. Ice cracks underfoot; ocean currents push a floe tens of kilometres east or west. The whole landscape is a fluxing surface of thin shifting planes of ice, crushing fields of frozen boulders and melt ponds.

We are known as 'the architects' by the crew, but quite how we've ended up on their ship they are unsure. A lot of the science team and ship's crew see architects as naive problem solvers and visionaries – and not necessarily successful ones. We are here as observers, a forensic team on a landscape scale, our scans are the evidence we extract. On board, we find ourselves the least qualified to comment on sea ice levels or climate change.

Our present company do comment though. This year Greenpeace is focusing on the plight of the Arctic and the danger posed by international energy companies who want to exploit oil and gas reserves. Greenpeace aim to declare the Arctic a global sanctuary and are close to having three million people petition to world governments for this cause.

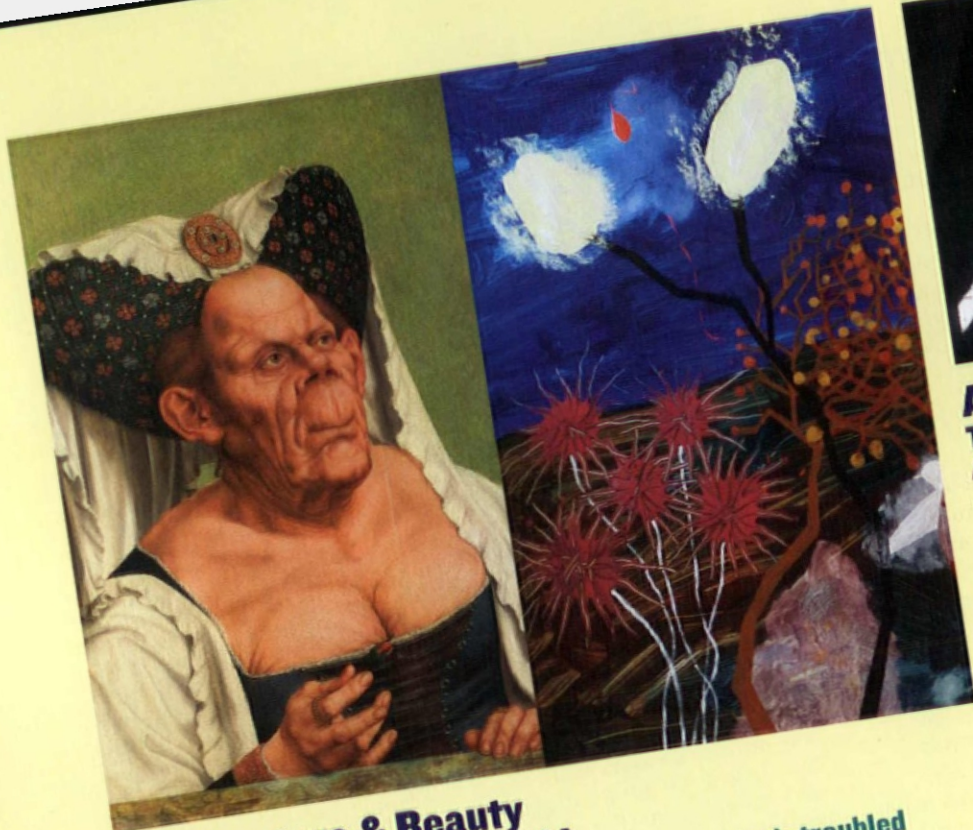
Professor Peter Wadhams, the lead scientist onboard, has stated that the frozen ocean we are now etching our way painstakingly through could be subject to a major collapse where summer melt overtakes winter re-freezing

in a self-perpetuating cycle. This collapse, he predicted, would occur in 2015-16 when the summer Arctic would become ice-free, due to one cause: global warming.

Wadhams and Greenpeace agree this is a human-caused design change on a planetary scale, yet the scientist differs from Greenpeace on the solution, feeling radical geoengineering ideas should be considered. We find this ambitious scale of design strangely familiar from our experiences in and around London architecture schools.

But when drifting amid the uncertain futures of the Arctic, romantic talk of dystopian visions does not go down well. The kind of doomsday scenario that might spark an interesting second-year studio brief is a live fear for Greenpeace. Their actions are seen as preventative measures. In the case of this tour they are raising awareness and supporting scientific understanding. In the case of the action which followed our tour, the boarding of Gazprom's Prirazlomnaya platform, they are physically halting the sinister creep northwards of landscape-altering machines. It is environmental crime, occurring now, that is the motivation for much of Greenpeace's planetary roaming, bearing witness to the scars mankind inflicts.

The exhibition *Frozen Relic: Arctic Works* by ScanLAB Projects is at the AA, London, until 9 February



Architecture & Beauty

Tuesday 19 February, 7pm, The V&A

Will Alsop and Stephen Bayley explore architecture's troubled relationship with aesthetics. Will Alsop, OBE, is a Stirling Prize-winning architect, artist, professor and Royal Academician. Stephen Bayley is one of Britain's leading cultural critics and the author of the recent bestseller *Ugly: The Aesthetics of Everything*



Architecture & Meaning

Tuesday 12 March, 7pm, The V&A

An examination of how architecture communicates meaning and why this important role for architecture has been overlooked in so much recent work. William JR Curtis is a leading historian, critic, photographer and author. Richard Wentworth is a well-known British artist and former Dean of the RCA School of Sculpture

ARCHITECTURE & THE LONDON LECTURE SERIES TO EXPLORE ARCHITECTURE'S CRITICAL INTERSECTION WITH OTHER DISCIPLINES

The AR has collaborated with the Royal College of Art and the Victoria & Albert Museum to produce Architecture & – a series of architectural discussions in London. The first sold-out events featured Liza Fior with Peter Wynne Rees debating Architecture & Urbanism and Rachel Armstrong with Steve Fuller considering Architecture & Ecology. The next two exciting debates look at Beauty and Meaning. Tickets are £9 full price, but a special concessionary rate of £6 is available for AR readers. To book, visit: architectural-review.com/ArchitectureAnd



Royal College of Art
Postgraduate Art and Design



Viewpoints



FARSHID MOUSSAVI

Creative leaps in the arena of architectural competitions

Taking part in architectural competitions is like taking part in competitive sport. I have participated in 218 since my first in 1993 – roughly one every month. While it is said that the success rate is around one in 10, in my experience it is much less – producing a regular sense of disappointment (and financial loss). Being an architect, then, requires being thick-skinned, or at least learning to be a good sport. And, as in sport, losing can have less to do with your performance than with the theatre of unpredictability within which competitions unfold.

I remember once being disqualified because the courier company did not deliver our entry on time; on another occasion, just as we were about to submit our scheme, the country in question broke out in civil war. Then there is the assortment of (not always well-chosen) judges and therefore decision-making politics. Eventually follows the painful period of waiting for the results, keeping you forever in suspense; or the awkward situation when the announcement 'and the winner is ...' unfolds right in front of you; or, worse, when the client doesn't let you know the results and you read them in the papers. It all sounds terrible, doesn't it? So why do architects still participate?

Competitions are driven by the desire to go beyond what already exists – unthought-of architecture – whereas commissions are mostly demand-driven and often by those of the market. We could say that competitions are to everyday architecture what competitive

sport is to everyday fitness training. Competitive sports break existing human boundaries and set records for bodily capacities. Similarly, architectural competitions are invitations to make conceptual leaps and to open new frames, speeds and scales through which we perceive space and time. In my own experience, the Yokohama Port Terminal would never have happened without the openness of an international competition. By inviting ideas from any practising architect, rather than directly commissioning a transport specialist or established architect, the client demonstrated commitment to innovation and our scheme broke away from the typical port terminal.

There are then the countless ground-breaking yet competition-losing entries that – like NASA's space exploration positively influencing everyday life – go on to inspire other projects. In 1921 a more conservative design triumphed over Mies van der Rohe's skyscraper proposal for Berlin's Friedrichstrasse. But his depiction of a glacial skyscraper contained the unprecedented idea that a steel skeleton could free the exterior walls from their loadbearing function. His vision of a glass curtain wall has gone on to inspire legions of architects all over the world. Similarly, OMA's unrealised proposal for the site of two Yokohama markets in 1992 envisioned a 24-hour destination that reframed the whole idea of a masterplan away from definitions of fixed space into space that remains continuously active by changing use over time.

The space-time section invented by OMA for this project inspired the work of countless other architects. There are far too many of these cases to mention here.

The real argument for undertaking competitions is exploration: of those ways – as yet-unknown – that maintain architecture as a creative, rather than stagnating, field. But, like in competitive sport, it is best when spectators have an open view. In many parts of Europe and Japan, there is a long-standing culture of open, public competitions with all entries being published. But in the UK and the USA, open, public competitions are rare, and the limited type of competition (or 'selection process') is increasingly used by the private sector. In these cases, the entries – and even the competitors' names – are almost always kept secret.

But who benefits from all this secrecy? Strategising ahead of meeting planners is no easy task for clients whose speculations are often riddled with complex politics. However, in an unprecedented show of confidence the recent competition for New York's 425 Park Avenue tower published all the architects' presentations online. This not only fosters a richer professional culture where we learn from each other, but it also generates publicity and public engagement well in advance of even breaking ground. Clients and architects wondering about the process of keeping competitions behind closed doors should take a look at this example online and ask themselves what they have to lose ... or perhaps win.

LAST WORDS

'A young couple were discovered making love above the auditorium. The architect said he considered their act the building's consummation'

David Owen on the Norwegian National Opera's inaugural performance, *New Yorker*, 21 January

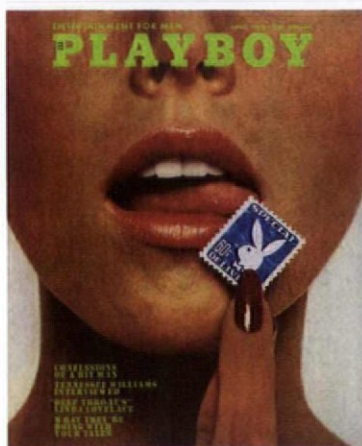
'There's a collaboration that I'm working on with Zaha Hadid, we're toying around with the idea of a prefab house'

Pharrell Williams, the US rapper, singer and music producer, *Hypebeast*, 3 January

'Being an architect is a very dangerous job because if you are wrong then of course everybody knows'

Renzo Piano interviewed in *Daily Telegraph*, 22 January

Your views



Skirting the issue

I was perturbed by Paul Davies's review of the exhibition *Playboy Architecture* in January's issue. After a year and a half of broadly progressive, critically robust AR, uncharacteristically this was a self-indulgent piece that sadly swapped discriminating oversight for salacious puns.

The article painted an unpersuasive picture of *Playboy* as a buccaneering, boundary-pushing lifestyle experiment while clumsily skirting the far more critical issues of exploitation, misogyny and the oppression of women, which were key weapons of the '50s capitalist consensus exemplified by *Playboy*. I have no doubt curator Beatriz Colomina was more than aware of these issues, but Davies brushed them under the rug.

In his final paragraph, Davies wistfully alludes to a cultural manifesto, for him represented by the virginal *Playboy*, before such innocent optimism was violated by the global marketplace. The irony of this hopelessly naive statement is painful – can there be any more serious allegation levelled at the adult publishing industry than its corrosive distortion, fetishisation and commodification of innocence? After all, the most important bottom in *Playboy* was always the bottom line.

Davies's review might have seduced readers into giving the AR a boost in website traffic but it has dealt a severe blow to the journal's credibility as a feminist publication and yet again reinforced the glass ceiling.

Atticus Grant, San Francisco

Congratulations to Beatriz Colomina for her renewed efforts to sex up architecture. *Playboy* may well have been read by all the architects of the time, but is it really tenable that this was actually a progressive architecture magazine in disguise? Surely there were only serious articles so that (pre-internet) architects had a good excuse to ogle pretty women.

Sally Yardley, Bridport, UK

The lost art of architecture

I'm grateful to William JR Curtis for the views expressed on architectural education in the December issue. I completed my diploma course two years ago with a project based in a town that faces the threat of eruption from Vesuvius. The project sought solutions to architectural problems posed by this future threat and by a shrinking population. However, when the project was presented I had to defend myself from the accusation that I was fiddling while Rome burned.

Yet while the problems of population shrinkage and threat from eruption remain real, they are immense political, economic and logistical problems, not architectural problems. This might seem a shocking statement to those brought up with the idea of the architect as a social problem-solver, but to suggest that the architect should even aspire to solving such problems is an unfortunate hangover from a defunct idea of the architect; it is patronising arrogance disguised as goodwill. If the failure of the Modernist project has taught us anything, it is surely that the profession must wake up to the limits of its own competency.

Architecture is the creation of beautiful public and private spaces, nothing more, nothing less. However, the true art of architecture has all but disappeared. Students are encouraged to think of their activities as cures for social ills and are led to believe that intensive research into such problems will help to shape architecture. Having carried out their amateurish research into economic or social ills, the student is expected to somehow extrapolate a design. It is patently obvious that none of these issues will affect the creation of a piece of architecture. Yet perversely, those areas of

expertise that will aid the student in the creation of architecture are neglected and even shunned. Few students are given even a basic education in the history or craft of architecture and, without the means of appreciating anything constructed before the 1990s, they are incapable of engaging with 99 per cent of the built environment.

We need only recall the debate surrounding Prince Charles's intervention in the Chelsea Barracks furore to see that the profession becomes excessively defensive when attacked on such grounds. Architects quickly rallied to the defence of a pathetically mediocre design while refusing the right of anyone outside the profession to an informed opinion. The sad irony is that while the profession is militant in its defence of its own (dubious) expertise, it too often insists on the myth of the architect's ability to lead in all other fields.

Architects are no longer respected or considered indispensable in Britain because they too rarely provide architecture and too often insist on the primacy of their own poorly wrought opinions over the knowledge of others. Thus architects have made themselves irrelevant in Britain, with those commissioning buildings and those using them unsure exactly what service it is the architect provides. Architecture is not economics, politics or social policy and, apart from in schools of architecture and the specialist press, it thankfully no longer pretends to be. Buildings may be born as the result of investigations into these fields but such research is undertaken by others and buildings are not necessarily, indeed rarely are, architecture. Anyone can design or construct a building, it is the architect's role and theirs alone to make this construction art. This is what the student of architecture must be taught, but too rarely is.

David Valinsky, by email

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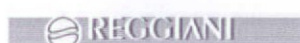
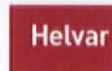
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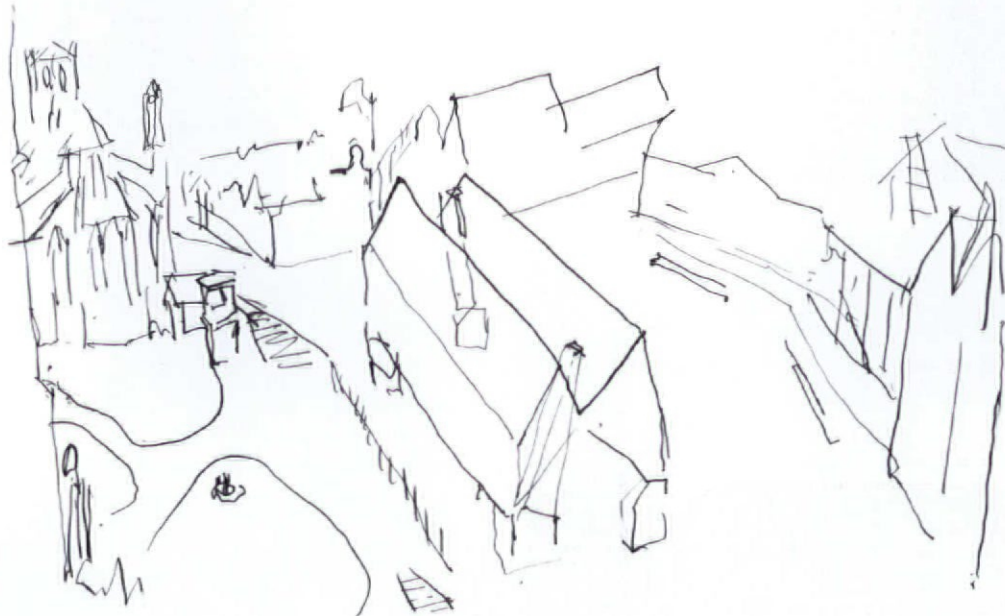
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**Market Hall,
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Ghent's historic urban realm assumes a new resonance through this thoughtful proposition about civic culture

MARKET VALUES





CRITICISM

TOM HOLBROOK

From its castle to the Belfort – its World Heritage-listed belfry – Ghent has at hand everything needed to contemplate the evolution of the Northern European merchant city. As the UNESCO listing notes, the building typology of the belfry emerged as a sign of a developed post-feudal mercantile culture. In this respect it vied with the castle and the bell tower as symbols of seigneurial and church power respectively, and was itself eventually supplanted by the more expansive typology of the *hôtel de ville* in representing the independence and power of a city.

The markets of Ghent, controlled by powerful guilds and aldermen from this mercantile period on, developed at its heart a highly differentiated hierarchy of urban spaces. These spaces have suffered over the last century, but are about to regain their urban resonance through a remarkable project to re-energise the city centre.

In his essay, 'Energy & Matter', Adam Caruso describes the intention of Caruso St John's public realm project in Stortorget, Sweden: 'Before pavements, kerbs and roads, the linear ordering of the stones was a continuous field up to and around the surrounding buildings. The new design attempts to expand the potential of the square by returning Stortorget to a kind of origin and emptiness once held by the undifferentiated space of the field.' Caruso goes on to contrast this approach with received conservation practice which would be to retain and articulate the various layers of historical use.

In the centre of Ghent, this play between abstraction and figuration of its public spaces began over a century ago, driven by the

emergent twins, tourism and conservation practice. At the beginning of the 20th century, the three paradigmatic structures of the city – St Bavo's Cathedral (containing the Van Eyck's *Adoration of the Mystic Lamb*), the Belfry and St Nicholas's Church – were cut free from the accretions that cemented them into the city fabric, critically described in the words of one early guidebook writer as being '... like barnacles upon a stately ship'.

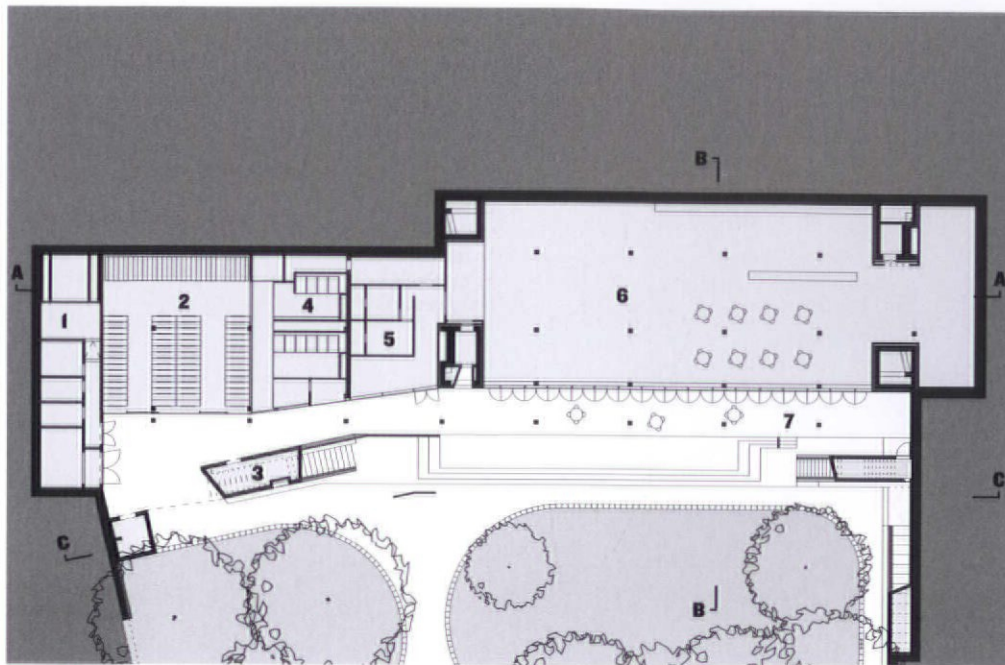
In this process of editing, these civic buildings became *monuments* – like boulders in an erratic field – made explicit in the terms established by *Baedeker 4* and the emerging tourist industry. At about the same time, the careful differentiation of the various *pleins* around the monuments by trade, in particular markets (the Korenmarkt, the Poeljesmarkt), was diminished, then lost. In the 1960s the situation was exacerbated by the demolition of another city block for an extension of the town hall: a plan which failed to materialise. The undifferentiated, leftover space between monuments was then used for parking.

Into this slow urban drama came local practitioners, Robbrecht en Daem and Marie-José van Hee. In 1996 the two practices (who share a studio, and have a 22-year history of collaboration), entered a competition organised by the city authorities to create an underground car park beside the town hall with a public square on top – the sort of project that was ubiquitous across Europe at that time. Feeling that parking was the last thing needed in the strange slack space resulting from clearance (and indeed, would directly contradict the city's own plans to push traffic out of Ghent's central public spaces), the team countered with a proposal for a park, together with an enclosed volume for staging events. This non-compliant entry led to their disqualification.

1. (Previous page)
God and Mammon
tactfully square up
in Ghent's historic
centre. The new
market hall is the
focus of a wider plan
to reinvigorate
the public realm
2. Sketch showing
the relationship of
the new building to
its urban context

'Conceived of as a light folded timber roof, protected by bespoke cathedral glass shingles, the roof's scaly surface reflects and catches the light. Chameleon-like, it constantly changes its appearance'

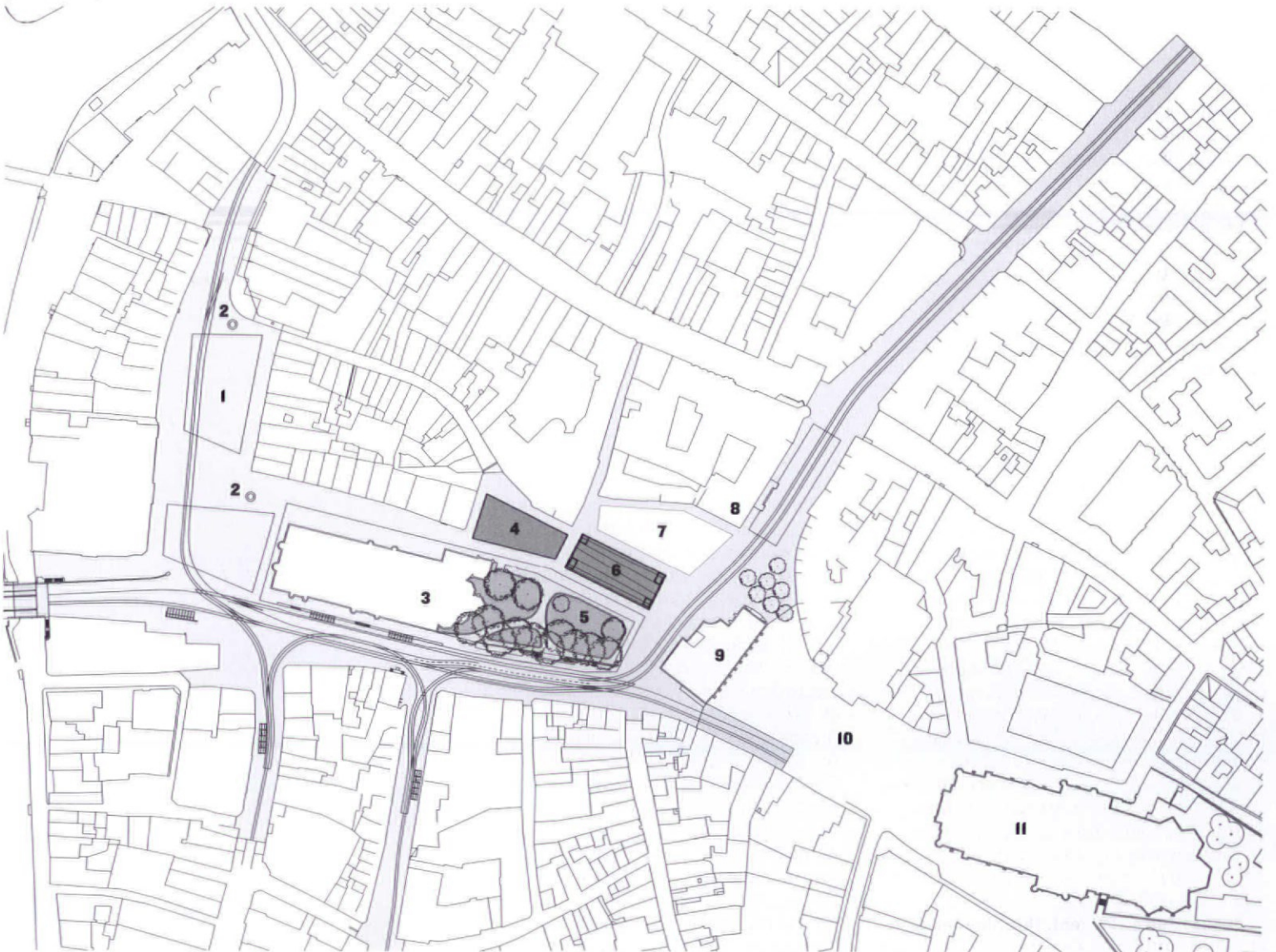
**Market Hall,
Ghent, Belgium,
Robbrecht en
Daem and
Marie-José
van Hee**



ground floor plan

- ground floor plan key**
- 1 technical area
 - 2 cycle parking
 - 3 storage
 - 4 wcs
 - 5 dressing room
 - 6 café
 - 7 covered outdoor area

- site plan key**
- I Korenmarkt
 - 2 sculpture
 - 3 St Nicholas's Church
 - 4 Gouden Leeuwplein
 - 5 The Green (park)
 - 6 market hall
 - 7 Poeljemarkt
 - 8 city hall
 - 9 belfry
 - 10 St Baafsplein
 - II St Bavo's Cathedral



site plan

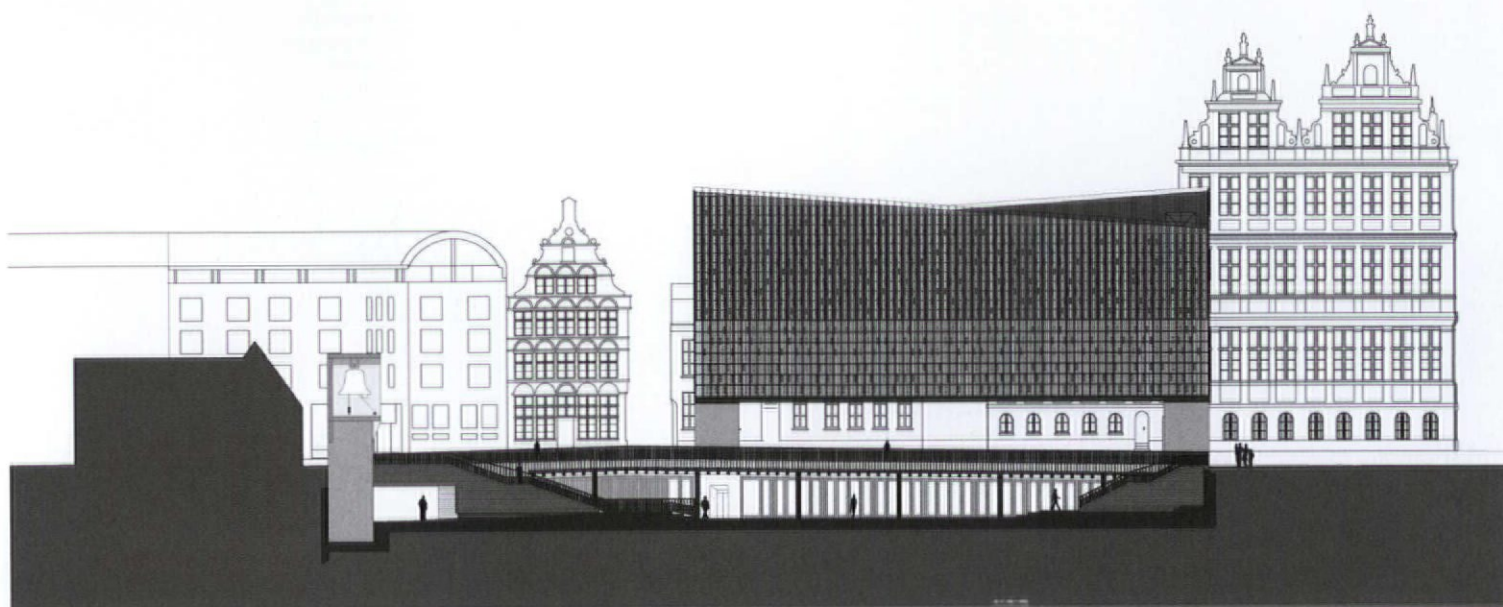




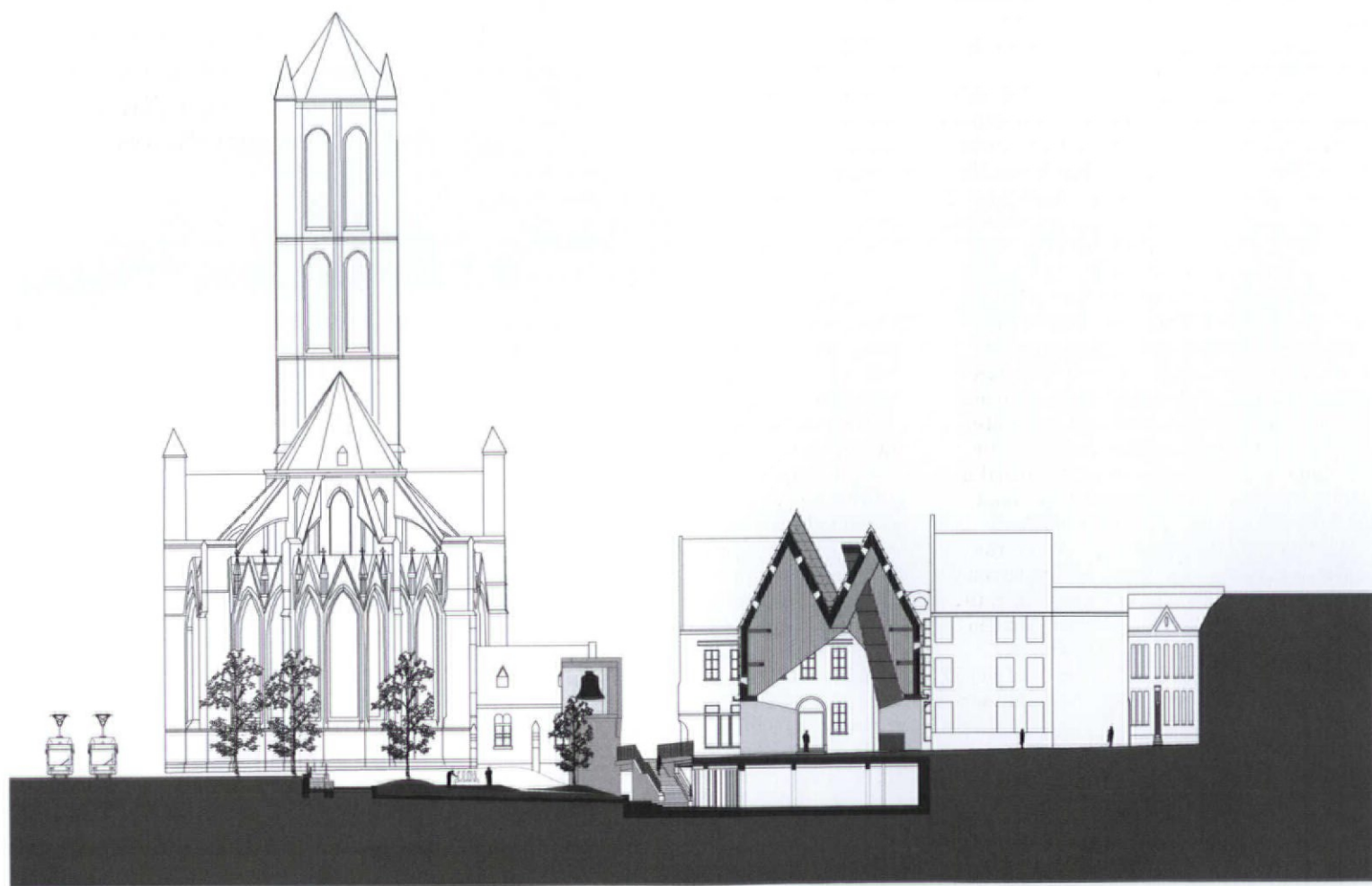
**Market Hall,
Ghent, Belgium,
Robbrecht en
Daem and
Marie-José
van Hee**

3. (Left) in the shadow
of Ghent's great belfry,
the exaggerated geometry
of the market hall's
roof peaks abstracts
the language of the
surrounding buildings
4. A large café under
the main hall overlooks
a new green space at
the east end of St
Nicholas's Church

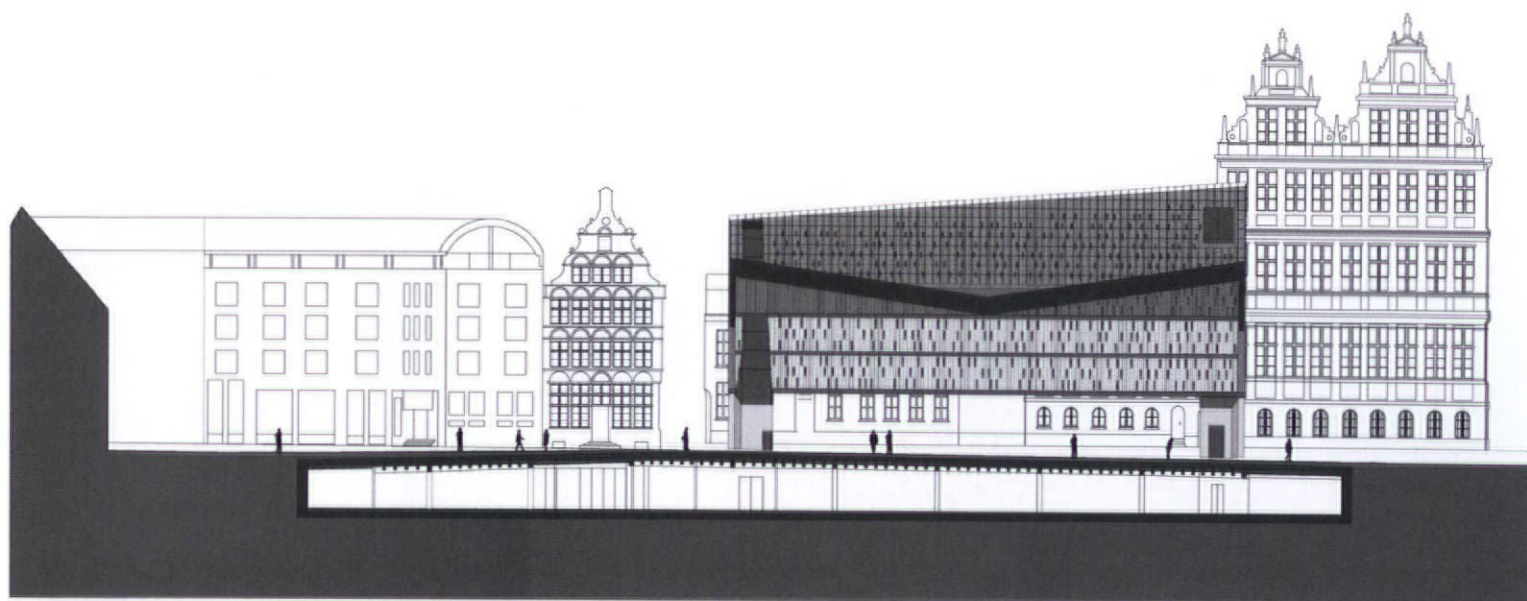




section AA



section BB



section CC

The winning project, once publicised, proved hugely controversial, sparking a rare public referendum in protest and ultimately forcing the city to abandon its plans. The centre of Ghent remained neglected space. By 1998, the city administration realised the ironic situation that the lacuna that had been created in its centre was actually antithetical to the city's burgeoning role as a tourist destination.

Another competition was instigated, this time effectively adopting the brief established by Robbrecht en Daem and van Hee's earlier entry. The collaboration eventually won this second competition: a victory coinciding with the establishment of a more sophisticated city administration, and a more receptive architectural culture across Flanders.

From this slow burn of 16 years has emerged an extraordinary project in two parts: the first involving the direction of the spatial coherence of the central squares of Ghent, and the second, the establishment of a new permanent market hall structure. This dramatic new addition acts to repair the damage of the last century, while making a wholly contemporary proposition about Ghent's civic culture in the 21st century.

For the wider public realm project, the architects have taken charge of the sequence of squares (comprising the Korenmarkt, the Braunplein, the Poeljesmarkt and Gouden Leeuwplein) running from St Nicholas's bridge (under which they have created a cycle park) to the east, comprising the main tourist itinerary of Ghent.

Paul Robbrecht talks about the establishment of a landscape sequence, with interspersed 'mineral' and green spaces, from the Korenmarkt through a new 'Green' at the east end of St Nicholas's Church, to the stony precincts of the belfry and cathedral through

to the green space of Limburgstraat. In the new Green, excavated to a storey below the Braunplein, the grass runs up to and around the apse of the church in the English manner.

Robbrecht en Daem and van Hee are also curating a series of public art works to further articulate this urban sequence, relocating to the Green a fountain by the influential Ghent sculptor Georges Minne, and directing the commissioning of two new vertical art works in the Korenmarkt. Further east, by the cathedral, a rather bombastic monument to the van Eycks is to be 'corrected' with a new piece by the artist Berlinda de Bruyckere.

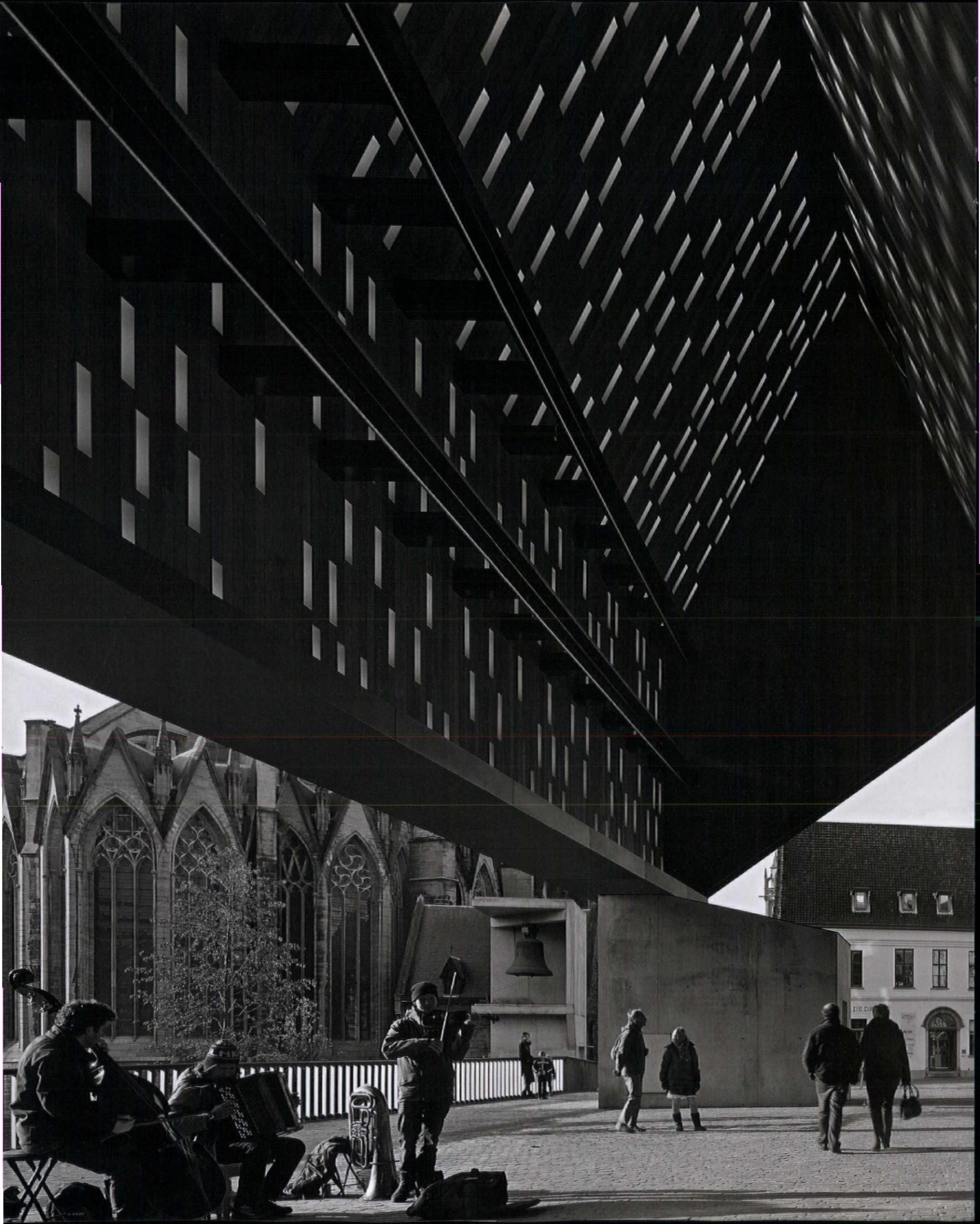
A layer of dark basalt establishes a datum, integrating people's movements from the tram stops and negotiating level changes and places to sit and to meet. The powerful De Lijn company, who run the trams, has been prevailed upon to accept some spatial integration of their system – usually deployed with a transport engineer's pragmatism and concern for the generic over the particular.

The new basalt layer floods the space and serves to emphasise continuity, playing down detail, such as tramline clutter, to form a ground plane on which the monuments are presented. To this 'carpet' has been added a new urban character – the market hall, which conversely acts as an engine of differentiation, choreographing a dynamic play between the various squares. This open-sided structure retains remarkable continuity with the original competition in terms of its conception. From that time it has evolved through very careful iteration and adjustment, continuing from the first model through to work on site 16 years later.

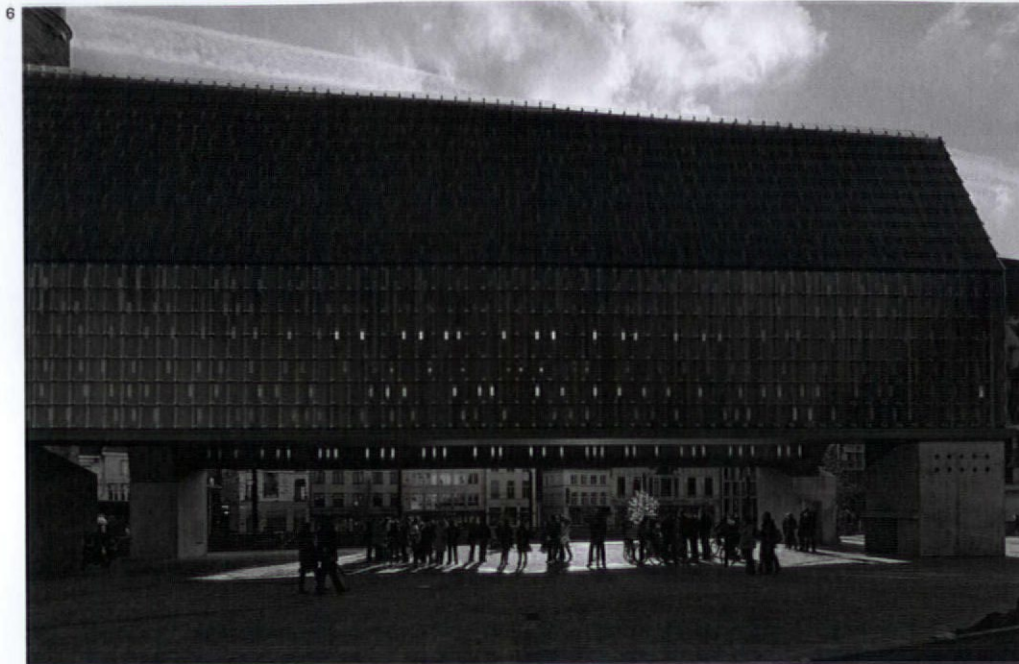
Conceived of as a light folded timber roof, protected by bespoke 'cathedral glass' shingles, the scaly surface of the roof reflects and catches the light. Chameleon-like,

'Feeling that parking was the last thing needed, the team countered with a proposal for a park, together with an enclosed volume for staging events. This non-compliant entry led to their disqualification from the competition'

**Market Hall,
Ghent, Belgium,
Robbrecht en
Daem and
Marie-José
van Hee**







**Market Hall,
Ghent, Belgium,
Robbrecht en
Daem and
Marie-José
van Hee**

5. (Previous page)
described by its architect
as 'resembling a folded
sheet of paper set on four
great feet', the market
hall shelters different
activities and unites
the urban realm
6. Shimmering glass
shingles give the
huge volume a
surprising delicacy
7. (Opposite)
simultaneously domestic,
with its giant gable ends,
and civic, as a piece of
urban infrastructure,
the building swaps easily
between these registers

it constantly changes its appearance. Hundreds of rectangular pipes pierce the roof construction, lighting the hall's interior by day, and shining out at night when the hall is internally lit. The shingles add an important scale and pattern to the surface, belying the scale of the roof and referencing the surrounding decorative use of brick and tile, as well as the weathered stone of the neighbouring historic monuments.

The market hall is simultaneously contemporary in terms of its materiality and form, and yet grounded in its place. It draws obliquely on Ghent typologies: the great roof of the 15th-century Groot Vleeshuis (butchers' hall), for example, or the city's evident love of craft, pattern and texture. These references combine to make a figure which is of sufficient strength to participate with the cast of other monuments, and in finding this poised, rather awkward character, it restores the differentiation to the various spaces that had been stripped out over the last century.

The structure – described by Robbrecht as resembling a folded piece of paper set on four great feet – has a disarming directness, recalling the matter-of-fact placement of the Victorian railway viaduct piers that he much admired in Newcastle. The hall roof spans these piers and acts like a giant spirit level, against which the subtle topography of the surrounding squares may be read. The giant piers contain key services to support various events – one contains a lift to the level below, and one a great fireplace with its chimney.

The volume is highly dynamic, adopting an asymmetry found in the gables of other surrounding buildings. The hall appears sometimes as a piece of infrastructure – its 40-metre span resembling a bridge – and sometimes in super-domestic mode: its gable end seen, for instance, as the picturesque

termination of a medieval alley. Its ability to swap between these registers is remarkable: the hall is simultaneously house-like, with its fireplace and domestic decorative motifs, and yet the scale of its civic works indicates that it is also operating at the urban level – at a horizontal scale equivalent to the belfry's imposing symbolic verticality or the massive outworks of a castle.

Beneath the market hall is formed a south-facing cave, at the lowest level of the Green, which accommodates another cycle park and a Grand Café with a broad terrace. To the west, abutting the church, is a new bell tower which also encloses a bike lift.

The hall will clearly be used intensively, programmed by the city for numerous events, using the spaces it creates in different combinations. Ghent has a vibrant street culture, culminating in the Gentse Feesten, one of the biggest public gatherings in Europe with over two million visitors over a fortnight in July. The project cost €12m, drawing on state and EU funding. It's hard to see how the city could benefit more from this investment. It has engaged the intelligence and care of some of its best architects, and in doing so has restated a concern with the civic as a difficult, time-consuming but highly rewarding component of the political realm. None of this stuff is easy; very few architects are capable of confidently operating at the scales required by this kind of work while producing results of such strength and humility.

This project demonstrates the power of engaging in your own city, bringing locally-attuned spatial imagination to make propositions about a positive future. Every city administrator should be bussed in to see a project that so elegantly sidesteps the inertia of a conserved city centre to make a confident statement about enduring civic pride.

'This project demonstrates the power of engaging in one's own city, bringing locally-attuned spatial imagination to make propositions about a positive future'

Architect
Robbrecht en Daem and
Marie-José van Hee
Photographs
Marc de Blieck
© Robbrecht en Daem





INFO BALIE

INFO BALIE

INFO BALIE

ETAGE 1



**Spijkenisse
Library,
Rotterdam,
The Netherlands,
MVRDV**

NOVEL IDEAS

The short shelf life of this Dutch library's collection enabled MVRDV to turn the spines out to face the town and invite in its inhabitants

CRITICISM

ORIEL PRIZEMAN

Spijkensisse is a 18th-century town twinned with Thetford in Norfolk. It has a shorter Wikipedia entry than any of the partners of MVRDV. Although technically within the Rotterdam conurbation, creating the sense of a distinct town is still an ambition of its councillors. The Book Mountain library is part of a three-phase regeneration project which involved the rehabilitation of its commercial and civic centres. MVRDV originally won the library competition in 2003, the building was completed in May 2012, the precinct and surrounding housing in September. The iconic 'barn' form of the building realises the ambition of landscape architect and urban designer Winy Maas to register the historic fabric of the area, as if the architecture were the culmination of refining an agricultural process. The building is intended to glow as a 'beacon' challenging

the declining levels of library use and literacy across the Netherlands and particularly in Spijkenisse. But does this impression work in practice in a built-up town?

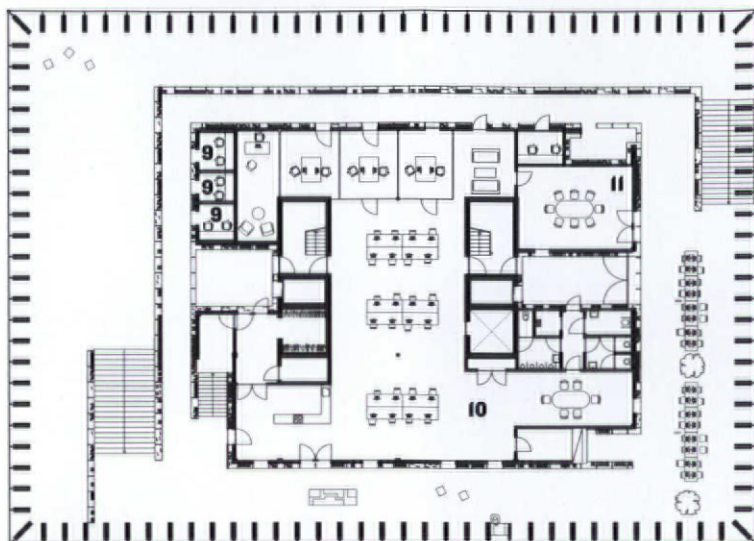
Unlike its flatland pen-friend, Thetford, Spijkenisse is a town that has been furiously re-thought by energetic architects with a back catalogue of housing projects articulating several generations of postwar dialogue over social rehabilitation and housing reform. Arriving by train, a Byker-Wall-size block is foregrounded by a 1980s brick terraced estate saved from resembling *Brookside* by its slightly more sophisticated roof forms. The space between the two is animated by a real model farm complete with large sows and brightly painted timber barns. Bob Dylan might have muttered 'housing project hill' to himself but of course all is very, very flat. The shopping precinct, swiftly erected by Sjoerd Soeters, offers a jumbled set of eclectic vernacular and decorative references that somehow satisfy shoppers by reassuring them that they are not

Spijkensisse Library, Rotterdam, The Netherlands, MVRDV

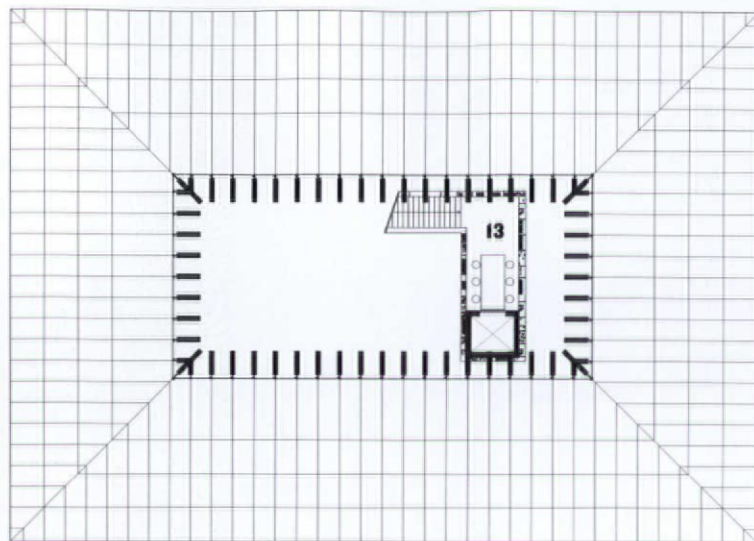


1. (Previous page)
MVRDV sought the maximum possible volume for the library within an envelope that met the planning guidelines relating to the height of the adjacent church and a 45-degree roof pitch 2 & 3 (opposite). The library is intended to be a literal as well as metaphorical 'beacon'. The public space in front is paved to show the denser plan of 17th-century houses, the edges of which are lit at night with LEDs. MVRDV also designed the neighbouring housing

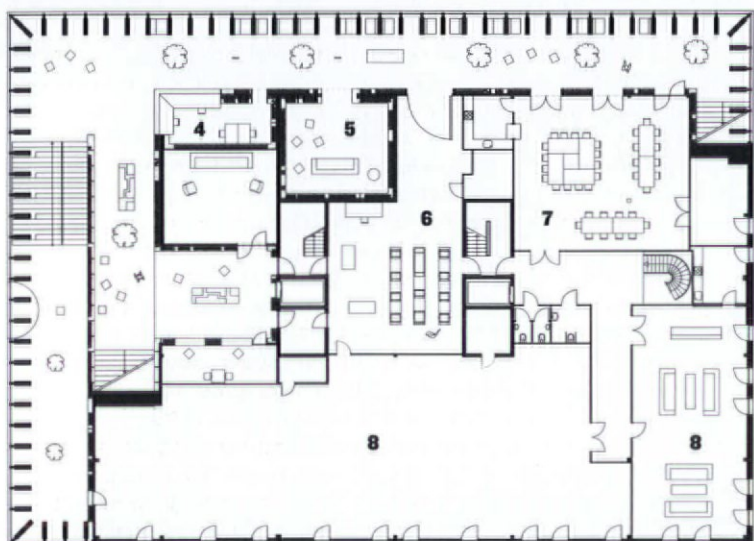




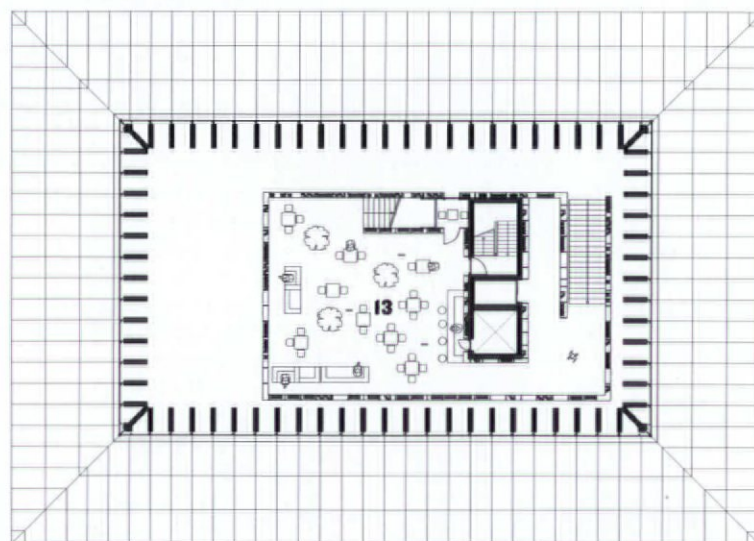
second floor plan



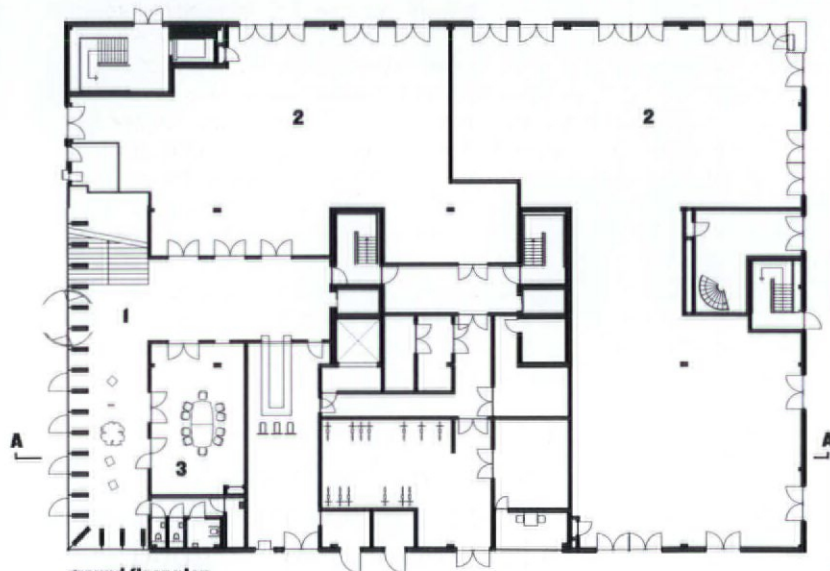
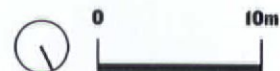
fifth floor plan



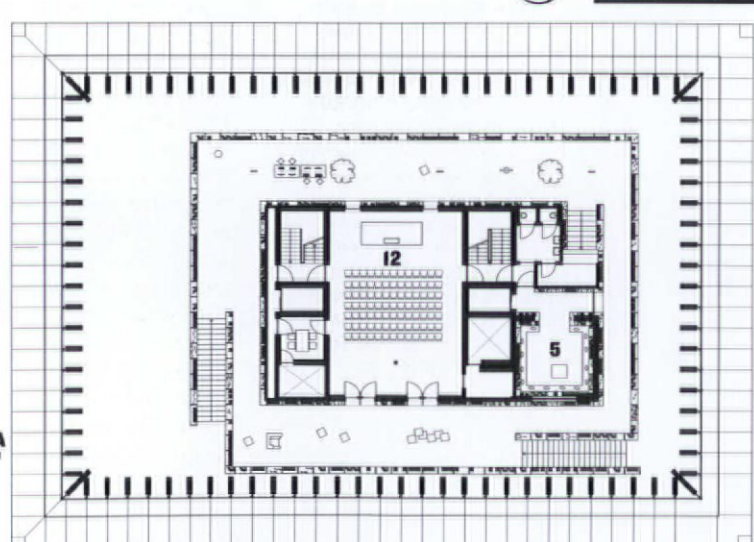
first floor plan



fourth floor plan

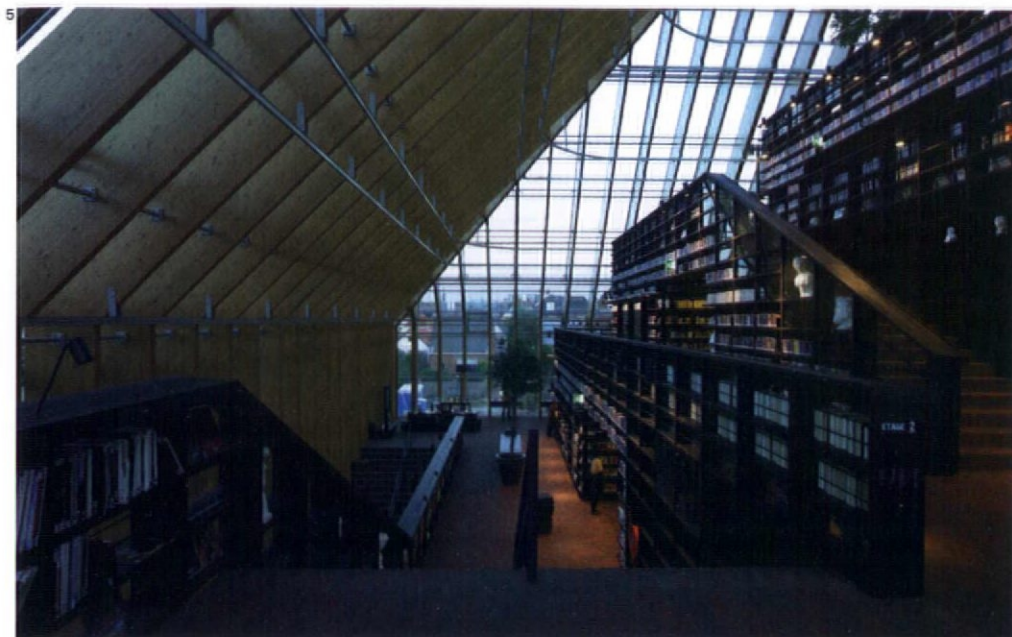


ground floor plan



third floor plan

- 1 main entrance
- 2 commercial units
- 3 meeting room
- 4 information desk
- 5 reading room
- 6 children's education centre
- 7 chess club
- 8 staff area
- 9 quiet study room
- 10 study centre
- 11 group study room
- 12 auditorium
- 13 café



Spijkensisse Library, Rotterdam, The Netherlands, MVRDV

4 & 5. As the library's books all have a short shelf life, there was no need to protect the spines from sunlight. MVRDV therefore made the unusual move of turning the books outwards to face the town. However, the sunlight is modulated to prevent glare and overheating, not least by a structure of 1m-deep glue-laminated timber portal frames set only 1.35m apart

actually occupying the dreary town they live in, but belong to a global marketplace in a similar way to the Cape Cod / Bicester Village experience. The precinct unexpectedly swallows up the old town's dyke which is surmounted by a slightly rusty escalator feeding you into the more windswept-feeling original civic centre. Ironically, a nearby windmill, surrounded by new developments that threatened its access to gusts, has had to be raised. It spins somewhat more frenetically than it might previously have done.

The urban setting of the library is unexpectedly quiet. Although the original brief did not incorporate the housing element, the open site provided the unusual opportunity for the architects to establish and secure the scale and disposition of most of the library's neighbouring relationships. The open space in front of the building sets it squarely in conversation with the church opposite. The ground is paved to delineate the much denser plan of houses and fields that stood on the site in the 17th century. The names of previous occupants are carved at the thresholds. Window openings are marked in the stone plan and LED lights demarcate the same ghosts at night. The raking of the paving to accommodate level changes, bicycle stands and steps, although carried out with only supervision rather than full direction by the architects, is still commensurately part of the whole. At the rear, the central house and ground it sits on are peeled up and tilted to admit two storeys of parking beneath the library building. The lights that illuminate the streetscape are the same as those used inside the library, further unfolding its potential.

MVRDV's bold presentation and apparently simple geometrical concepts can lodge a set of fairly intransigent doubts in the magazine beholder of their work. The architects claim to approach each

building typology afresh (excluding housing). The office is populated by ambitious models at all scales and all 56 members of staff apparently consume Emmmental sandwiches and orange juice for lunch together at a long table every day, like an order of happy co-ed monks. As their first built library, Spijkensisse subverts many well-established precedents. Anticipating a building that might be an environmental disaster, a cross between the Luxor pyramid in Las Vegas and Stirling's library of sweaty or freezing historians in Cambridge, the scheme proves to be unexpectedly sophisticated in its consideration of climate and acoustics.

The MVRDV approach is disarmingly pragmatic. Their competition proposal set about claiming the maximum volume for books within an envelope that met local planning guidelines for the height of the ridge in relation to the church, the eaves height and a 45-degree pitch. By imagining a barn-like envelope, the volume of the books and reading areas was sketch-modelled like a pile of hay bales and so they were able to offer considerably more volume of library space than had been requested. In fact, climbing over sound-absorbing hay bales and finding privacy within a huge enclosure is a good way to imagine the space. Thanks to imaginative interpretation of technical advice, the building has amazingly sound-deadening qualities while still offering open visual navigation of the space. Perforated mesh behind the brick facings of the core pyramid

'Climbing over sound-absorbing hay bales and finding privacy within a huge enclosure is a good way to imagine the space'



6. (Left) the top of the pyramid is given over to a café. The terrace is paved in bricks in order to create a continuity with the external public spaces. The potted trees, which are the same species as those planted outside, further this connection and also help to moderate the internal environment

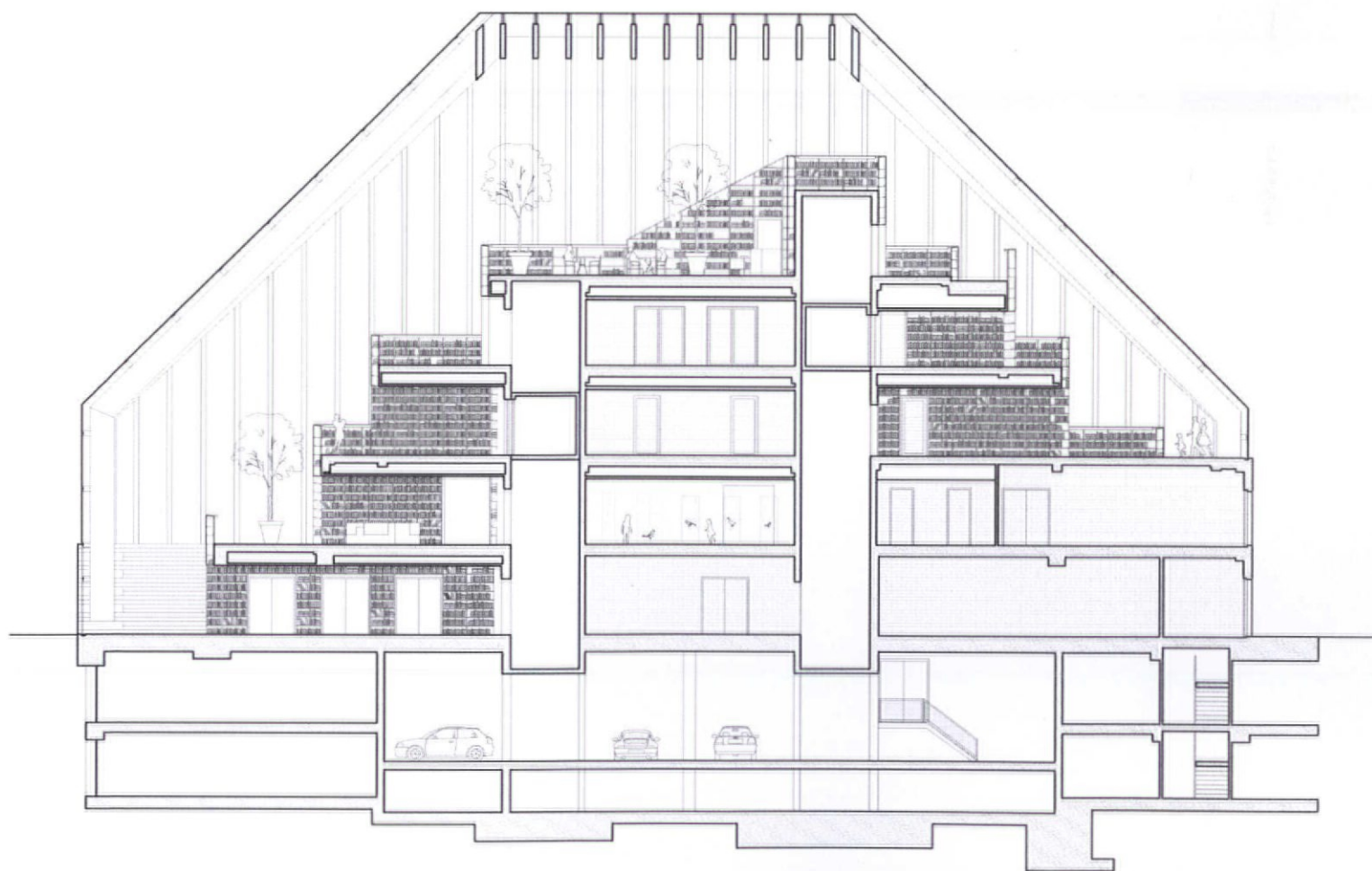
Spijkenisse Library, Rotterdam, The Netherlands, MVRDV

soaks up distracting conversations that are out of sight remarkably successfully. The architects learnt from the librarians that the books had a short shelf life, that none of the books was rare or had any value, and therefore protecting their spines from fading under UV light was not an issue. This observation fundamentally justified and enabled the otherwise sacrilegious ambition of creating a daylight bubble for a library. In exposing the books to the town, the traditional strategy of securing and protecting books from the damage caused to them by light and readers is completely reversed.

While accessibility and legibility are cherished, unlike many other buildings of its type – including Will Alsop's Peckham Library or Labrouste's Bibliothèque Sainte-Geneviève – this message is not delivered as an inscription or a legible sign: the books themselves are used as the visible sign and physical manifestation of the possibility offered by the library. It cannot be a

coincidence that Bruegel's 'little' Tower of Babel painting lives in the Museum Boijmans Van Beuningen – less than a mile from MVRDV's office. The brickwork is apparently continuous from inside to out, like Isi Metzstein's at Robinson College. It forms the external skin of the domestic buildings and the roof tiles are not only coloured but also gauged to align with the perpendicular joints of the brick copings at the top of the gable ends. The glass canopy of the library indeed frames it as a lantern, the beacon that the architects intended the building to become.

The other reasons that a glazed envelope for a library would commonly be dispensed with early on in the design process are the failure to provide adequate thermal comfort without significant energy wastage, and the very obvious challenge of providing comfortable visual conditions for reading without excessive glare. However, both the environmental strategy and the detail of the envelope at Spijkenisse library address these



section AA

**Spijkenisse
Library,
Rotterdam,
The Netherlands,
MVRDV**



site section



7. Neighbouring houses use the same materials as the library, but in a different configuration: the more limited glazing signifies private space
8. (Opposite) the brickwork is continued across the square, where planters will eventually be filled with foliage

issues head-on. Different environmental consultants were engaged at sketch and detailed design stages. The ambition was to create a very 'calm' thermal and visual environment.

Although being designed before the age of certification, the scheme design set out to minimise environmental impacts from its competition stage. It contains two ground-source heat pumps and the central brick core has perforations at the top and beneath all the bookcases that are used as the orifices of a whole building mechanical ventilation and heat recovery system. The thermal currents running up and down the glazed envelope are directed to contribute to the circulation of the system. Underfloor heating offers continuous stable temperatures while steel sandwich panels, which are apparently brick faced, contain phase change materials to cool ceilings in summer.

The overarching skin is less of a slick one-liner than its photographs suggest. The skin is supported by a structure of 1m-deep glue-laminated timber portal frames set only 1.35 metres apart. This means that the frames in themselves are fins projecting into the space, and are able to provide a considerable degree of solar shading, acting as vertical louvres. An impressive amount of pipework, as well as the adjustable shading blinds, are concealed between the outer face of the structure and the glazing itself, leaving only tracks for internal glass cleaning to disrupt the clarity of the sturdy exoskeleton.

Significant efforts have been made to minimise visual clutter. The number of materials and colours on show is reduced as far as possible, bringing the lively spines of the books into the foreground. The stretcher-bond coursing of the brickwork core is continued in parallel on the floor and ceiling, with the bricks laid as pavers. Sliced bricks

are applied across doors and architraves and printed onto lift doors and interiors. When the perpendicular courses collide at corners, they are meekly and fairly knitted together to make diagonal junctions. Similarly, courses of bricks following the direction of travel up the treads of the stairs continue until they collide one by one with the turn at the top. As a result, the whole appears to be excavated from a solid, but also the lines of navigation are subtly set out.

Trees grow in pots on the top terrace café within the library (the same species is planted outside), and project architect Fokke Moerel explained that these also help to moderate the internal environment. The only non-functioning element apparent at this point is the nested summit reading room, which, like Peckham Library, has pods which are not occupied. They were intended to play similar roles to the Peckham pods, offering intimate spaces to small groups of young people, but perhaps the experienced librarians are playing a subversive role here by furnishing them with uncomfortable tables.

The pleasure of visiting the library far exceeds the promise of its photographic reproductions. The acoustic qualities are remarkable, and on an overcast January afternoon it evidently provided comfort and respite for teenagers on Facebook, in another world from pensioners in the café above.

As library attendance in the Netherlands, as everywhere, is changing, and literacy rates are challenged, the optimism of this design – so removed from the faded glory of its fellow East Anglian town – is admirable. Equally impressive is the ability of a public client to recognise the potential role of architects in creating a modest local identity such as this. In a manmade landscape of dykes and poly tunnels it feels absolutely natural to make a mountain out of books.

Architect
MVRDV
Photographs
Jeroen Musch
except 2 by Walter Herfst



**Marquee for
Restaurant,
Olot, Spain,
RCR Aranda
Pigem Vilalta
Arquitectes**

LIGHTNESS OF TOUCH

Using banal materials to poetic effect, this dining marquee sits between architecture, landscape art and minimalist sculpture





CRITICISM

WILLIAM JR CURTIS

The marquee stands to the rear of a precinct belonging to the restaurant Les Cols ('The Cabbages' in Catalan) in the small town of Olot, 40 kilometres west of Girona on the edge of the volcanic park of La Garrotxa in the foothills of the Pyrenees. It is the latest in a series of interventions by RCR Arquitectes on the site, beginning with the main restaurant constructed just over a decade ago, and continuing since with a sequence of minimalist pavilions for overnight stays. The restaurant has established a style of its own combining quality local produce with a sophisticated up-to-the-minute cuisine. One is tempted to say that the building and the contents are from the same table as they both fuse modernity and tradition, east and west.

The architects of RCR are very much of their place but they also possess a cosmopolitan architectural culture reaching beyond Catalan traditions to a wider world of inspirations including the architecture of Mies van der Rohe, the steel blade sculptures of Richard Serra and the Zen gardens of Kyoto. The marquee fits into this trajectory. With its slender structure suggesting both temple and tent, it exists on the knife edge between the

industrial and the rural, the artificial and the natural. As well as being a remarkable work of contemporary architecture, the marquee is the latest in a string of experiments supported by an enlightened client with an eye for quality and sharp commercial sense.

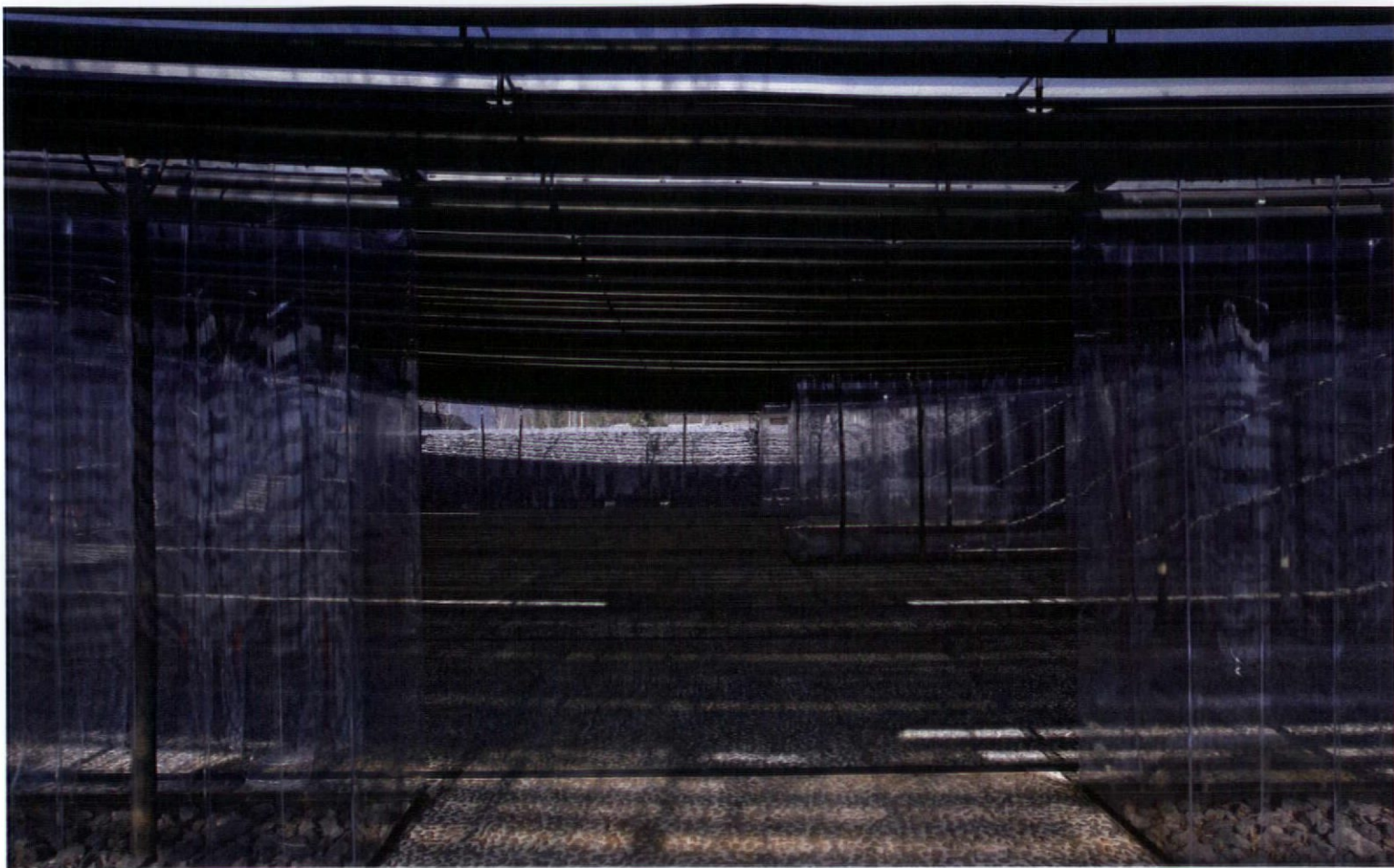
This, the most recent structure on the site, responds to the apparently growing need for wedding banquets and large social get-togethers. It has an independent kitchen to the rear and can cater for groups of different sizes: it was an intrinsic part of the programme that the building should feel right with a dozen people in it having a Sunday lunch, or with several hundreds attending a major reception. No doubt this requirement led the architects to the idea of compartments that are not compartmentalised, and to the idea of a big space that does not feel big. Beyond the usual practical issues of cloakrooms and bathrooms (tucked off to one side in the masonry surround of the structure), there was the need to find the right festive note. When solving architectural problems the three architects of RCR – Ramón Vilalta, Carme Pigem and Rafael Aranda – ask such questions as 'What does the programme really mean?' and 'How can these problems be resolved in a way that synthesises the contradictions in a clear idea?'

- 1. (Previous page) diaphanous plastic veils let a scintillating light fall across the rubble elements of the marquee
- 2. The roof bows in an elegant sweep
- 3. Trees poke through the roof plane, creating a shady bower
- 4. (Opposite) a plan reveals the dominance of tree cover



**Marquee for
Restaurant,
Olot, Spain,
RCR Aranda
Pigem Vilalta
Arquitectes**





They work like a jazz group in which one individual launches a theme and the others pick it up and develop it. But they still need to get back to the basic concepts in defining the identity of a work.

The site was rather unremarkable with vegetable gardens on one side and some shacks on the other. RCR decided to define a precinct by cutting into the ground, building solid masonry surrounds, and surmounting the whole thing with a hovering roof spanning the entire lateral dimension of the space. It was also necessary to respond intelligently to the environmental requirements of the programme throughout the seasons of the year, and to cut out ambient noise while creating internal acoustics suitable for speeches. In turn it was essential to cut down the racket that can be reflected off floors in the din of conversation. In tune with the sensibility of their earlier buildings, RCR devoted considerable attention to the granular texture of ground materials, including not just the floor of the vast room itself, but also the meandering approach path. Circulation was crucial, and as usual they guided a serpentine route by orchestrating views through layers of actual and implied transparency. The idea of a floating roof – combining light filter, protection from the elements, air cushion and baldachin – was also in tune with their intention of defining

single elements serving several functions and carrying several meanings. Then there was the startling use of semi-transparent curtains made of agricultural tent plastic, which endow a banal readymade material with poetry as it captures and filters a silvery light.

The marquee is detailed at the edges so that the ends of the steel rods supporting the bowing roof stand free of the masonry walls on slender steel flanges. As a result the superstructure appears to hover even as it weighs down towards the middle point. It suggests both strength and flexion. Meanwhile the joints of the masonry portions are carefully detailed to express both mass and surface. They supply an ancient note as if post-industrial nomads had stumbled upon an ancient ruin and decided to cover it with a temporary shelter. In RCR's work the texture of materials is one of the keys to their meaning. The closer to the volcanic ground, the rougher and more granular the treatment of stone or concrete; the closer to the sky, the smoother and more transparent the materials. The marquee distils these generic themes in its section and in its very fabric. As for the plastic layers, they appear to be both there but not there. The architects have never been 'classicists' in any obvious sense, but they have absorbed almost unconsciously the tripartite division of base, middle and top, and in their way have transformed the idea of rustication.

'Everything about the building is ambiguous, beginning with its definition as an architectural object, for it floats in light and dissolves in air, seeming to melt into its landscape surroundings'



**Marquee for
Restaurant,
Olot, Spain,
RCR Aranda
Pigem Vilalta
Arquitectes**

5. Agricultural plastic sheeting hangs to form draped Semperian walls, partitioning the space without darkening it
6. Trees are planted within these partitions, creating a deceptively simple interplay of interior and exterior spaces

In plan, the building is deceptively simple and suggests an oblong, symmetrical room with slender partitions defined by slots letting in air and light and supplying places for rows of trees. This is an ingenious reinvention of the notion of the 'free plan'. One rarely experiences the plan's symmetry directly (except for the arc of the roof), for one moves across the building along an asymmetrical, zigzag route. Diagonal views play an essential role as do the shifting planes suggested by the hanging curtains of plastic. Everything about the building is ambiguous, beginning with its definition as an architectural object, for it floats in light and dissolves in air, seeming to melt into its landscape surroundings. The roof, constructed from slender rods like steel bamboo, bows down in the middle and draws a catenary in space, but this is the only easily identifiable geometry. For the rest, the marquee works principally with voids, floating planes, unfolding limits and, of course, changing effects of light.

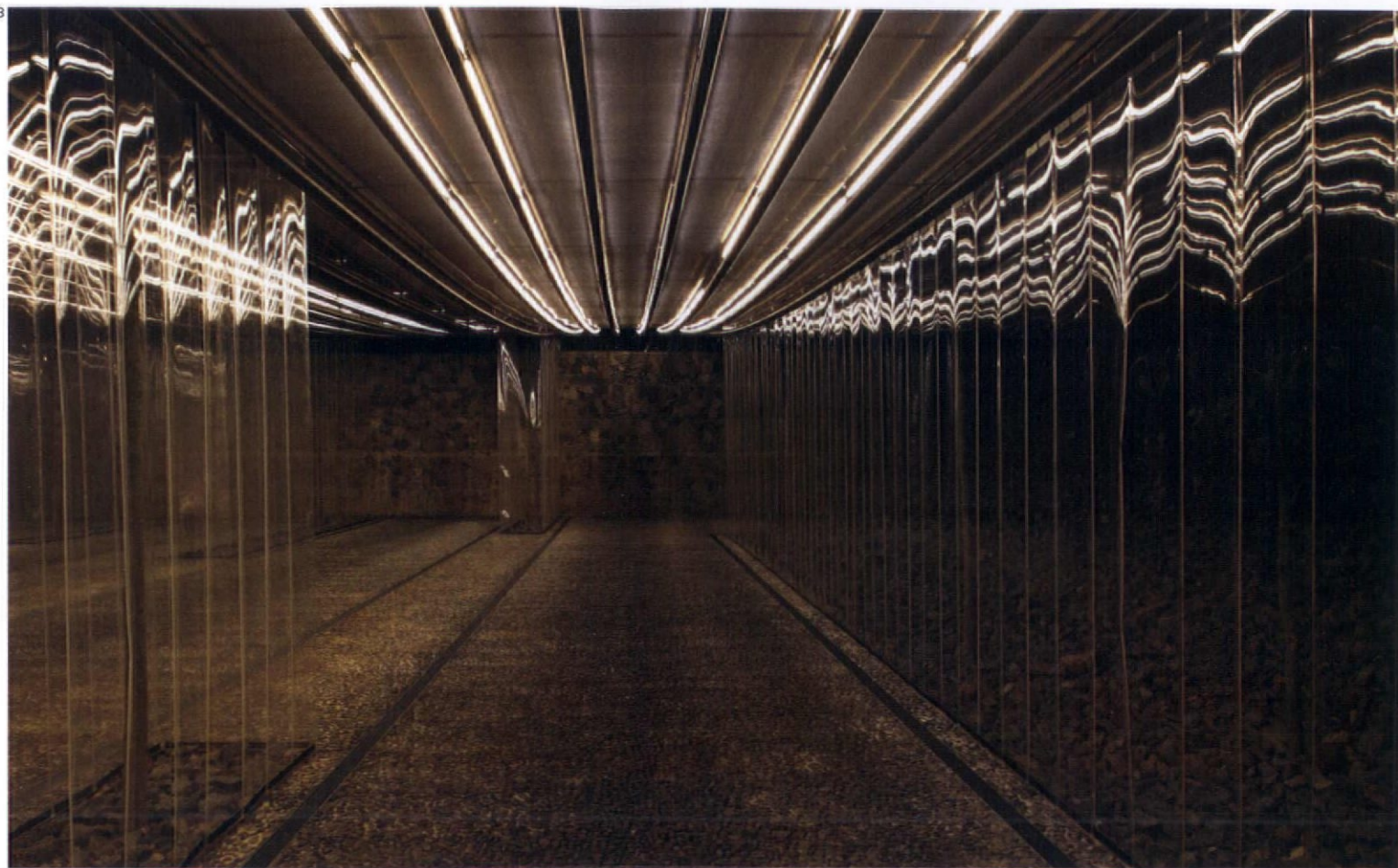
As one moves through the translucent plastic sheeting, the lateral slots containing slender saplings suggest spaces within spaces, while the shadows of trunks and branches supply a tracery drawn by nature. The effect is curiously theatrical, especially when people gather in groups for wedding receptions or other ceremonial events. The figures move from one loosely defined compartment to the

next, and at a distance are transformed into silhouettes. They themselves help to define the 'form' of the building by their presence.

Despite its modest appearance, the marquee touches on a range of contemporary agendas concerning the relationship between modern technology and the givens of nature. The double-skin roof, with its serigraphed upper glass surface, filters the light while reducing heat and blocking the negative effects of the sun's rays in the summer. At the same time the pocket of air supplies an insulating layer for dealing with a wide range of temperatures throughout the year. In turn, the double layer supplies an acoustic cushion. These pragmatic considerations are not dealt with by means of added gadgets but are integral to the solution, and correspond to the ethos of the architects, who favour technical devices responding to natural forces.

At the same time, the marquee touches upon the theme of origins by evoking archetypes such as the platform, the pergola and the tent. Over time the saplings in the lateral 'pockets' will grow into trees which will lend the whole structure the air of a clearing or even a natural version of a hypostyle hall. This delicate structure suggesting a contemporary version of a bower, frames human activity and intensifies the experience of the natural world through a poetic abstraction.





7. (Opposite) sketched variations on the marquee theme
8. Reflections multiply when the space is lit at night, creating a transparent light box

Architect
RCR
Photographs
Pep Sau

The marquee exists in a realm somewhere between architecture, landscape art, minimalist sculpture and the techniques of modern agriculture. It takes its place in an oeuvre that includes other structures existing in an ambiguous state between architecture and landscape such as the winery at Bell-lloc (see AR January 2010). In that case the predominant themes had to do with a descent into the earth and into the realm of shadows as an exploration of the very process of cultivating and producing wine underground. The marquee, by contrast, makes luminosity its main feature. The light is filtered and disposed in a variety of ways, not least by means of the acrylic furniture with edges that shine. The toplighting along the edges of the structure catches the rough aggregate walls and casts veils of vertical shadows. The materials of the marquee dissolve into immateriality and the structure captures the slightest changes of light intensity as when a cloud moves over the sun. At night, on the other hand, the marquee is transformed into a magical environment, an ideal place for a midnight feast looking up at the moon.

'Almost nothing'; the phrase of course belonged to Mies van der Rohe and has been appropriated by any number of correct neo-Modernists, but the work of RCR Arquitectes goes deeper than that into the questions of structural rigour, 'simplicity' and

architectural space. RCR conceives buildings less as objects, more as voids. They respond to sites at several scales and read them as fields of potential energy which can be brought alive by the right architectural incisions. The larger landscape is always at the back of their minds and their approach is particularly relevant to the new conditions of a middle landscape which exists somewhere between an abandoned agriculture and the industrial wasteland of extra urban sprawl.

RCR has roots in a Barcelona tradition of architecture and landscape which includes key works by Miralles/Pinós as well as Torres/Lapeña and Carlos Ferrater, but in the long run there are debts to Gaudí who, in his time, tried to anchor a frantic urban development with metaphors of nature. Equally RCR has entered dialogue with seminal Japanese works such as the Water Temple by Tadao Ando and more recent works stressing transparency by, for example, SANAA and Junya Ishigami. But they have also returned to roots, and in their case this means not only the volcanic landscape of their home environment but also the Zen Gardens, temples and teahouses of ancient Kyoto. The latter hold out perennial lessons in social ritual, the transition from the artificial to the natural, the movement through spaces of different intensity and the evocation of the spirit through emptiness and the void.

**Marquee for
Restaurant,
Olot, Spain,
RCR Aranda
Pigem Vilalta
Arquitectes**

CHAMPIGNY SOCIALISM

In a communist suburb of Paris, Edouard François's social housing cunningly conflates archetypes of individualist and collective living

**Social housing
Champigny-sur-
Marne, France,
Edouard François**







REPORT

ANDREW AYERS

'I was asked to bring in beauty and I refused. Wanting to create it at that particular spot could only have made things more chaotic and incoherent. Beauty would have been stupid, selfish, forsaken, as though it had accidentally dropped there bang in the middle of the crossroads – it would have said "Merde!" to everything around it.' Such was Edouard François's sentiment regarding the Cité des Mordacs, a 1960s Modernist housing estate in the Parisian *banlieue* which, thanks to its morphology of utilitarian towers and slabs disposed along wide avenues, is frequently described as 'Stalinesque'. Surrounding the estate is mediocre suburban sprawl, while the town centre of Champigny-sur-Marne, two kilometres away, displays traditional party-wall urbanism. Declared a *Zone Urbaine Sensible* ('sensitive urban zone') in 1997, Les Mordacs is currently the object of a four-year, €73-million regeneration programme, which includes the complete renovation of a quarter of its housing stock, as well as the demolition of two buildings (a tower and a slab, 104 flats) and their replacement with 114 new dwellings. It is these that Edouard François's firm completed, to much media attention, last year.

The reason François's scheme garnered so much press was its frankly freakish form and dress: sited at a T-junction, two of the buildings display what appear to be townhouses at the lowest level, on top of which a 1960s housing bar has been casually dropped, while the skyline is marked by bungalows that seem to have landed there, *Wizard-of-Oz* style, in a hurricane; on the other side of the avenue, the third building mixes the same elements in a different, and at first glance even more chaotic, combination.

Viewed in isolation the gesture can appear gratuitous, but for François it was all about the context. How do you bring a sense of place

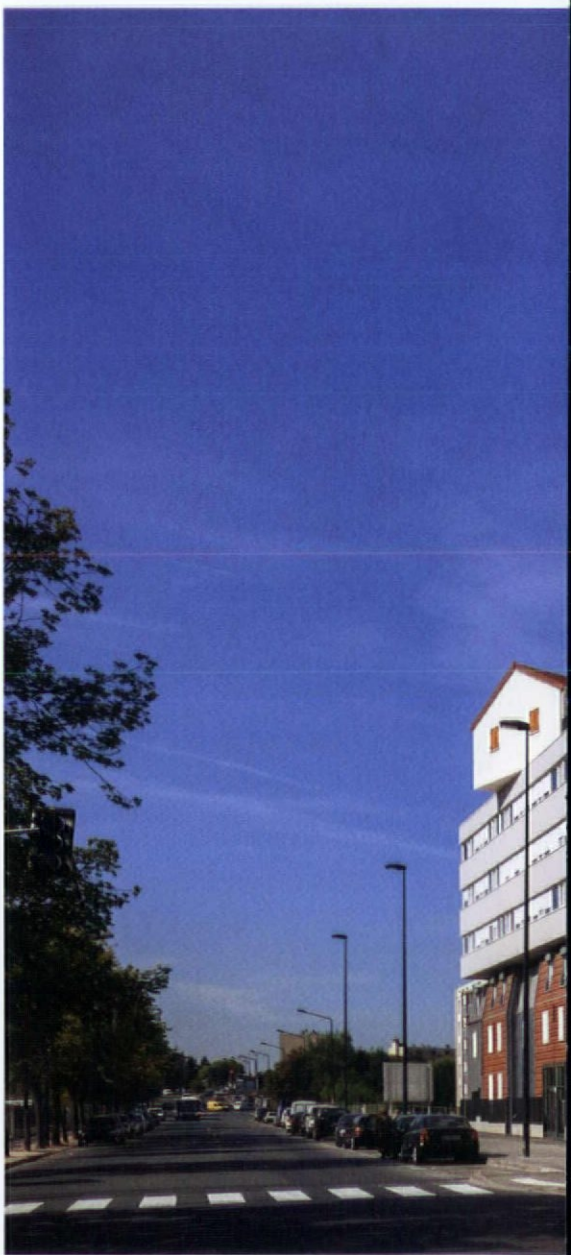
to somewhere that is in a sense no place? And how do you respond to a context of dreary slabs and towers without appearing to judge that context? François's answer was to bring to the site the three housing typologies that characterise Champigny's fabric and pile them up in a confrontational dialogue.

While isms and their ilk clearly bore François, his intervention at Champigny owes an obvious debt to the games played by the Postmodernists 30 years ago. We find the same irreverent reverence for history, the same ironic humour (funny to some, impertinent to others), the same flirtation with kitsch, the same use of collage, the same desire to speak to popular taste, and a similar Pop sensibility. Indeed François describes his intervention at Champigny as a work of art, a giant installation *à la* Rachel Whiteread intended to make us consider the Cité des Mordacs in a new light. This is not the first time he has attempted such a manoeuvre: his Hôtel Fouquet's Barrière just off the Champs-Élysées (AR November 2007), with its black-concrete casts of Haussmann-era facades through which modern fenestration pokes seemingly at random, was also intended as a mirror held up to its surroundings.

Where François's work differs from that of his PoMo forebears is in its eschewal of their shiny Legoland aesthetic in favour of something materially more subtle and interesting; at Champigny the articulation of the blocks is beautifully realised so that the illusion of a piling up of archetypes is thoroughly convincing (hats off to the concrete engineers), and is reinforced by the various finishes and details, which include tile, zinc, render and shutters.

Despite initial appearances, there is a functional logic to the scheme's organisation. Bringing a sense of place to Les Mordacs has here been interpreted as injecting a chunk of traditional, street-line-respecting urbanism into the heart of the Ville Radieuse, and it is

'Three beautifully simulated styles cancel each other out to become no style – which is one way of responding to the problem of dealing with no place'



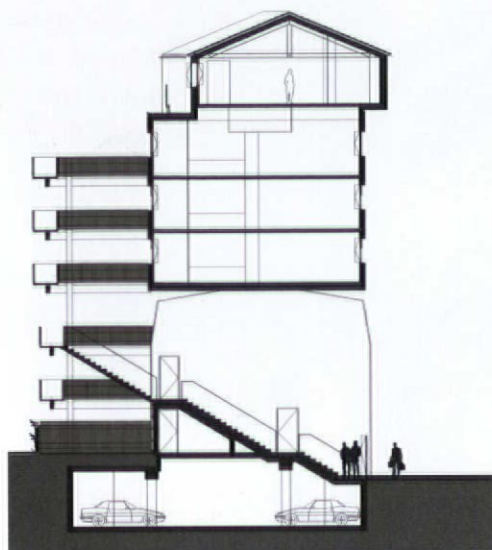
**Social housing
Champigny-sur-
Marne, France,
Edouard François**



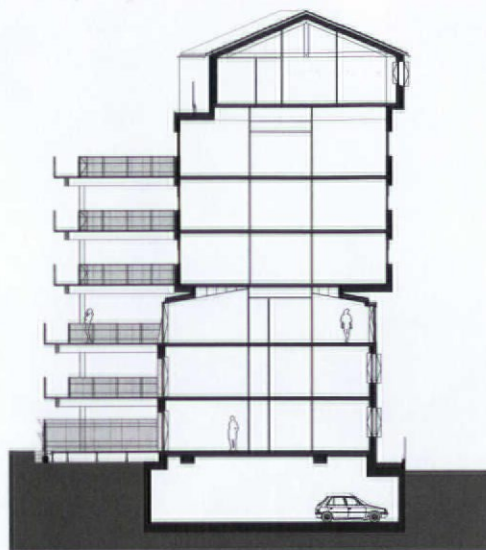
site plan



1. (Previous page) homely 'bungalows' with terrace gardens are the top layer of the tripartite structure
2. The block is a crazed conflation of archetypes and materials. All French housing life is uneasily here, from the townhouse to the Corb apartment
3. Is no style (but every style) a valid response to no sense of place?



section AA



section BB

therefore the townhouses that are in the front line. They set the rhythm – a simulacrum of division into traditional plots – and are formally and materially the most rich (François subscribes to the belief that most people are only fully aware of materials up to five metres above street level – beyond that you can be less *soigné*).

The irony of sticking suburban bungalows (the average Frenchman's dream dwelling according to polls) on top of a Corbusian roof terrace was clearly an opportunity not to be missed (hyper-collective versus hyper-individual, as François put it), and so dictated the rest of the stacking order, as well as, according to the architects, providing accommodation for families with young children in a manner that allows the little ones space to play without bothering other inhabitants. Traditional urbanity also means street-level shops, and one of François's buildings duly contains four ground-floor retail spaces – Les Mordacs's original introverted indoor shopping centre, which had reached a state of terminal decline, is currently being demolished and replaced by scattered retail pockets.

The reality of the internal organisation of François's buildings becomes clear at their rears: here we find massive wooden walkways at every level (except for the roof terrace) providing individualised access to each flat, and you consequently realise that the 'townhouses' are in fact nothing of the sort, their urban dress hiding an internal division into apartments. Ranging from two to seven rooms, all the dwellings in François's buildings enjoy a front-and-back double aspect, which is why the walkways were needed, in order to avoid a proliferation of stairwells.

Set away from the rear walls to maintain privacy, the walkways are connected to each dwelling by 12m² private terraces, each of which is intended as a little 'garden'. The idea



is attractive, but the manner in which the terraces are stacked up on top of each other results in unpleasantly dark and dingy spaces on the lower levels. Lifts and fire escapes are internal – reached via communal entrance halls where the letterboxes are located – and provide access to the rooftop bungalows, whose generous terraces command sweeping views.

When building on a restricted budget, certain choices have to be made – if we spend on this we have less for that. The choice made at Les Mordacs – and it was the client's, not François's – was to invest money in the external appearance of buildings that contain rather poky, *Existenzminimum* apartments (66m² for a three-room flat) with little or no storage and bedrooms in which it would be hard to squeeze a wardrobe.

Other architects hired by client Paris Habitat-OPH (most notably Frédéric Druot

4. The scheme's formal contortions essentially disguise what might otherwise have been a large and imposing seven-storey block

Architect
Edouard François
Photographs
Paul Raftery

'The irony of sticking suburban bungalows on top of a Corbusian roof terrace was clearly an opportunity not to be missed (hyper-collective versus hyper-individual, as François put it)'

**Social housing
Champigny-sur-
Marne, France,
Edouard François**



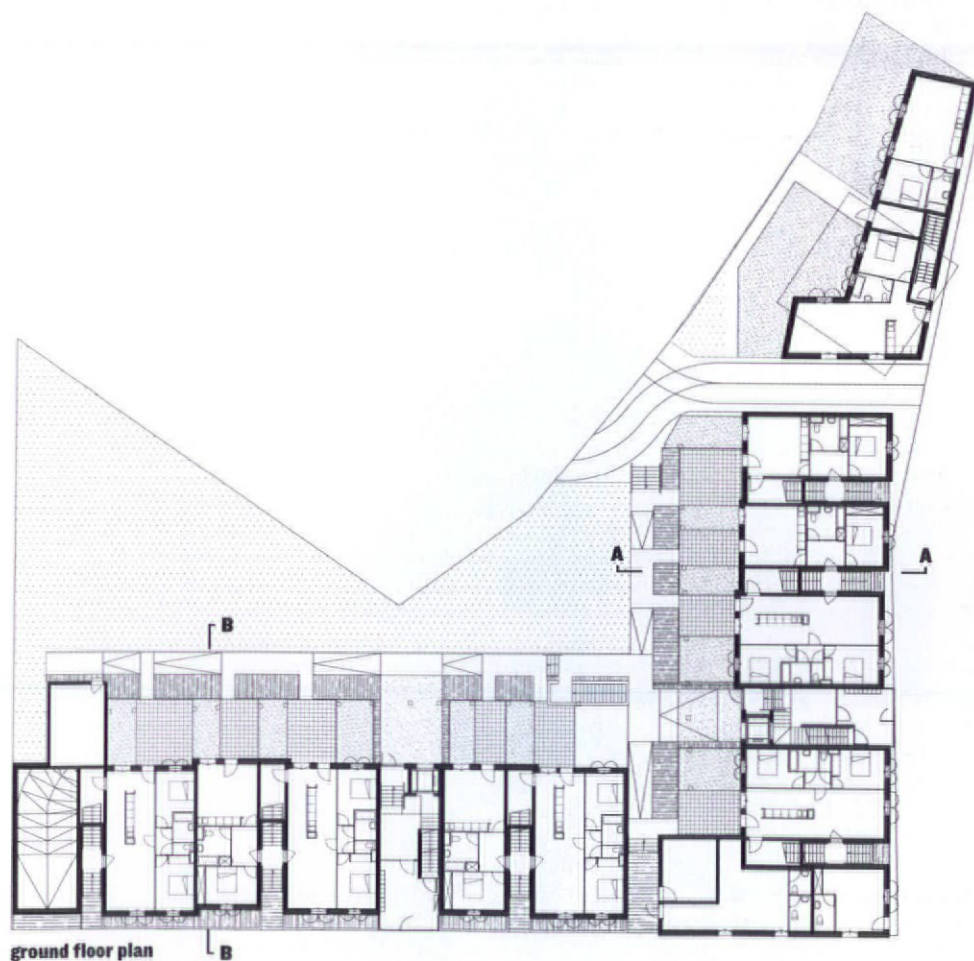
and Lacaton & Vassal, AR January 2012) have tried to challenge this, but François opted to stick to the *cahier des charges*. He did, however, persuade the mayor of Champigny to change the planning regulations for this sector of the *commune* so that he could build up to the street line and rise to 21 metres instead of the original limitation of 15 metres.

To a Modernist diehard, this project would presumably come across as a slightly retrograde, conventional building type that has been given an unnecessary and kitsch wrapping. A less-stringent functionalist might concede that François's formal manipulations disguise the bulk of what would otherwise be rather forbidding seven-storey blocks. But if you subscribe to the Postmodernist viewpoint that style and content are inextricably linked, François's Champigny buildings send out a clear message of intent. The estate that surrounds it proclaims, with its identical blocks of identical apartments, the socialist ideal of egalitarianism – everyone is housed in the same way because no one is better than anyone else; relentless anonymity as the great social leveller.

Champigny was and still is a communist municipality, but the ideological expression no longer follows Soviet models: here we have three French housing archetypes – the individualist (but today often subdivided) townhouse; the highly individualist bungalow with garden; and the old collective social-housing model – that are piled up together on an equal footing, in a project that attempts to reconcile, through its form and organisation, the individualised and the collective.

Paradoxically it aims for consensus through shock tactics; but once the initial surprise has dissipated, it seems as if, collided together in this manner, these three beautifully simulated styles cancel each other out to become no style – which is one way of responding to the problem of dealing with no place.

third floor plan

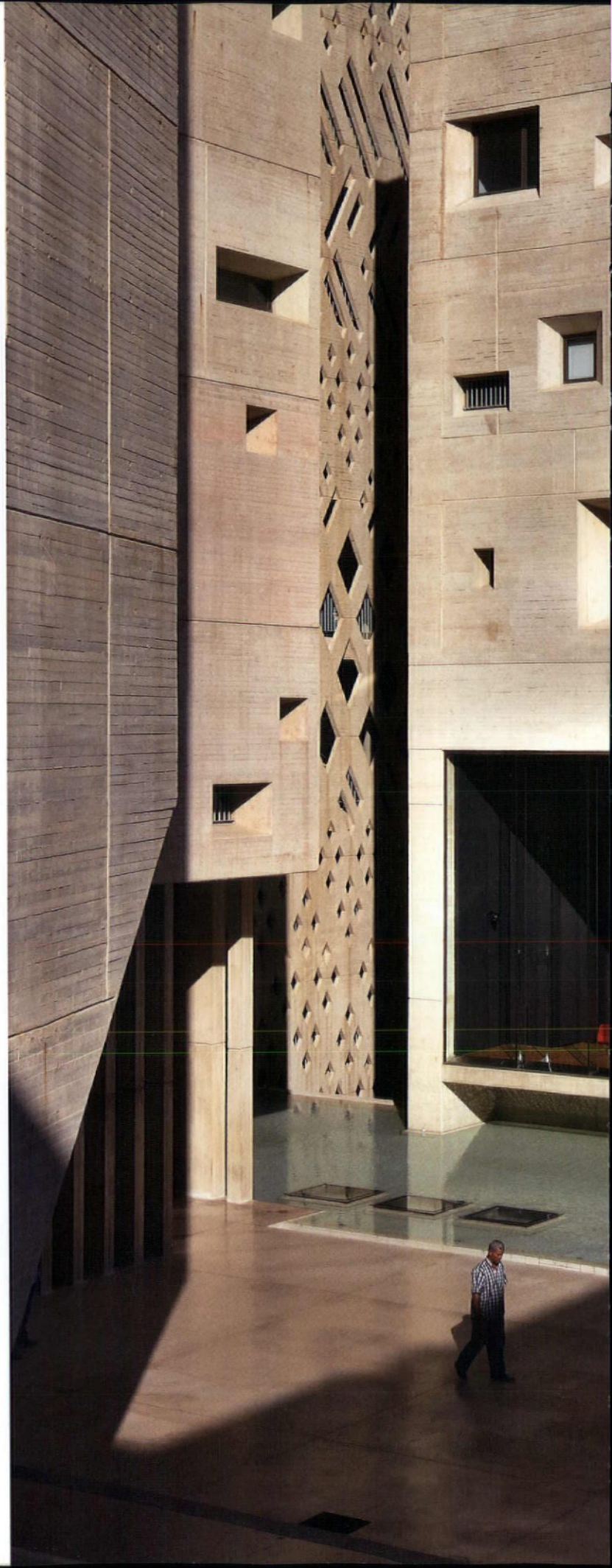


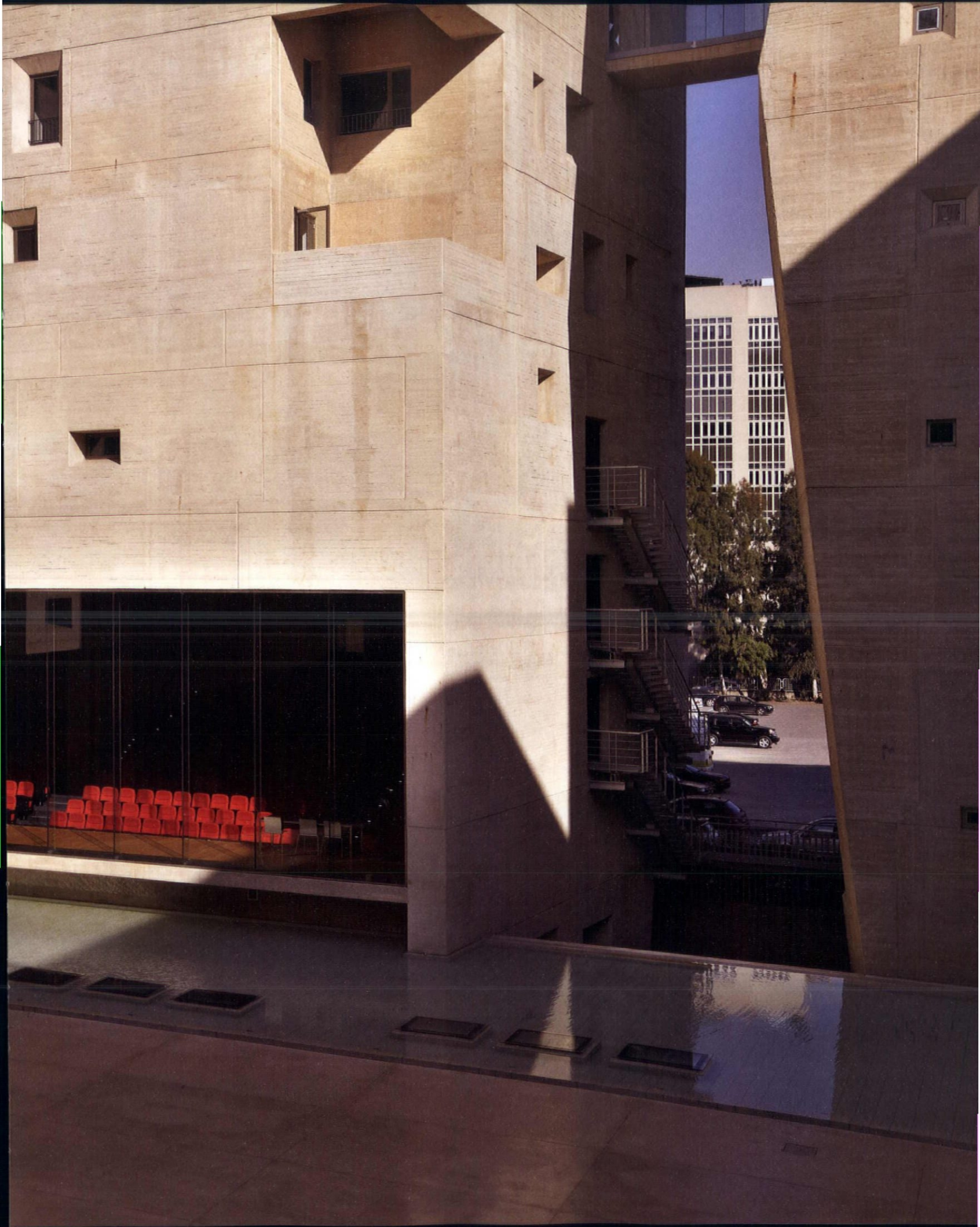
ground floor plan

**Saint Joseph
University,
Beirut, Lebanon,
Youssef Tohme
and IO9
Architectes**

Behind its austere concrete exterior, this university in Beirut recreates an idea of Lebanese public space in a city still healing after war

CAST OFF THE PAST





KARINE DANA

Lebanon is a narrow strip of land between the Mediterranean and the mountains, little more than 200 kilometres long and roughly 50 kilometres wide. A highway running north to south is the main arterial road; it looks like an American commercial strip. This comparison epitomises how the territory is seen today: as a succession of colliding opposites, a collage.

When the civil war ended in 1990, the political system fell apart, so the interests of individual religious groups, communities and extended-family clans have grown dominant. There is no broadly-conceived urban planning.



Saint Joseph University, Beirut, Lebanon, Youssef Tohme and 109 Architectes

1. (Previous spread) the monumental concrete walls are softened by thoughtful detailing 2 & 3 (opposite). The building's creation of brutal urban blocks is mitigated with patterned excisions in the facade.

Frenzied construction is everywhere, especially in suburban and mountainous areas unaffected by the war. The coastline is almost completely built up in places.

The conditions for construction projects are exceptional: there are no public tenders, no state-promoted housing policies – and no rules without exceptions. All that matters are land values. Construction is entirely dominated by large British firms responsible for both the off-the-shelf architecture and the large showcase reconstruction projects. Local architects have little chance to grow and develop. Their work is mostly limited to villas for rich private clients.

A handful of architects nevertheless seek to draw upon the thrilling architectural legacy of the 1950s and '60s, and to reinvigorate a discourse on architecture and urban design that had all but fallen silent in Beirut. This is especially true of Pierre El Khoury, Bofill student Nabil Gholam and Bernard Khoury (the last two trained abroad and opened Beirut offices years ago). Their works represent a profound, sometimes metaphorical or symbolic engagement with the experience of war.

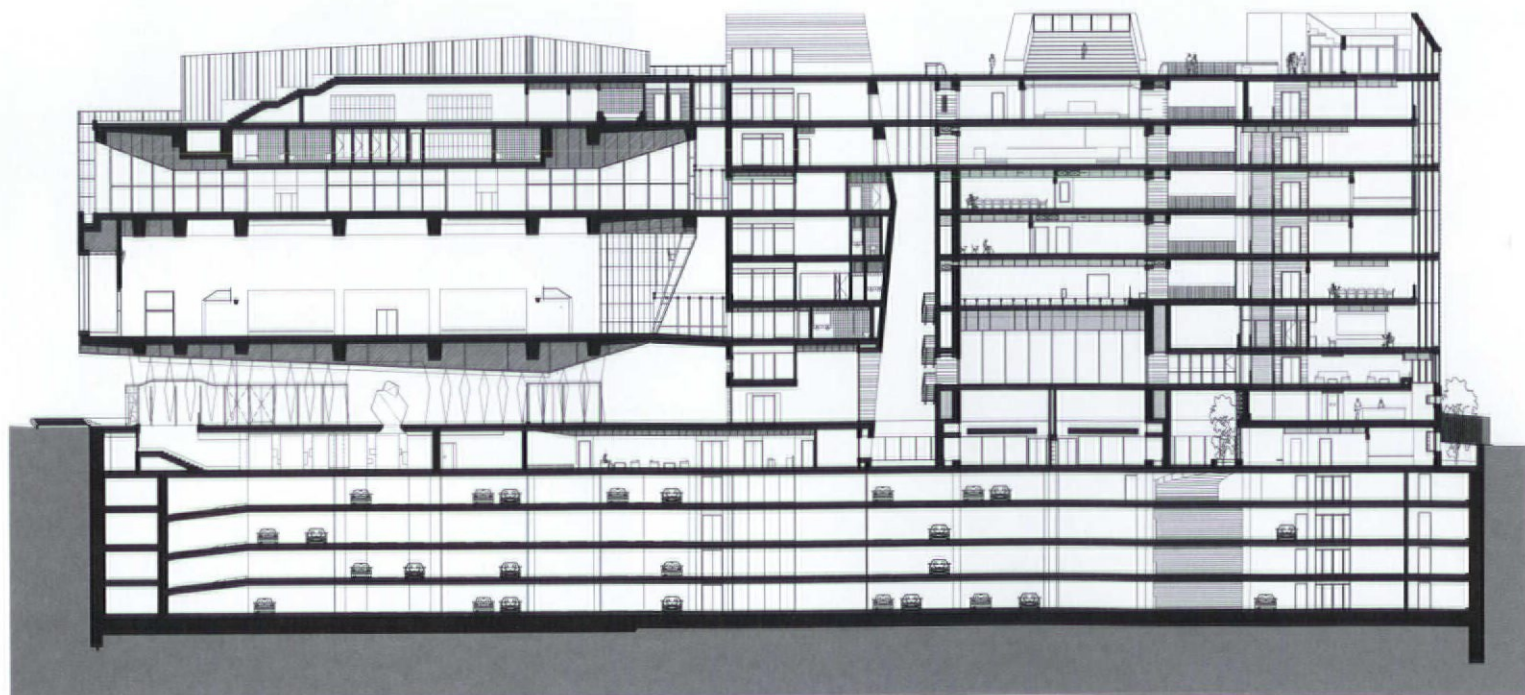
This group also includes Youssef Tohme, who has studied and worked in Beirut and Paris; but this project, his debut, has entirely

different dimensions of scale and scope. For Tohme, Lebanon is a cosmos of almost solely reflexive responses to external stimuli: destruction, rebuilding and isolation. His conception of Lebanon is of a country that has grown through fractures and scars.

In 2004, with Lebanese practice 109 Architectes, he led the design team of the new building for Beirut's Saint Joseph University. The project's bold design, its unusual internal organisation and idiosyncratic Brutalist expression, initially elicited sceptical reactions from the client and the contractors. But he eventually won them over by integrating the city into the project, extending public space vertically, and rationally arranging services in the lower levels (including a four-storey underground garage).

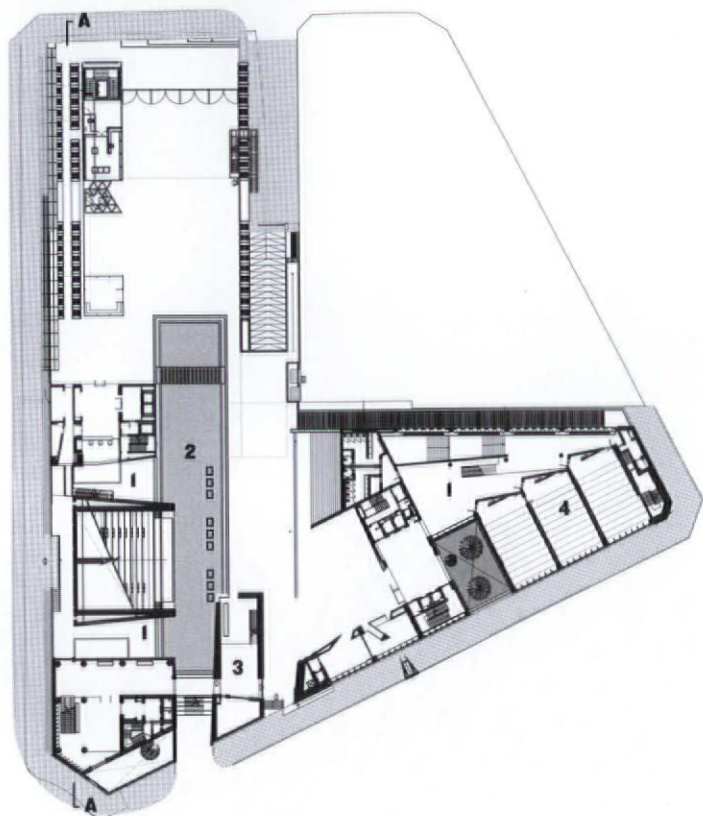
'Architecture has an especially precarious status here,' says Tohme. 'You must be careful, and always use clever tactics: show restraint, assert oneself, talk, say nothing. I fear the new generation of architects, trained abroad, will simply import ready-made images. We must act more prudently, especially now that Beirut is being built anew. In contrast to other cities, Beirut's identity is very fragile.'

Tohme uses the USJ campus project to pursue key issues explored in his other projects: how can emptiness be formulated



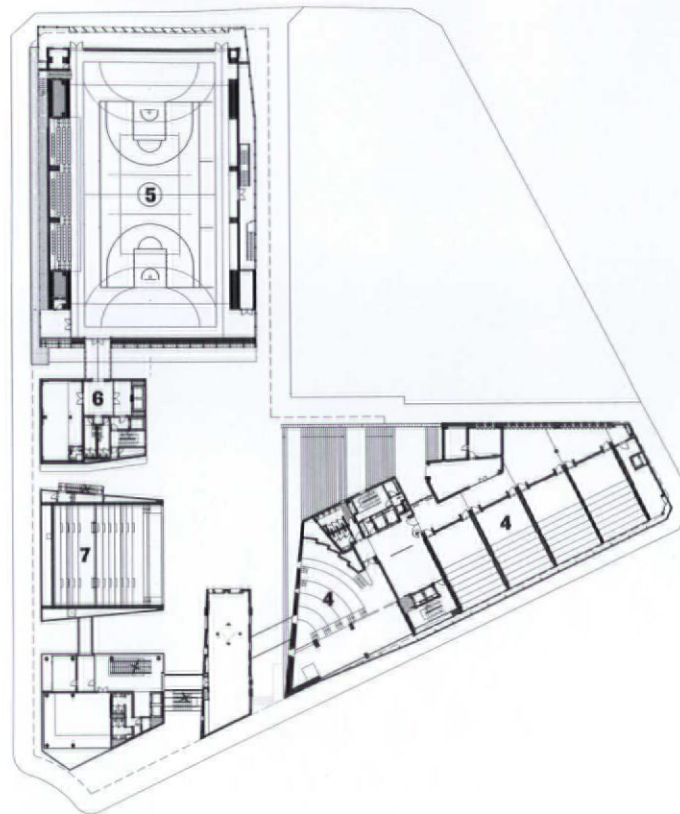
section AA





ground floor plan

**Saint Joseph
University,
Beirut, Lebanon,
Youssef Tohme
and IO9
Architectes**



second floor plan



architecturally? What determines the relationship between people and built enclosures? Can different functions be superimposed? Additionally, something unexpected – an almost, a maybe – is a common element in his designs. Tohme wants to take risks. The same is true of the material he selected for the USJ project: in-situ concrete; a substance that is both ambivalent and enables everything. 'I use concrete to pose questions – not as a medium to obtain a certain form or aesthetic.'

USJ's Campus of Innovation and Sport sits directly on the old demarcation line that divided the city during the civil war into the Christian east and the Muslim west. The building complex appears monumental and open at the same time. A total of 60,000 sqm of usable floor area is packed onto a 6,000 sqm site, which, though built up to its edges, still manages to create new urban spaces. It is the opposite of a freestanding building.

In the middle of the high-security diplomatic quarter of the Rue de Damas,

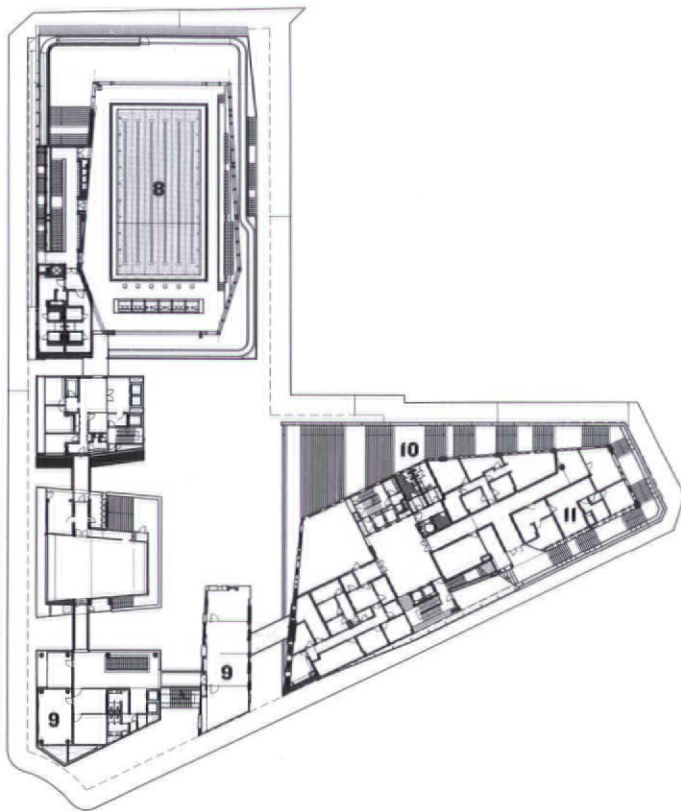
where nothing of the old urban structure survives, the building achieves autonomy without appearing monolithic. The deep recesses and rough edges incorporate the heterogeneous architecture of the immediate neighbourhood into the design. The university also required areas for variable use, and themes of appropriation and encounter are addressed in the 'empty space', an attempt by the architect to experiment with public space and ask what togetherness could look like in everyday terms.

In Beirut, this concept of public space can be read as a form of resistance, as the city effectively lost its public places as a result of the civil war. For Tohme, it is fundamentally important to address the continuing repercussions of this loss through architecture. In a society where all space is privatised, where the state has no control whatsoever any more, and where individual needs are the sole measure of things, how can one reflect on the basic requirements of a community?

Tohme places a public space at the heart of the campus. Here, on the border of interior and exterior space, an unusual sense of peace dominates: the otherwise ubiquitous noise of the city can only be heard in muted tones. The court continues upward by means of an exterior staircase, designed to be wide enough for people to sit undisturbed upon it. This leads to the roof terrace, where you can stroll, play sports, talk in peace, or simply hang out – a place for everything, open to all.

This three-dimensional public zone can be seen as a model for a spatial continuum without barriers. The opportunities for interaction and reflection this offers are precious in a city still traumatised by the past. Tohme wants to encourage contemplation of the principle of non-exclusion. Volumes intersect, compete with one another, and/or overlap. A complex structure emerges, one that perhaps comes close to a new form of *libanénité*, of being 'Lebanon'.

'Working out such a spatial mood is a clear alternative to the obsession with architectural



sixth floor plan



roof terrace plan

- 1 foyer
- 2 ornamental pool
- 3 café
- 4 lecture rooms
- 5 gymnasium
- 6 changing rooms
- 7 large auditorium
- 8 swimming pool
- 9 meeting rooms
- 10 grand staircase
- 11 administration

‘In a society where all space is privatised, where the state has no control, and where individual needs are the sole measure of things, how can one reflect on the basic requirements of community?’



style that occupies international architecture,’ says Tohme. ‘The architectural output in Lebanon has become ensnared by questions of a formal nature and of superficially symbolic importance. The question of the spatial effect seems more fundamental and real to me. It is about the sensory experience, about the creation of a system of references, a system of emptiness resulting from the war. So I prefer working with the empty space than making purely visual stipulations. It is a direct expression of freedom.’

The relatively small lot sizes and the great importance the architect attaches to public space have informed the campus’s vertical organisation. As if one had thoroughly shaken up what was originally a monolithic block, the building is comprised of three parts that are, in turn, further divided into smaller units and interconnected via footbridges.

The first block, to the south, contrasts starkly with the others due to its facade cladding of lightweight polycarbonate panels. The block contains stacked sports facilities:

on the ground floor is an open space, above which is the gymnasium, and above that the swimming pool. At the very top, on the roof, is a basketball court. In the second block, above the glazed auditorium and the café on the ground floor, are a music hall and seminar rooms, as well as a chapel at the very top. The ground floor of the third block contains the entrance foyer and a large lecture hall. Above these are the library and seminar rooms, a reading room and a rooftop restaurant.

The complex organisational structure, in which uses are repeatedly superimposed to create tensions between them, follows a constructive logic that deviates entirely from conventional layouts. There is no discernible pattern in the system of loadbearing walls and columns – with the possible exception of the grid in the lecture rooms. It seems as if the functional programme has been assembled into a seemingly endless spatial form that could just as well have already existed before. This impression – that the USJ might have always stood here – is reminiscent of the

4. (Below left) broken volumes within an L-shaped plan interact with the heterogeneous urban fabric of Beirut

Brutalist architecture of Jacques Kalisz, or Lina Bo Bardi's SESC Pompéia in São Paulo.

Precisely because the individual volumes cannot be read in the untreated in-situ concrete of the exterior facades, you get the impression of a continuous public space. In Beirut, where everyone swears by natural stone, exposed concrete is regarded as *materia non grata*. However, the solid concrete walls are slit, pierced and broken up, thus putting customary readings to the test. Here, the concrete becomes a material of ambivalence, a building material for a cast landscape that refuses to give the viewer even the slightest hint of functional assignments. The architects have tested the limits of formwork and casting techniques, making us aware of the craft and technique used to form this supposedly industrial material. That these concrete walls, reaching heights of up to 25m, were cast in-situ at all is a testament to the virtuosity of a local construction company. The south-east facade looks like it has been riddled with bullet holes. It is an intentional gesture, very close to aestheticising the horrors of war, but visually compelling nonetheless.

This principle of experimentation and the lack of perfection from working in-situ also relates to the material itself. The exposed

concrete does not have a consistent colour throughout. In some places it tends toward pink, as the quarry that supplied the white sand ceased operations during the construction and the sand then imported from Cyprus had a significantly more reddish pigment. For Tohme, the resulting variation in the colouring reflects the economic reality in Beirut, which can always change in an unforeseeable way. 'I have the feeling that with prefabrication, much of the emotionality of building is lost', says Tohme. 'That particularly becomes apparent at a large scale. The in-situ concrete tells much about Lebanon and about the conditions that prevailed during the construction.'

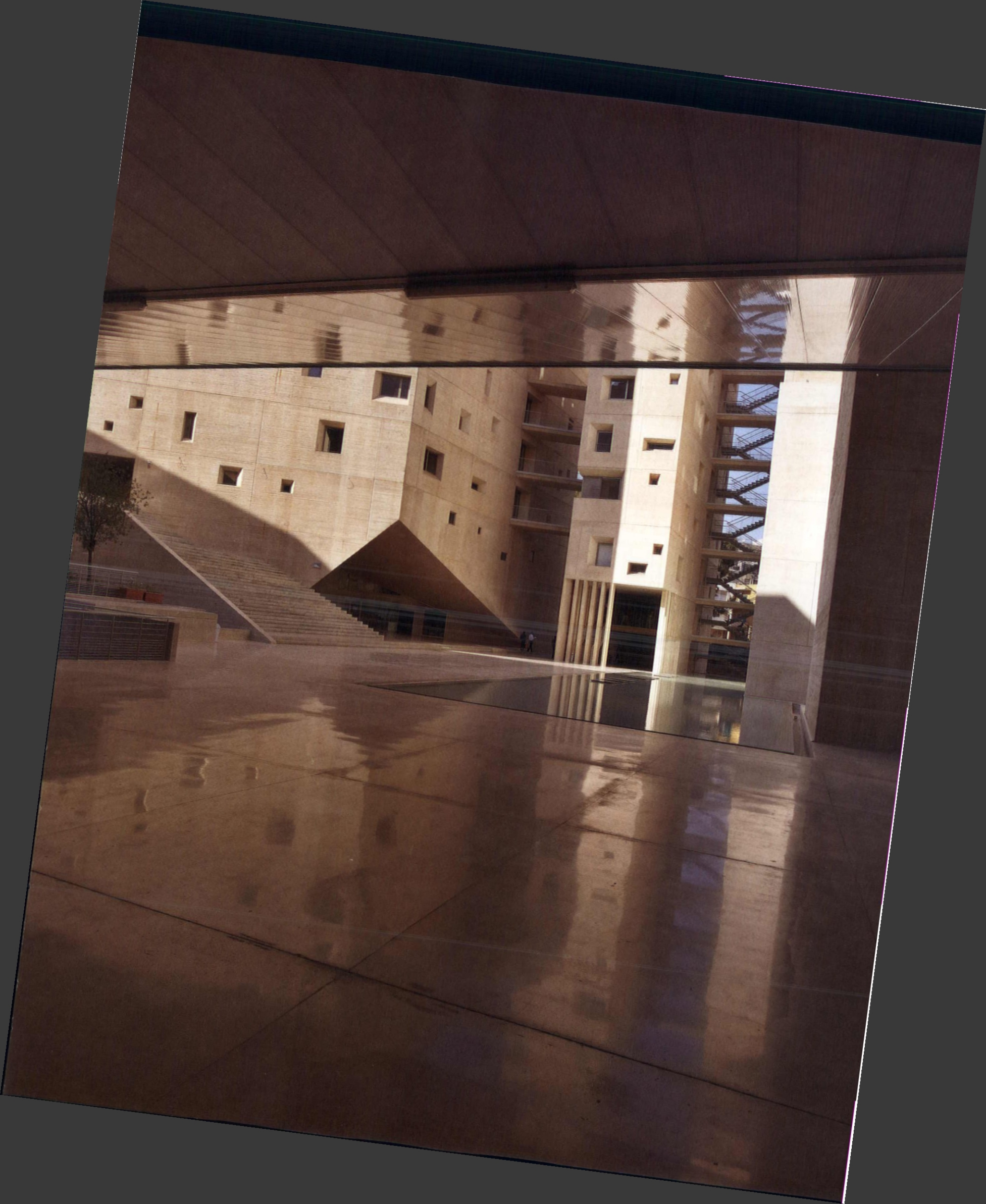
Memories of the civil war and architecture are constant companions. This building complex for a post-traumatic Beirut contradicts Yona Friedman's programme for postwar Berlin, in which trauma would create a new awareness of the uselessness of the static. For Youssef Tohme, the war has shown that the static and durable are not obsolete. The fundamental aim of his investigation is to discover how our world could succeed in enduring. Seen in this light, his architecture in the heart of the city is a defiant argument against war – and also against the current policy of reconstruction.

**Saint Joseph
University,
Beirut, Lebanon,
Youssef Tohme
and IO9
Architectes**

5. A broad stair leads from the public space of the courtyard to the terrace on the roof, creating a multi-dimensional zone for interaction and rest
6. (Right) the courtyard invites entry through a low-ceilinged passage

Architect
Youssef Tohme
Photographs
Joe Kesrouani

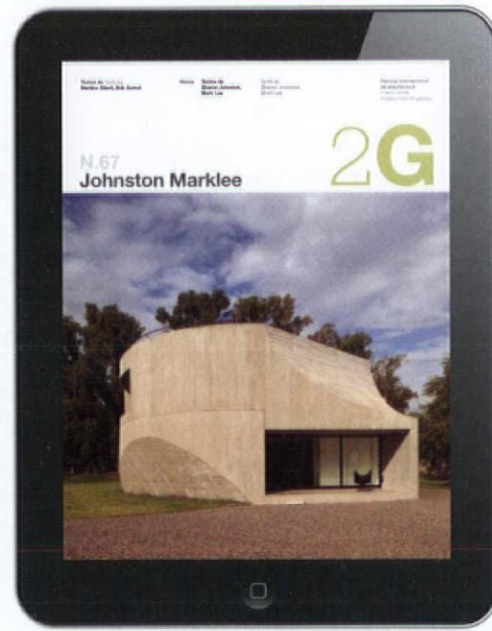




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HANGING GARDENS OF SACRAMENTO

Two office buildings in Sacramento, California — the Bateson Building, completed in 1978, and the Lincoln Center in 1986 — take different approaches to environmental concerns, using concrete, organic materials and an unusual air-conditioning system

ETIENNE LOUW



In response to the oil crisis of the 1970s, California established a set of energy-efficiency standards for buildings, and architects began experimenting with low-energy buildings starting at a residential scale. Sim Van der Ryn was a pioneer in this 'green design' movement, and when he was appointed California State Architect in 1975, an opportunity to take these ideas to a larger public was presented. Van der Ryn and his boss, Governor Jerry Brown were admirers of Gregory Bateson's *Steps to an Ecology of Mind* and EF Schumacher's *Small is Beautiful* (both published in the early '70s). Van der Ryn was also significantly influenced by the Integral theorists.¹

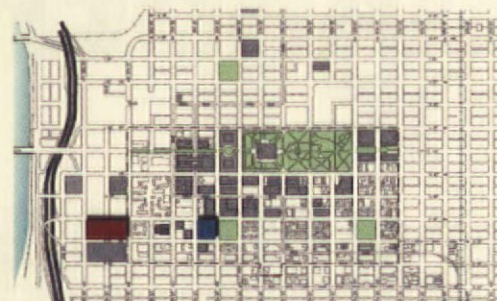
The first large-scale building to embody what we now call sustainable architecture was a state office building in Sacramento completed in 1978, named after Gregory Bateson and designed by a team led by Van der Ryn and Peter Calthorpe. Incorporating ideas radical at the time, in sustainable design circles there has been a vague awareness that its various energy-saving systems were not used for long, although it was unclear why. Just a couple of blocks away, a less published office building – the Lincoln Plaza Building

for CalPERS (The California Public Employees' Retirement System) – was completed in 1986 by Len Blackford of local architectural firm Dreyfuss & Blackford. It employed similar ideas to the Bateson Building, making the two structures ideal subjects for a double revisit.

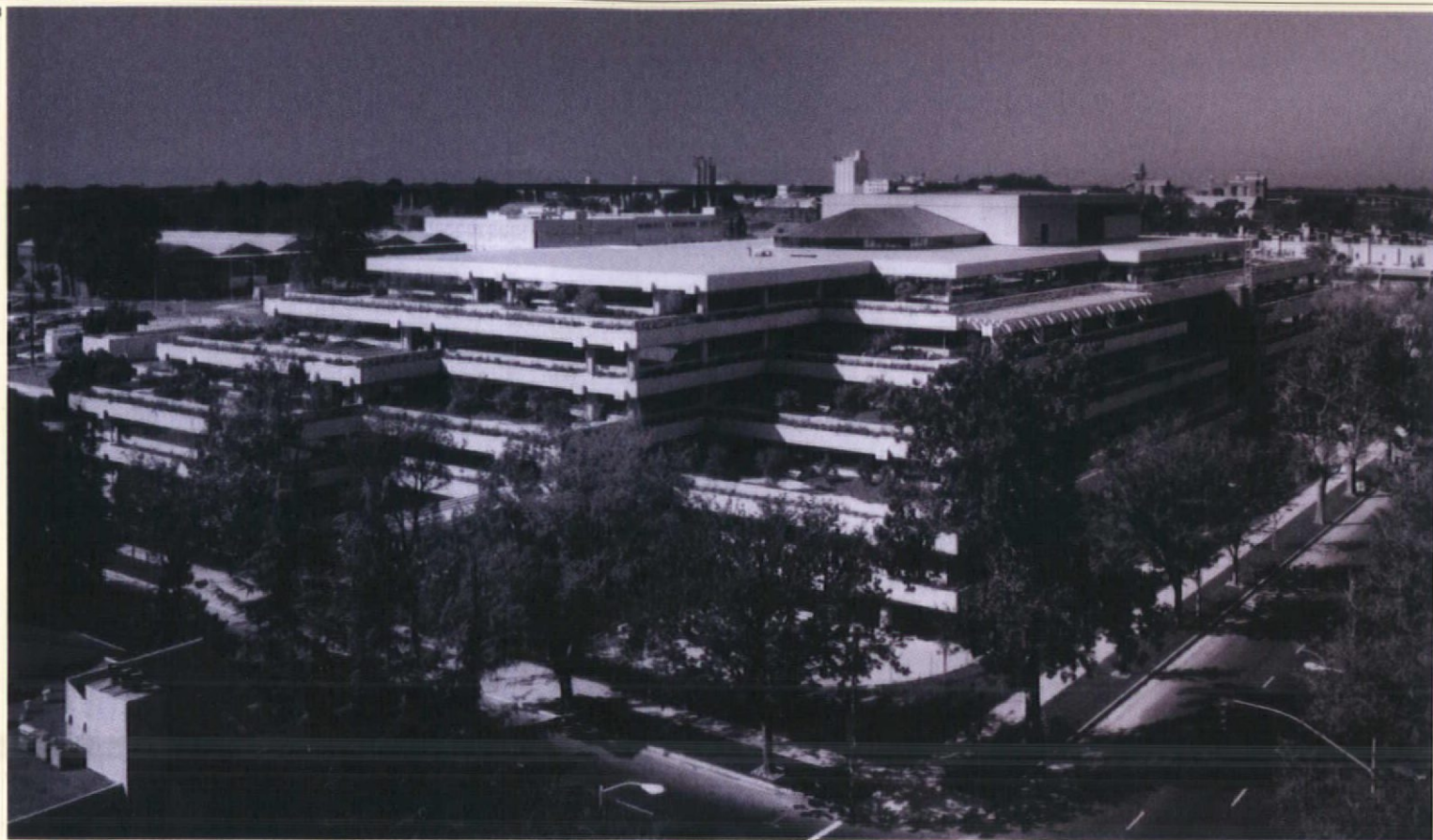
Both had to deal with the specific environmental conditions of Sacramento, which is hot and dry in summer, and has a relatively high water table making subterranean parking deeper than one storey uneconomical. Consequently, the Bateson Building has no on-site parking, Van der Ryn intending the office employees to use public transport instead. Lincoln Plaza, in contrast, has a sunken level of parking reached by ramps with pedestrian bridges providing access at street level.

Both buildings have rectangular plans that effectively fill blocks of the city grid – 25,000 sqm on one city block for Bateson, and 50,000 sqm on two city blocks for Lincoln Plaza – and both are shielded from the streets on all four sides with abundant trees. You could say that they share a similar *parti*: however, this was arrived at from two contrasting positions.

1. (Previous page) street view of Lincoln Plaza with horizontal planting merging with street trees. Deep cantilevers shade the continuous office windows and cut off the summer sun angles



city plan: Lincoln Plaza (red) and Bateson Building (blue)



Similar partis, different departures

It is no coincidence that the building Van der Ryn and Calthorpe designed was named in honour of Gregory Bateson. Bateson championed what he called 'the pattern that connects man and the natural world', and Van der Ryn's primary design aim was a 'climate responsive' building that would illustrate the interrelatedness of individuals, societies and ecosystems that Bateson promoted.

In contrast, CalPERS placed more emphasis on the human dimension for Lincoln Plaza. As managers of the state employees' vast retirement fund, they rely on attracting the best and brightest workforce. The point of departure for Len Blackford was to create the best working environment possible. The client conducted a detailed cost-benefit analysis, which concluded that a five to 15 per cent increase in productivity could be achieved by improving interior environmental factors and the psychological qualities of the individual workspaces.² With that goal in mind, Blackford, working closely with departmental heads, concentrated on creating optimal spaces, in both psychological and environmental terms. This 'from the inside-out' design approach is clearly evident in the finished structure.

In the Bateson Building, conventional construction elements interact to perform multiple tasks. The building has an exposed concrete lattice-frame structure providing thermal mass to capture, store and release heat internally in winter months. In summer, the structure is purged of heat by the cooler night air to absorb it internally during the day. Within this exposed concrete structure, aluminium-framed window systems and exposed wood spandrel panels fill the grid. In some areas, the structural grid is exposed both vertically and horizontally in the pergolas and outdoor terraces which break up the edges. To illustrate the interrelatedness of systems, Van der Ryn has expressed the essence of the concrete and wood in an unadorned 'Brutalist' manner. It is unusual to see exposed wood used so extensively on buildings of this period, and along with the surrounding trees (which are approximately four storeys tall), these panels help the building blend into the streetscape.

The facades are handled differently to address their solar orientation. On the east and west facades, motorised bright yellow canvas shades drop vertically from the horizontal concrete beams to keep early morning and late afternoon sun off the glass. The south facade

2. South-west aerial view of the Bateson Building illustrating the rigour of the exposed concrete frame. Mechanically operated vertical canvas blinds protect the western glass exposure, and the lattice frame on the south elevation cuts the southern sun angles. The influence of Herman Hertzberger is evident
3. North-east aerial view showing the stepped-back cantilevers at Lincoln Plaza. The building is camouflaged by planters and a screen of trees



has a horizontal concrete extension of the lattice structure with closely-spaced concrete beams to reduce the glare of the summer sun, while the north facade is unshaded.

The Lincoln Plaza Building, surrounded by a moat of submerged car parking, is reached by pedestrian bridges on three sides. The west elevation has direct street access to loading docks. Even more so than the Bateson Building, Lincoln Plaza disappears behind a green wall of foliage. This is achieved by a dense screen of trees in conjunction with extensive planting on all levels. Generous five-metre cantilevers provide deep shade to almost every facade, and each cantilever has precast concrete panels fixed to the edge of the slab holding a 450mm-deep planter filled with foliage that cascades over the edges and effectively camouflages the building.

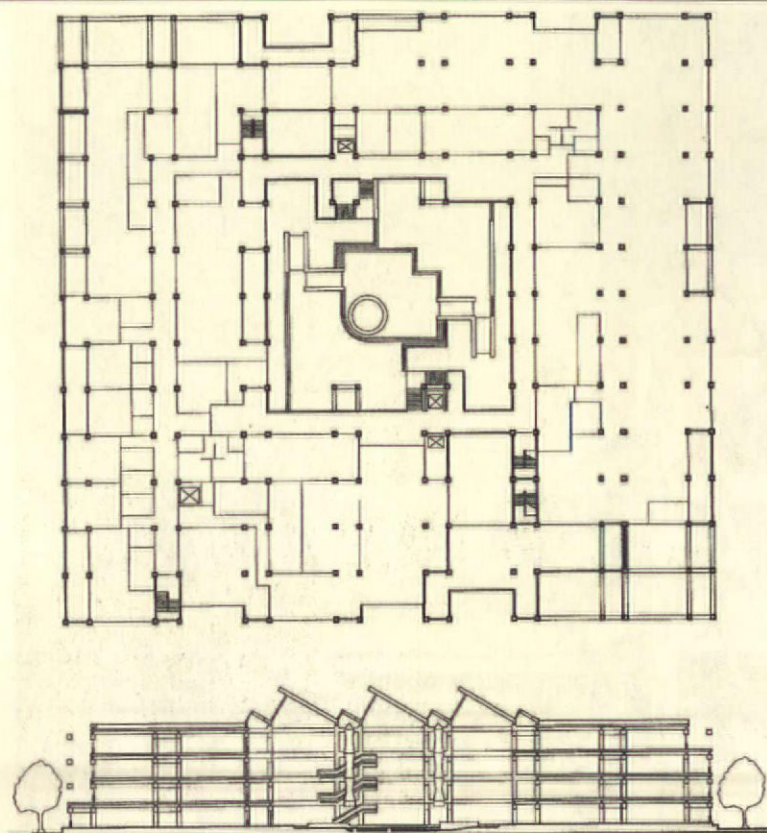
All four facades are handled consistently and, although the depth of cantilever provides a valuable deep recess for sun control, it does inhibit, to some extent, light penetration on the north facade (these cantilevers are also accessible for window and planting maintenance). The deciduous street trees provide additional shade in summer, and allow winter light to penetrate effectively.

The building has a cool and understated elegance. The concrete is well finished and the continuity of the panels provides a horizontality that was commonplace in early '80s office buildings. These stepped floorplates, and the extensive planted roof decks, elicit comparisons with the work of Arthur Erickson in Vancouver. Erickson called concrete 'the marble of our time', and the juxtaposition of concrete and lush planting was regularly seen in his early work. Sacramento has a vastly different climate to Vancouver, and Blackford's Lincoln Plaza is a startling oasis of visual coolness and respite from the hot and dry Sacramento summers.

Energy-efficient ideas

The internal organisation of the two buildings also begins from similar starting points: both have perimeter office space arranged around a central atrium. In the Bateson Building, this is a crucial component of Van der Ryn's 'climate responsive building', with the four-storey unconditioned space acting as 'the lungs of the building'. It is in the design of the atrium that his energy-efficient ideas are manifested and the integration of systems is played out.

4. Bateson Building south-west view with the yellow vertical canvas blinds. The south elevation illustrates the horizontal concrete baffles which are spaced apart to provide airflow but cut the summer sun angles



Bateson Building plan and section

The atrium roof has a sawtooth profile with clear glazing on the north-facing incline, and operable vertical louvres facing south. On the roof, solar panels assist in heating the domestic hot water. General office lighting comprises fluorescent light fixtures placed between acoustic baffles under the concrete soffits, and is supplemented with individual task lighting.

Although the building is linked to the state's central utility plant, which provides steam and chilled water to more than 20 state-owned buildings in downtown Sacramento, the intent was to design a building that would use 80 per cent less energy than would ordinarily be the case.³ This would be achieved by 'pre-conditioning' the air by heating it in winter and cooling it in summer by passing it from the atrium over two 600-ton subterranean rock beds located beneath the atrium floor. At night, air from the atrium would be passed over the rock beds and supplemented and moistened with evaporative spray air washers. In winter, the released thermal mass of the exposed concrete structure together with heat from the central utility plant passed through the rock beds would have the effect of pre-heating the air. In the atrium, vertical canvas tube ducts and fans were installed to prevent stratification by pushing the warm air downwards.

5. Bateson Building detail with exposed concrete, wood, glass and canvas all expressed separately. The deep shadows allow each element to be viewed independently and to illustrate Gregory Bateson and Van der Ryn's ideas of the interrelatedness of societies and ecosystems. Each element contributes distinct and multiple functions to the design

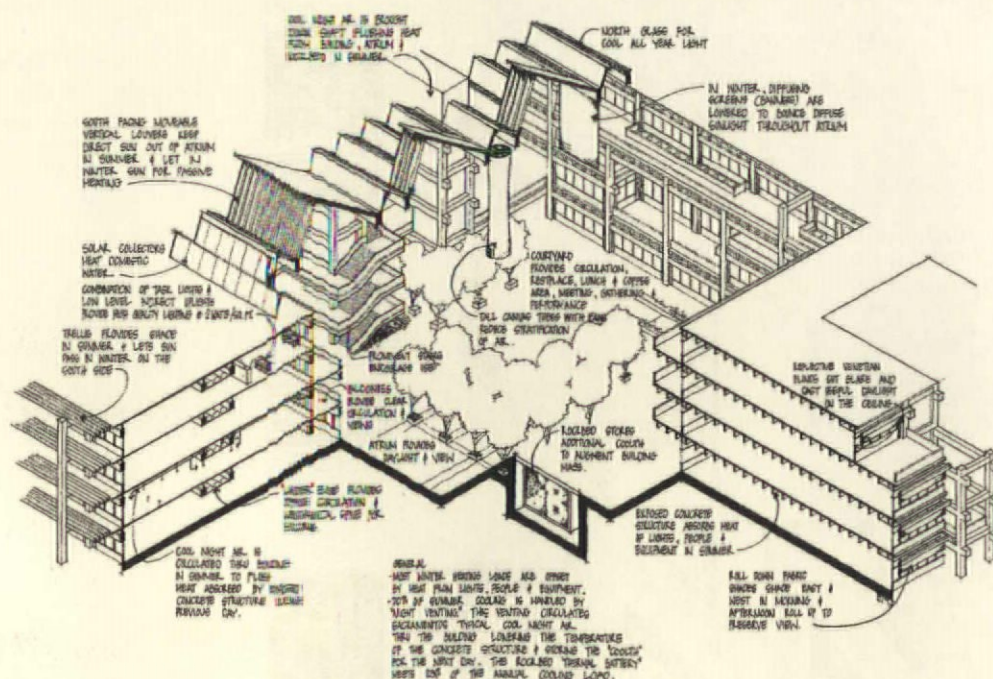


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However, in 1976 a mould infestation in an air-conditioning system led to the outbreak of pneumonia at an American Legion convention in Philadelphia and soon acquired the name 'Legionnaire's Disease'. In 1978 the State of California opened the Bateson Building, and in 1981, a class-action suit on behalf of State employees who worked in the building was filed.⁴ Although no infections could be attributed to the pre-heating and pre-cooling rock bed design, the State deactivated the system soon thereafter, and the building now operates fully off the central-plant piped steam and chilled water system. Reports of occupant discomfort were largely attributable to faulty variable air-volume control boxes that reduced the air supply to occupants. Furthermore, a rushed completion schedule and late installation of fabrics and carpeting containing the irritant formaldehyde caused additional discomfort.⁵

In 2008 the State of California commissioned an infrastructure study which examined the building in considerable detail.⁶ It found that the roof-mounted solar water-heating system was removed mainly because of roof load. The report determined that the possibility of mould together with control considerations was the prime reason for the deactivation of the rock bed as a means to pre-heat and pre-cool the air in winter and summer. In addition, the atrium socks were

6. When the blinds are lowered on the facade of the Bateson Building, the filled-in concrete grid is as striking as a Mondrian under the bright Californian sun



Bateson Building axonometric

disconnected as the atrium is not heated and there is minimal stratification.

The study concluded that the Bateson Building can be repaired, retrofitted and brought into compliance with current codes together with LEED Silver or Gold certification for existing buildings at 20 per cent of replacement cost. In addition, the recommendation includes the reinstallation of the Rock-Bed Thermal Storage System with some modifications. For example, the use of water to cool and add moisture to the air would be eliminated, thereby removing mould concerns. Critically, however, the original design in 1978 was based on a fresh-air ventilation requirement of five cubic feet per minute per occupant, whereas current code requirements are for 15 cubic feet per minute. The atrium cannot be used as a source of fresh air and this increased requirement will increase the heating and cooling loads to be met.

Lincoln Plaza, which covers two city blocks, has double the floor area of the Bateson Building. Its plan is arranged around two major spaces. The first is an enclosed atrium with glazed roof, and the second is an open courtyard adjacent to the cafeteria and auditorium which can also be used as a spill-over space. Overlooking the open courtyard, an extensive outdoor roof garden with significant planting further blurs

the relationship between the building and the trees on the street.

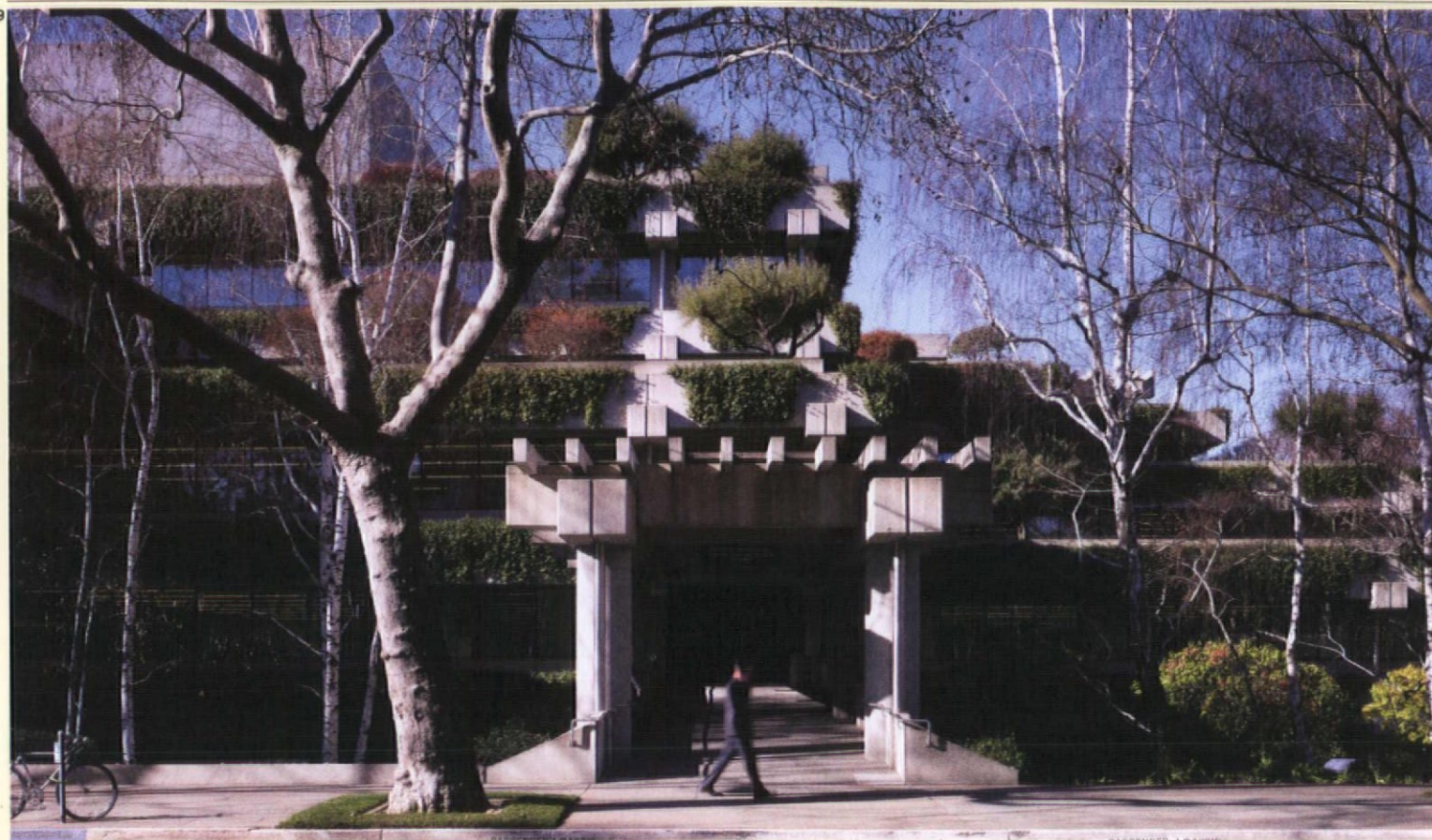
While the Bateson's atrium was intended to play a critical part in the passive heating and cooling of the workspaces, Lincoln Plaza's designers adopted a different approach to the significant challenges of cooling the building in the summer months. Since the project was located in a predominantly residential area, an early decision was made to minimise external noise from cooling towers and boilers. Consequently, a ground source heat pump system was installed. The building condenser water system consisted of a single-pass ground-water cooling and heating system from two wells and then re-injected into the aquifer. With ground water at a consistent 18°C, the building could be pre-cooled prior to summer mornings by using only the well water. As the temperature rose, the heat pumps would kick in. In winter, the heat from the computer room equipment was captured and used to augment the heating cycle.⁷

However, because the ground water contained iron bacteria, the filter screens needed cleaning and flushing with chemicals. Since this was an open loop system, the compliance cost for chemical discharge became more onerous. Along with a rise in general maintenance costs, this led to a decision being made – after 22 years of



7 & 8. Hanging fabric tubes in the atrium of the Bateson Building were intended to counteract stratification of the air temperature. In practice, this turned out not to be an issue, and the casual observer is left wondering if they were meant to function more as legible signs of the designer's concerns vis-a-vis systems and 'energy flows'. The circulation walkway has in some places compromised the privacy of the office workers on the internal edge. Employees have constructed ill-placed partitions and window coverings, and as a result, the atrium daylight source has been blocked





successful operation – to abandon the system and replace it with conventional roof-mounted chillers and boilers. Replacing the open-loop system with a closed-loop system requiring multiple wells would have been a more costly solution.⁸

The thermal mass of the building is significantly increased through extensive landscaping which covers approximately 14,500 sqm, with an annual maintenance cost of approximately \$13 per sqm. This allows for significant periods of time during normal operation when a combination of outside air from the heat exchangers and recirculation of inside air can maintain desired temperatures without input from chillers or boilers. The building's HVAC, pumps, lighting, etc are controlled by a sophisticated digital energy management system (EMS.) Thermostats are set by the EMS, and occupancy sensors switch lighting off if there is no movement in a particular space, although entrance areas remain lit (after-hours workers can turn on extra lighting as necessary).⁹

Interior workspaces

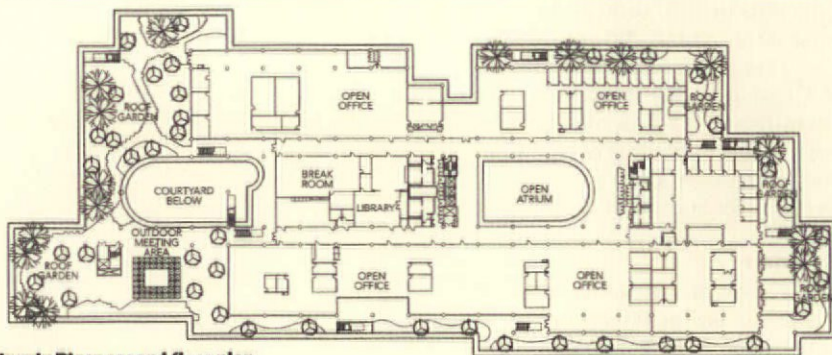
An occupant survey at the Bateson Building revealed general satisfaction with the work

areas. However, thermal control appeared inadequate to more than 50 per cent of respondents, and general workspace lighting levels were considered poor by approximately 30 per cent of respondents. The survey revealed that a large majority viewed the atrium as a positive feature and that it enjoyed individual and departmental use. In summer it was particularly well used, but in winter a majority found it too cold, with inadequate lighting levels, particularly on cloudy days.

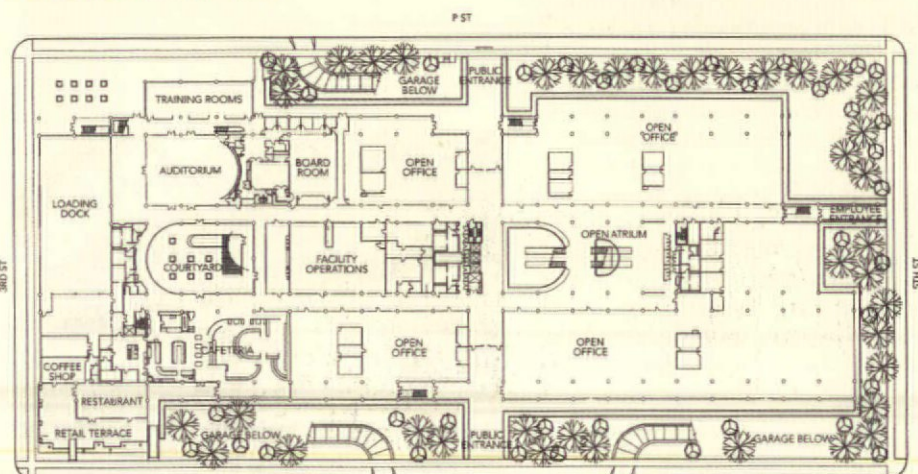
By implementing the Infrastructure Study Report's recommendations, occupant concerns regarding thermal comfort can be addressed. Some ill-considered interior space planning changes have compromised light penetration from the atrium into surrounding office spaces. When the the motorised blinds are lowered on the east or west facades, natural light is reduced yet further, making the building more reliant on expensive artificial lighting.

Fabric blinds that achieve the right balance between light penetration and heat transfer could easily be installed, and general lighting levels can be improved quite simply by painting the concrete soffits which have





Lincoln Plaza second floor plan



Lincoln Plaza ground floor plan

9. Footbridges cross a moat of submerged parking that surrounds the Lincoln Plaza Building. The setbacks creating rooftop plazas are clearly visible

10. An outdoor dining spaceframe on one of Lincoln Plaza's roof decks
11. Lincoln Plaza north-east aerial view. The erosion of the corners and the generous setbacks on each floor provide the workers with easy access to outdoor spaces for relaxation, lunches or informal meetings.

Today, conventional cooling units occupy the roof (compare with Image 3)



dulled with age and reduced the intensity of reflected general lighting levels.

In contrast, Lincoln Plaza has benefited from closer attention being paid to employee comfort and flexibility requirements. All office spaces have raised access floors to enhance flexibility, and are used for power, data and telephone networks. Indirect lighting, task lighting, glare-free general lighting, acoustic workstation panels, flexibility in workstation configuration and visual connection to outside light and greenery all contribute to a workspace environment that has consistently received praise from employees.

Hard-walled spaces are located in the internal core of the building, and open office spaces are visually linked to the exterior greenery of the building. Meeting rooms are also confined to the 'inboard' edge of the open office spaces, and arranged at right angles to the window wall to maximise external light penetration. Interior office spaces have been well managed and the architects continue to be engaged in designing all changing spatial departmental requirements. Generous outdoor green spaces on each level give employees the opportunity to conduct group meetings, or just to enjoy the surroundings.

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This might be a more common approach today, but 30 years ago in the era of utilitarian office space, it was quite far-sighted. It has borne fruit – employees are reluctant to leave the building and relocate to the newer CalPERS building completed a few years ago. There is no doubt that the quality of light, the generosity of outdoor green space and the mature way in which employee needs were addressed, all play a significant role in this respect. Over a period of time, all buildings undergo interior reorganisation of workspaces. Here it is evident that Lincoln Plaza has controlled and managed this aspect very successfully by retaining Dreyfuss & Blackford to design the changes according to the original organising principles. On the other hand, the Bateson Building is subject to different contracting protocols, and continuity in design input is harder to achieve.

In 1978 the Bateson Building cost \$80 per sqm. The Lincoln Plaza Building cost \$160 per sqm in 1986. But taking inflation into account, the cost of the Bateson in 1986 dollars would be \$137 per sqm. The Lincoln Plaza Building has a subterranean basement, extensive landscaping and superior interior finishes. That said the two building have very similar basic cost structures.¹⁰

Through the energy-efficient measures designed at the Bateson Building, Van der Ryn was expecting an 80 per cent reduction

in energy usage per sqm over 20 to 30 years to pay for the building. The State did not test this hypothesis, and the abrupt deactivation of the Rock-Bed Thermal Storage System enabled critics to rather unfairly dismiss the building's energy reduction ideas outright, even though they had not been given an adequate chance to prove their viability.

Maintenance and comfort

The limited exterior material palette on both buildings does make ongoing maintenance rather efficient. On the Bateson Building, the only areas where exterior deterioration has occurred are in the sealants between concrete, wood and aluminium, and the waterproofing of outdoor terraces. Modern-day sealants and waterproofing materials are vastly superior to the products around in the '70s. Notwithstanding these advances, the original materials have stood up well over the 35 years since installation. Despite extensive raised plazas and landscaping on Lincoln Plaza, there have been relatively few waterproofing issues. In fact, the landscaping has largely protected the waterproofing from the degradation associated with heat and sunlight. With almost no direct sunlight on the windows, sealants have held up well.

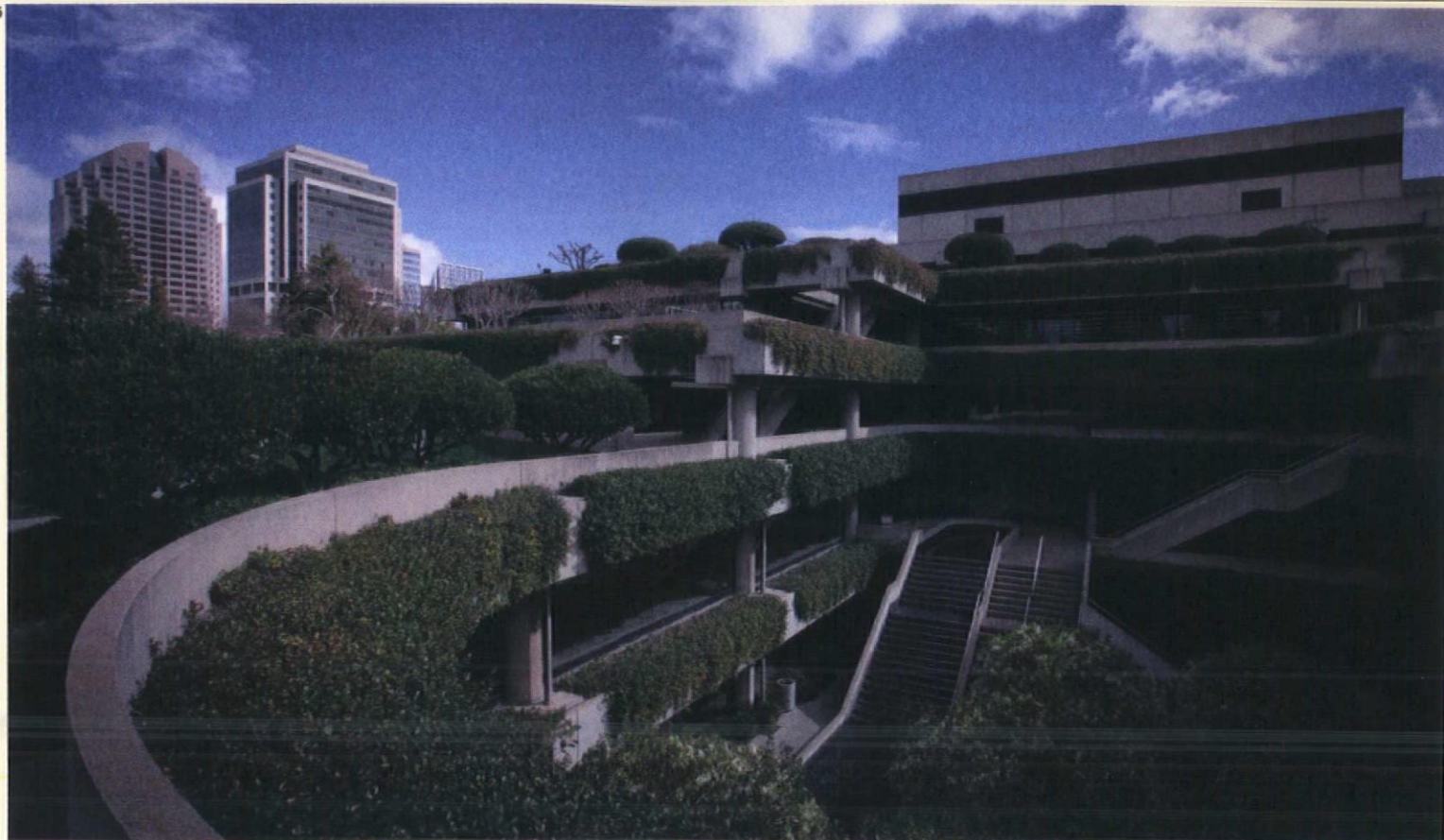
Both buildings merge into the Sacramento streetscape with an air of easy conviviality. The Bateson Building uses materials – those



12-14. Lincoln Plaza main entrance atrium. The cantilevered exterior planting beds are replicated in the interior. The circulation walkways are generous and the interior partition layout has not stopped light penetrating the offices 15. Lincoln Plaza main exterior court. The semicircular form and stair mirrors the internal atrium. The auditorium and cafeteria open onto

this court. Abundant planting together with a water feature provide shade, sound and an evaporative cooling effect. Surveys revealed that employees find little reason to leave the building as all work and recreational amenities are provided. In fact, many employees resisted being relocated to the new CalPERS LEED Platinum building completed a few years ago





wood-panelled spandrels – to make the connection between the facades and adjacent trees. Likewise, Lincoln Plaza uses extensive rooftop and edge planting to achieve the blurring of building and street trees, so becoming an integral part of nature.

Besides these similarities, the two designs have a starkly different ethos. The Bateson Building sought to make construction elements 'multi-functional', which was a buzzword in the '70s. For example, the concrete beams act as structure, heat-storer, pergola, and a device from which to hang canvas sunscreens. 'Energy-flows' are made evident in the Bateson Building, with the canvas tubes in the atrium drawing immediate attention to an element which has undeniable sculptural qualities and at the same time raises an immediate question as to their function. It does come to mind that the health and comfort of the occupants might have played a secondary role in the resolution of the energy-saving methods attempted.

On the other hand, Len Blackford explained that the design approach on Lincoln Plaza was centred on the individual and the creation of a comfortable workspace. For example, the structural grid was driven by

making the spaces relatively column-free for flexibility, but also to ensure that no workspace was far removed from a source of natural light and a visual connection to greenery. The organisation of the plan also provides broad corridors that lead to outdoor rooftop green spaces. Whether it is a visual connection with the outdoor street trees, or access to the abundantly planted roof decks, the natural world is always easily accessible to employees.

Much of the appeal in revisits lies in the opportunity to evaluate original design hypotheses. Unfortunately, the State of California never tested the Bateson's promise of an 80 per cent reduction of energy-consumption. Nevertheless, research done in 2008 means that the Bateson Building is well understood, and recommendations to reactivate the Rock-Bed Thermal Storage System are welcomed. In contrast, no attempt has been made to measure the employee-centric design approach of Lincoln Plaza, which was supposed to lead to a five to 15 per cent increase in productivity. What is evident is that this revisit reveals the Lincoln Plaza Building to be a relatively little-known 1980s masterpiece deserving of wider recognition.

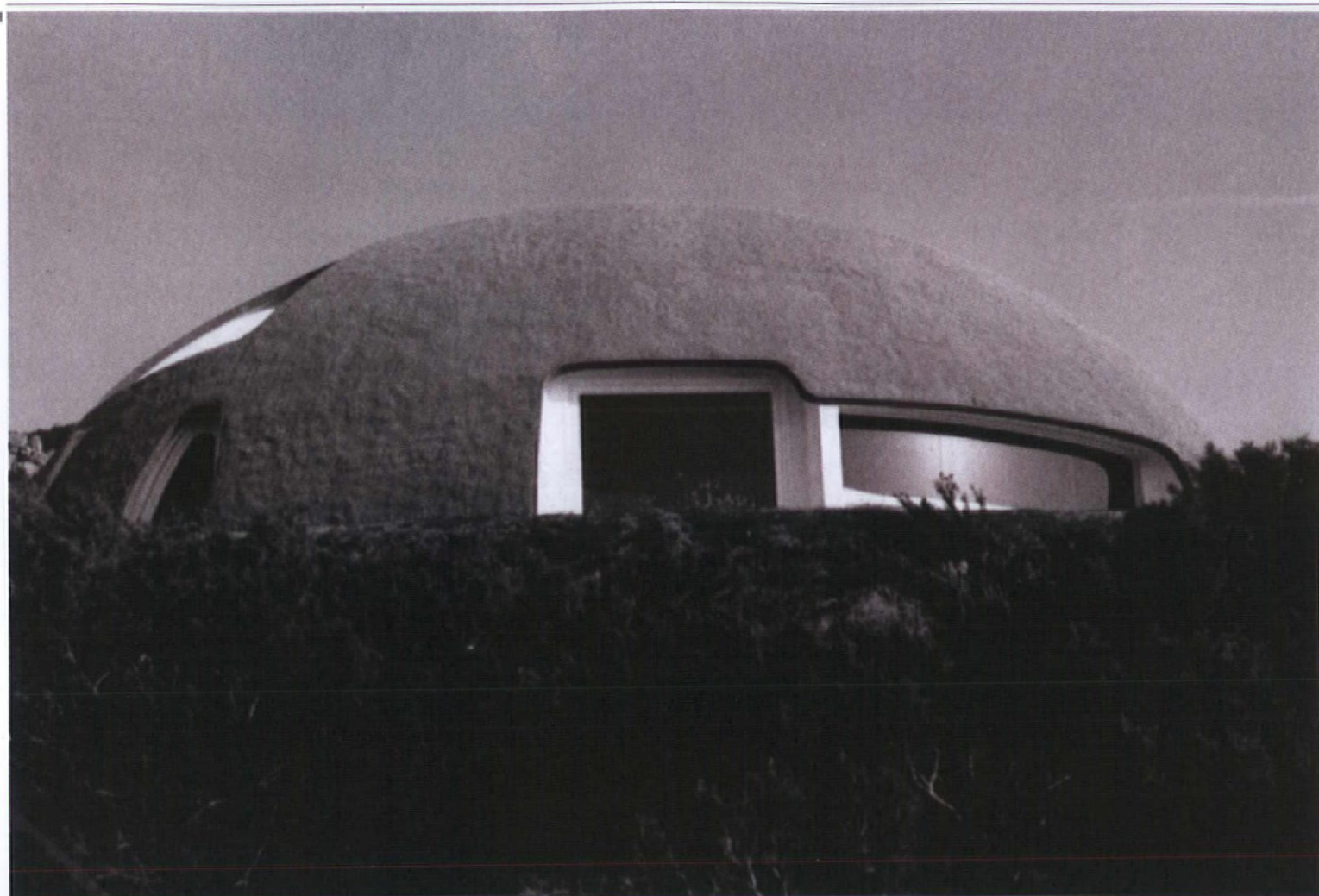
1. Sim van der Ryn, *Design for Life. The Architecture of Sim Van der Ryn*, Gibbs Smith Publisher, Salt Lake City, 2005, p82.
2. Craig W Hartung, 'Lincoln Plaza, an Office Building for the Future', press release 8 April 1986.
3. See Note 1.
4. See www.calwatchdog.com/2010/09/02/funds-for-moonbeams-sick-buildings/.
5. Leonard R Bachman, *Integrated Buildings: The Systems Basis of Architecture*, John Wiley & Sons, Hoboken, NJ, 2003, p 418.
6. Kitchell, *Infrastructure Study Report: Bateson Office Building. Prepared for State of California Department of General Services*, Job No 3508A3, 5 September 2008.
7. See Note 2.
8. Information provided by mechanical engineers CECI.
9. CECI, 2009 CalPERS Retro Commissioning Report, June 2009.
10. *InCalPERS*, October 2006 newsletter.

Architect

Bateson Building: Sim Van der Ryn
with Peter Calthorpe
Lincoln Plaza: Dreyfuss &
Blackford Architects

Photographs

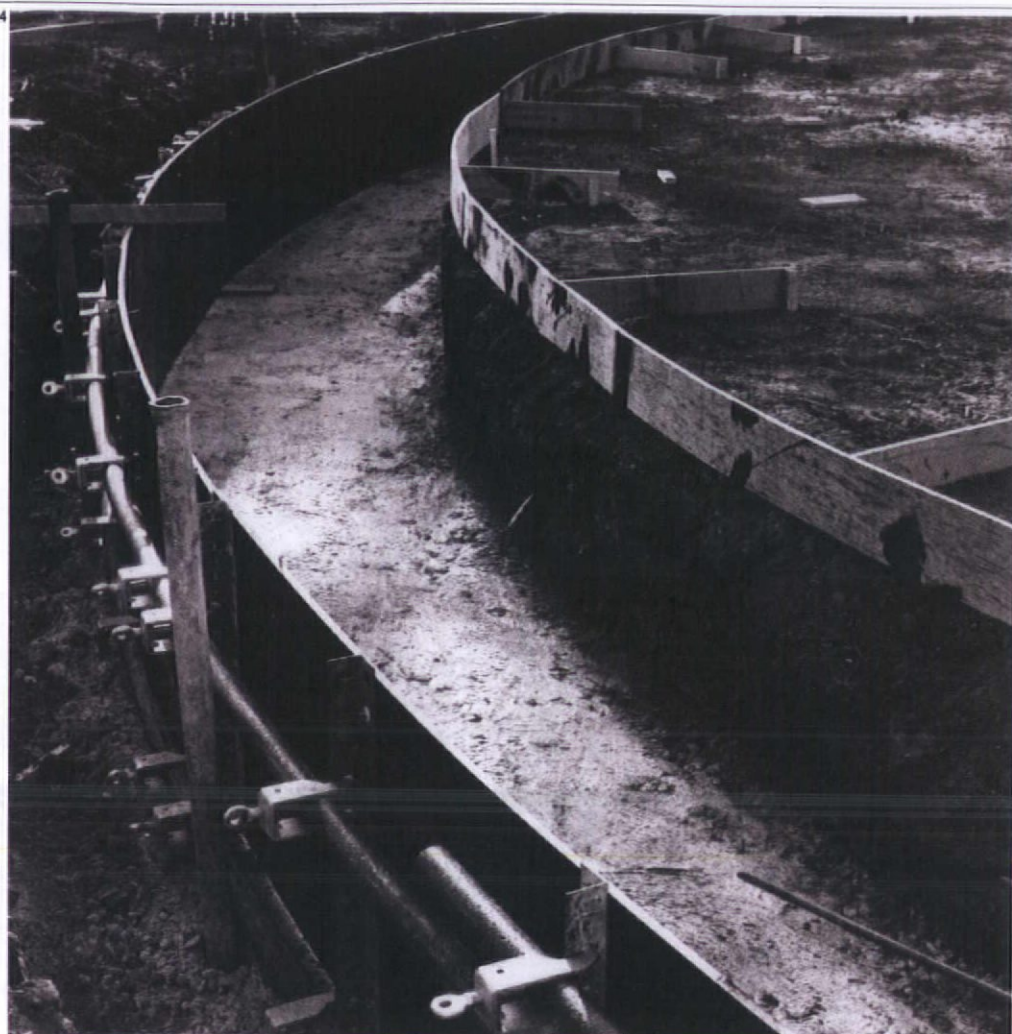
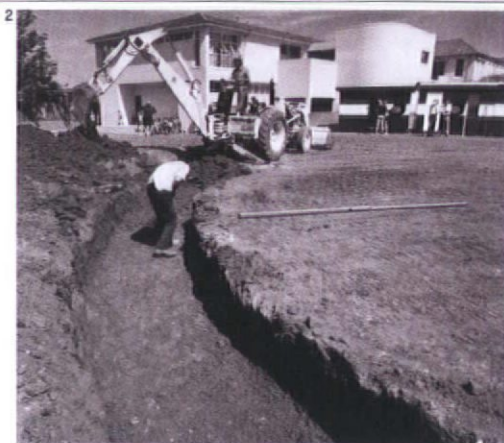
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DOMES OF DISCOVERY

Frustrated by both expensive and labour-intensive methods of moulding concrete with steel or wooden formwork, Italian architect Dante Bini pioneered 'air structures': gigantic balloons that could be covered with a thin layer of concrete then inflated to form domes in a matter of hours

WILL MCLEAN



On the afternoon of 14 July 1964, a young reporter was travelling on the road that connects Bologna to a town named Crespellano. He had been assigned to write an article about a local beauty contest. Towards midnight, driving the same route on his way back, he could not help spotting a 'sinister' grey mass, a globular form nearly 20 feet high, illuminated by his headlights. It had certainly not been there on his trip out that afternoon.

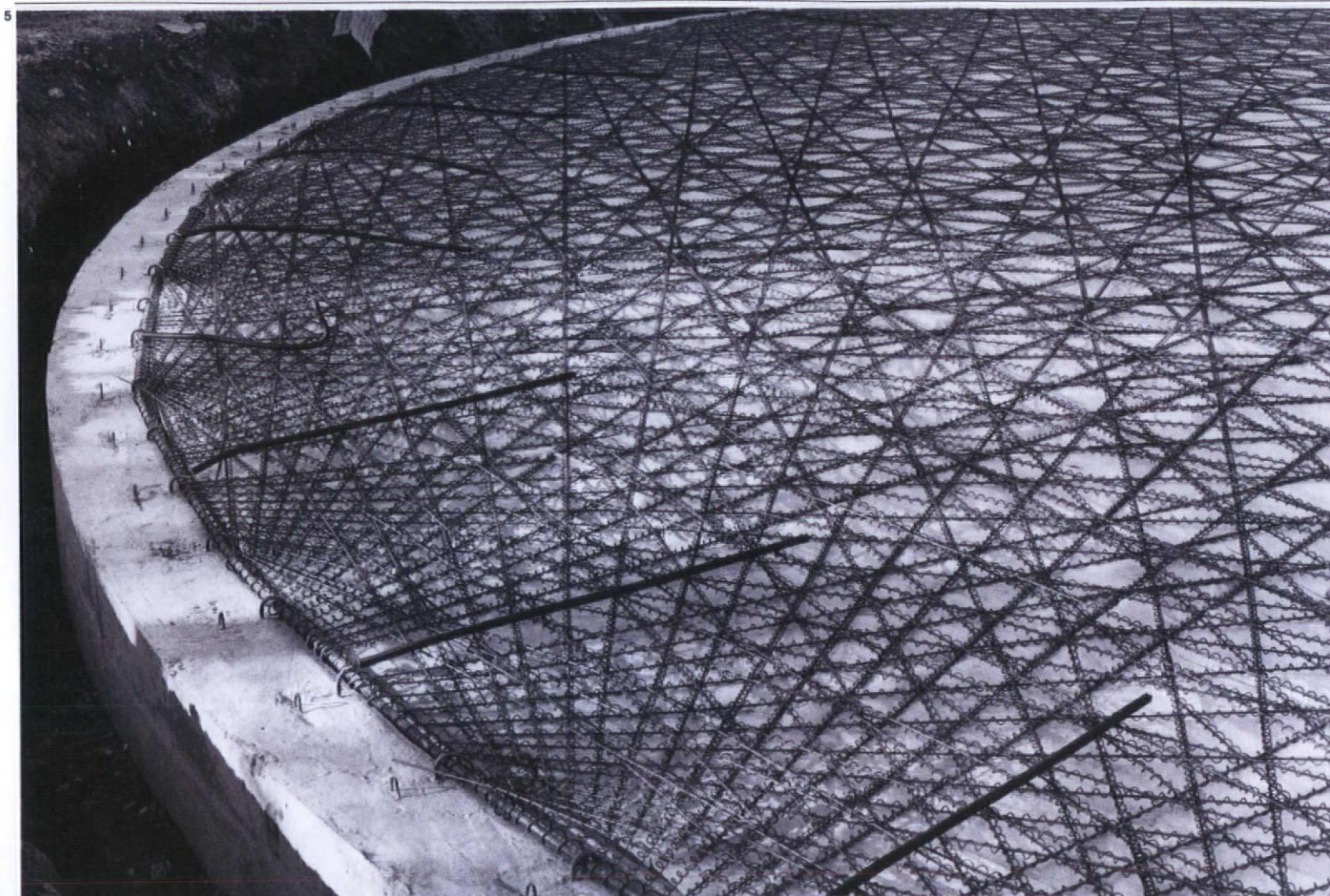
His curiosity was such that he stopped the car and cautiously approached 'that thing', which in addition to a sound was also giving off a fine mist resulting from condensation. He touched the surface of the structure and realised that it was warm concrete, in the process of setting. Having first ruled out the idea that Martians had landed, he spotted the light of a nearby farmhouse window and rapped on the windowpane. When he asked the farmer what had happened, the man replied in dialect: 'An architect from Bologna came, made this big ball, then went home!'

Dante Bini has dedicated his professional life to the development of what he calls 'automated construction technologies'.

In 1965, in Bologna, Italy he successfully constructed a 12-metre-diameter, 6-metre-high hemispherical concrete shell structure in three hours, using the unique pneumatic formwork of a giant low-pressure balloon. This first prototype did, however, have some teething problems, particularly the uneven distribution of the wet concrete caused by an unpredictable (asymmetric) inflation. Improvements were made, and in 1967 at Columbia University, New York, Bini demonstrated in a few hours the construction of another large-scale Binishell.

For this first US prototype, Bini used a complex web of helical 'springs' with steel reinforcement bars threaded through their middle, which allowed for a geometrically controlled inflation and thus uniform concrete distribution of the shell structure. For this demonstration and subsequent Binishell

1. Costa Paradiso, the Sardinian holiday home of film director Michelangelo Antonioni and actress Monica Vitti, designed and built by Bini in 1972. The air structure peeps over a hedge: alien invader or Tellytubbies house?
2-15. Construction photographs of Ashbury Public School Library.
2. Excavating a trench for the dome's edge beam
3. Formwork for the circular edge beam
4. Casting the edge beam. Note the ovoid pipe, which will create a void to anchor the fabric membrane



5. A unique system of springs traverse the circular slab, with reinforcement rods inside the springs. The reinforcement is laid over a carefully pleated 'pattern cut' membrane
6. At the centre of the reinforcement mesh a plate is installed from which the concrete vibrators/compactors will be attached

structures, an additional external membrane was also used, allowing for the vibration and compaction of the concrete, post inflation. Over 1,500 Binishells were constructed throughout the world between 1970 and 1990, with diameters between 12 and 36 metres and with a varying elliptical section.

In chapter two of *Air Structures: A Survey*,¹ Dante Bini is credited for his work with inflated formwork. This report, co-authored by Cedric Price and Frank Newby, remains an impressively comprehensive survey on the possibilities of using air for construction. As Cedric Price said in a lecture: 'I like air structures because the major structural element you can breathe and it smells of violets and you can't draw it.'²

Dante Bini, while enjoying the odd 'top drawer' artefact of his own architecture, such as a Sardinian holiday house for film director Michelangelo Antonioni and actress Monica Vitti, was demonstrably more interested in 'construction automation' and inventing



7. Concrete is distributed flat over the inflatable membrane and reinforcement
8. Slump-testing concrete samples on site by Dante Bini (wearing hat)

new lightweight processes by which space is enclosed. Less concerned with the experimental form-finding technique of engineer Heinz Isler, Bini is more interested in how to use the very same techniques as a lightweight formwork to actually build his structures.

Concrete shell structures, in particular Isler's 'form-found' Swiss carapaces, are structurally efficient and elegantly enclose huge volumes with a small amount of material. However, the fabrication of the formwork required a large skilled workforce and corresponding amounts of construction materials. Bini's inflatable formwork or 'Pneumofom' eradicates the need for such a large site team, reduces material use and speeds up construction.

Both Pneumofom and construction automation were developed in Bini's university dissertation, in response to his concern that 'the timber or steel temporary formwork used to obtain the sophisticated

'Concrete shell structures are structurally efficient and elegantly enclose huge volumes with a small amount of material'





engineering expressions of Félix Candela and Heinz Isler cost more than the final structure'. Bini has described how a game of tennis in a snow-covered inflatable tennis court led to the realisation that the low pressure of a few hundredths of an atmosphere could literally support tons of weight.

Bini's quest for construction automation continued outside his work with shell structures with other systems, which all shared the 'material' of differential air pressure. His Binix system uses a series of precast triangular frame units raised into position with a pneumatic formwork cushion. The geodetic lines are then filled with concrete and reinforcement, 'knitting' together the structural components. In the Binix system there are clear parallels with projects by Pier Luigi Nervi like his Palazzetto dello Sport, Rome, of 1959, where a mixture of prefabrication and in-situ concrete casting was used to create the elegant lamella dome.

9. A membrane is laid over the concrete to help control distribution of concrete and finish quality
10. Inflation starts to lift the concrete



In the Binistar system, a reticular spatial structure is assembled flat on the ground, and a membrane cushion is inflated which is used to raise the structure as well as providing the environmental cover. When the extensible tubular structure reaches its designed height, the specially designed node connectors lock into position, creating a rigid steel grid-shell-type structure. These structures have been used for temporary events at Expo and World Cup venues.

Bini Dome construction sequence

The sequence of Bini Dome fabrication first involves the construction of a ring beam and ground floor slab. The ring beam cleverly contains a 'cast in' egg-shaped void that will contain a separate inflatable tube to hold the main membrane in place during inflation, as well as air inlets and outlets. The internal pneumatic form Pneumofom of nylon-reinforced neoprene is then laid over the slab and secured at the edge on top of which



a complex network of criss-crossing helical springs is stretched across the diameter. The springs have no specific structural function, but control the even distribution of steel reinforcement bars (which are threaded through the springs) and also maintain an even concrete thickness by holding the mix in place.

Once the reinforcement is in place the concrete is poured. A regular concrete mix is used with small amounts of retarders and plasticisers added to extend the workability of the mix for two to three hours. After the pour, an outer membrane of PVC is laid over the wet concrete, which will help to control evaporation during the setting process and allow for vibration of the concrete. The inflation procedure then begins using low-pressure blowers, which takes about an hour; pressure is regulated by controlling the outlet to maintain an even lift.

When the shell is fully inflated, the concrete is vibrated using rolling carts hung

from cables at the top of the structure. The internal air pressure is maintained for between one and three days depending on the diameter. For a 36-metre-diameter dome the thickness of the completed shell is 125mm at the base and 75mm at the crown.

The UK's only existing example of such a dome, is the Edinburgh Sports Dome in Malvern, 1977, by architect Michael Godwin. He used Bini's system (licensed at the time as Parashell in the UK) to create a school sports hall. Interestingly, he raised the entire dome on a series of eight concrete pilotis to provide natural light reflected from the surrounding pool in which the dome sits. In May 2009 the scheme was Grade II listed by the Government for its rare (unique in the UK) construction method and quality of architectural execution.

I became aware of the work of Dante Bini and his remarkable Bini Dome structures through the research of restless innovator and superlative draughtsman Jonathan

11. When inflation is complete, 'vibration' carts are pulled around and across the surface of the dome to compact and consolidate the thin concrete shell

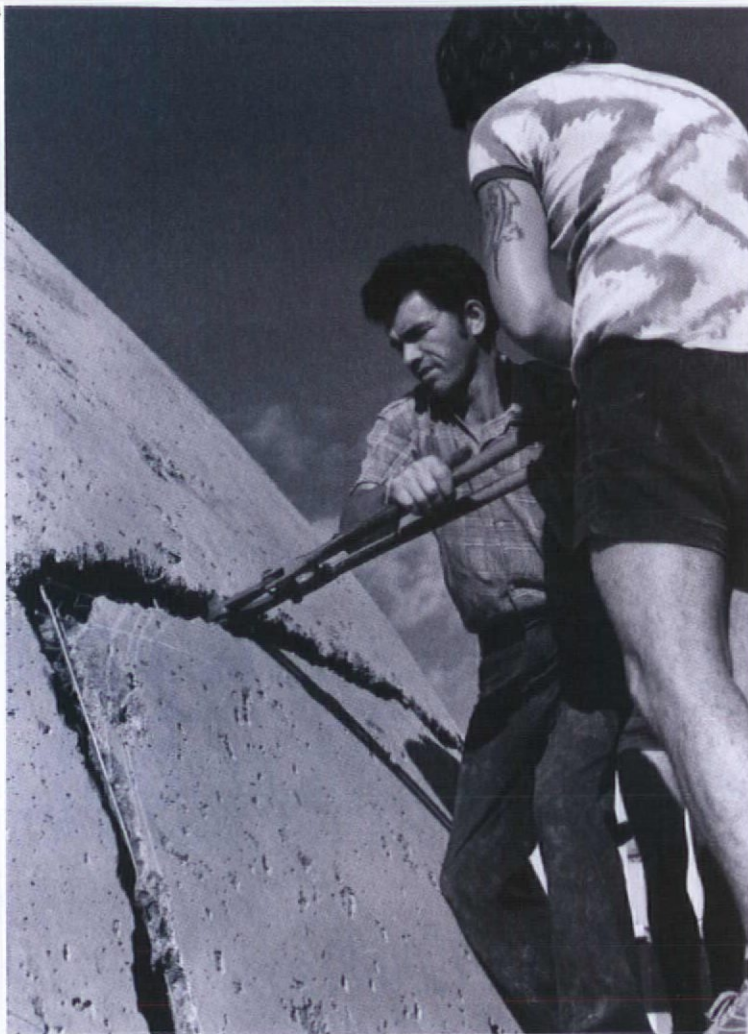
12. The finished dome is kept inflated for at least 24 hours until the structure has become sufficiently stable



13



14

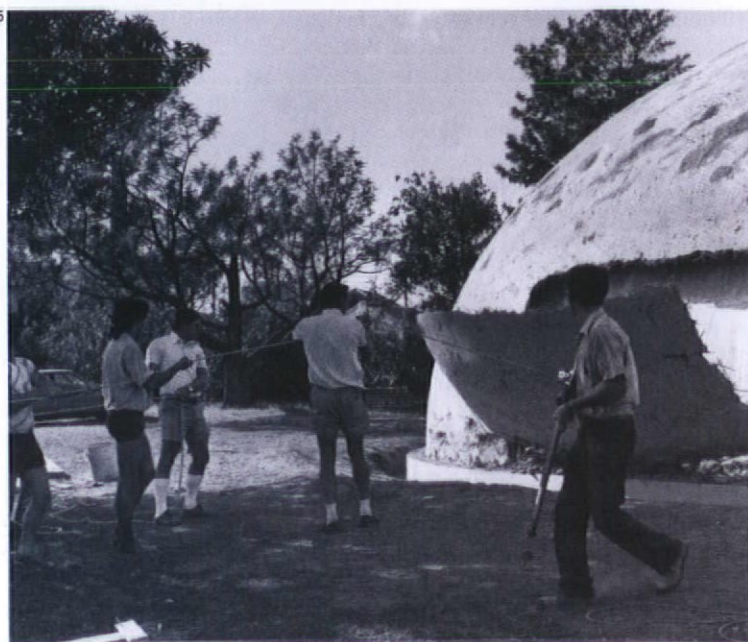


Adams while we both worked for Will Alsop; and whether we were just looking for ways of making blobular forms or just non-standard ones, these solidified bubbles seemed like an exotic lost art.

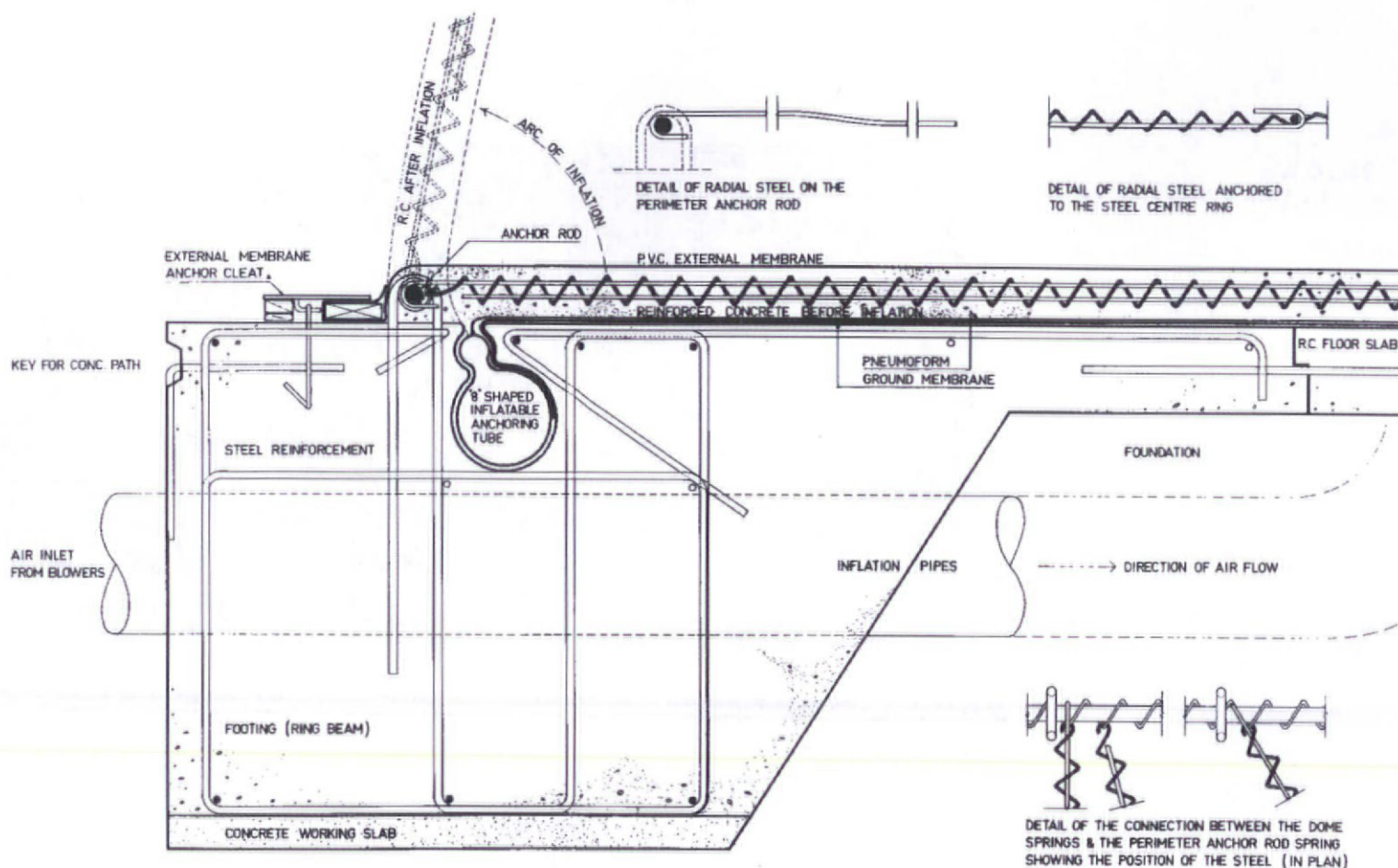
In his book,⁸ Dante Bini recounts a wonderful story about a visit from legendary engineering professor Mario Salvadori who travelled from the US to Castelfranco, near Bologna, to witness the construction of a prototype in 1965. 'For the American professor, the local farmer set a pale blue wooden table, with a glass of water, a bottle of sparkling red wine and an old kitchen chair', all of which sounds more like an artist studio visit rather than a visit to a construction site. Salvadori sat at the table from 9.30am until 1.30pm. At 1.30pm the 12-metre dome was complete, Salvadori stood up, took a sip of wine and pronounced: 'Look, today I saw an amazing thing! If you were an engineer you would never have conceived such nonsense!' Following which,

13. Stripped of the outer membrane, the structure is locally checked and repaired
14. Openings can then be cut from the thin structural shell
15. A large door opening is removed without large site equipment. Note the semi-inflated internal membrane, which was used to 'lift' the structure

15



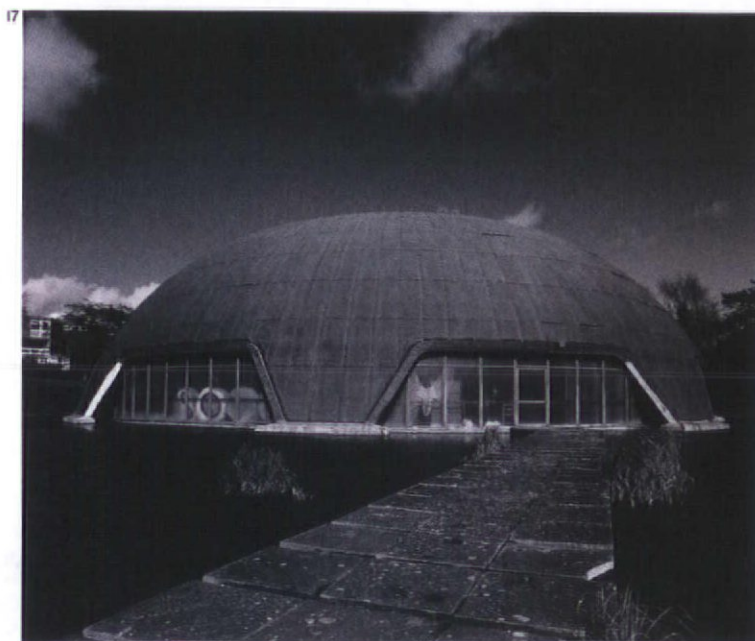
Architect
 Dante Bini
Photographs
 Max Dupain, 2-15
 Alwyn Cooper, 17



Bini was officially invited by Columbia University to repeat the experiment on its campus. He did so successfully in 1967.

The Binishell company is now run by Dante's son Nicolò, and there is renewed interest in the curvilinear possibilities of the Bini Dome. In part, the interest may be inspired by a retro impulse; more significant is the environmental imperative, in Buckminster Fuller's phrase, of 'doing more with less'. The domes are models of structural efficiency, with corresponding minimised material use and an incredibly lightweight formwork the chief component of which is air.

1. Cedric Price & Frank Newby, *Air Structures: A Survey*, Department of the Environment, 1971, HMSO.
2. Cedric Price, *Cause and Effect* (lecture at the Architectural Association, 6 June 1984).
3. Dante Bini's book, *A cavallo di un soffio d'aria* (loosely translated as 'riding on a puff of air') is published in Italian by Guerini e Associati, Milan. An English edition will be published by Bibliotheque McLean later this year.



16. Typical section of a Binishell dome construction, similar to that used in Sydney's Ashbury School project
17. The Grade-II listed Edinburgh Sports Dome in Malvern, UK, by architect Michael Godwin, advanced the ideas inherent in the Bini Dome

REVIEWS

Sense and sensibility

RICHARD WESTON

Encounters 2, Juhani Pallasmaa, Architectural Essays, Peter MacKeith (ed), Rakennustieto Oy, Helsinki, €61

Since its publication in 1996, Juhani Pallasmaa's slim but passionately argued book *The Eyes of the Skin* has become one of the most widely recommended student texts. Despite the gap in time, readers familiar with his phenomenologically-inspired ideas will feel very much at home with this second collection of recent essays (the first having covered the years up to 2005). There are new themes and emphases here – a topical interest in biomimicry and 'atmosphere', a recurring concern with time and the need for 'slowness', and a determination to see 'sustainability' as a cultural, not narrowly technical challenge, for example – but the character of his arguments feels broadly familiar.

The book begins with a lively and biographically informative conversation with the editor, Peter MacKeith, in which Pallasmaa laments the 'catastrophic loss of the understanding of the traditional literary and artistic culture', worries about the 'lack of resistance and physicality' of the digital world, and berates the 'suicidal ideology of perpetual growth'. Sensing the fine line between the wisdom of age and appearing a grumpy old man, he suggests that the arts are necessarily grounded in 'metaphysical melancholia' born out of 'wonder at the basic enigma of life'.

The essays themselves are presented in groups that alternate between theory and critical accounts of architects and artists. Personally, I found the latter much the more congenial. A piece on Aalto is finely nuanced while that on Reima Pietilä, grounded in his long acquaintance

with the architect, is an essential reference. And when he turns critic, Pallasmaa can be refreshingly forthright; Koolhaas's Seattle Library exterior, for example, is discussed as 'urban terrorism'.

With the more wide-ranging pieces, however, I have problems. Read singly they can inspire, but the collected-essays format is not helpful: the prose style is rather leaden, and you begin to notice that too many beginnings are 'very', essences 'basic' or 'original', intentions 'deliberate' and logic 'rational', leading you to wonder what else they could be. There is a good deal of repetition, and the frequent use of favourite quotations only serves to emphasise this. They also reveal the tendency to rely on portentous assertion rather than discursive exposition. The poet Joseph Brodsky is quoted frequently, notably his contention that 'the purpose of evolution, believe it or not, is beauty': it sounds wonderful, but as a statement of biological fact it is, of course, nonsense.

It may be that such assertions are not to be understood rationally,

Above: Juhani Pallasmaa asserts that Mies van der Rohe's Farnsworth House reveals 'the metaphysical and hidden order of reality' Below: 'urban terrorism' – Pallasmaa is trenchant in his criticism of Koolhaas's Seattle Library exterior



but through the 'silent wisdom of the body' – and this in turn highlights my difficulty with the genre of phenomenologically-inspired writing that has dominated architectural discourse in recent years. Faced with a particularly florid example of the genre, I recall the late Charles Moore remarking that 'not every staircase is a Jacob's Ladder to heaven'. With its repeated appeal to 'essences' – like that ubiquitous mystification the *genius loci* – such writing tends towards the grandiloquent. More worryingly, it can verge on the coercive, privileging the writer's superior insight over the reader's less developed sensibility without offering a way to enlightenment.

Take, for example, the statement made next to a reproduction of a Van Gogh drawing of trees around a rocky outcrop. For Pallasmaa it 'stands for all perceived and experienced trees and their innate life force', whereas to me it is the acute topographical description that seems so striking. I could elaborate at some length on how that is conveyed, whereas quite how the 'innate life force' of 'treeness' is

articulated through these particular marks on paper I have no idea – and Pallasmaa, needless to say, doesn't let us into the secret.

Too many of the comments on architecture are of a similar kind: the Farnsworth House, for example, somehow reveals 'the metaphysical and hidden order of reality'. Such assertions have become the common stuff of architectural writing and it is perhaps only when you read a book so richly packed with them that their emptiness becomes so apparent.

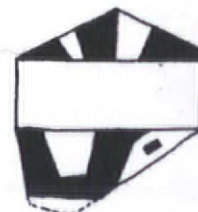
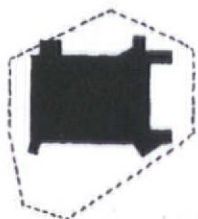
The story of the word

ANTHONY VIDLER

Composition, Non-Composition, Architecture and Theory in the Nineteenth and Twentieth Centuries, Jacques Lucan, EPFL, Lausanne, distributed by Routledge, €75

Recently the term was 'parametric iteration'; some decades ago it was 'design method'; but for most of the 19th and 20th centuries, the word 'composition' served to indicate the process, if not the rules, by which a work of architecture was designed. Appropriately enough, the word 'composition' came into full service at the same moment that the curriculum of architecture became established in schools – from the École des Arts of Jacques-François Blondel, through the long reign of the École des Beaux-Arts and surviving in the Modern Movement to the middle of the 20th century. The teacher and encyclopaedist Blondel devoted an entire chapter to it in his magisterial *Cours d'architecture* (1771-77); the polytechnician JNL Durand systematised its rules for his two-year students, the École ratified it until, ossified, it came under attack from outsiders like Viollet-le-Duc. But, as Lucan points out, even the radical introduction of 'Gothic reason' could not dispense with its

Below: OMA's Casa da Música. In Lucan's book, Koolhaas is presented as the latest adept in the long tradition of conveying meaning through the abstract process of 'composition'



procedures, and, as Le Corbusier was to demonstrate, its ghost lay behind the elaboration of the free-plan.

'Composition' was thus a fundamentally French idea, but the French system spread to Britain (the University of Liverpool) and the United States (MIT, Columbia, the University of Pennsylvania, and with the appointment of a Beaux-Arts architect, Jean Labatut, Princeton). As Colin Rowe observed in his ground-breaking article, 'Character and Composition; or Some Vicissitudes of Architectural Vocabulary in the Nineteenth Century' (written in 1953-54, first published in *Oppositions* 2, 1974), 'the shelves of any representative architectural library in the United States or Great Britain might suggest that between 1900 and 1930 the major critical interest of the architectural profession throughout the English-speaking world lay in the elucidation of the principles of architectural composition'.

Save for this one article, however, and the numerous handbooks published between 1800 and 1930, there has been no serious attempt, before this deeply researched and comprehensive work by Jacques Lucan, to draw out the history of this formidable word, that at the height of its usage demanded a rigorous approach of the student and architect that enabled the formulation of a *parti*, or starting-point, appropriate for every programme and any site.

The history assayed by Lucan is thus not one of individual buildings, styles or technology, but rather of ideas of architectural formulation before the emergence of final projects or constructed works. As Lucan writes, 'composition is antecedent to "styles", or, to put it another way ... a given composition can be dressed in several different "styles"'. A question of 'syntax' rather than 'vocabulary', the idea of composition at any moment in the 19th and 20th centuries is intimately

bound to the idea, or theory of architecture itself. Shifting from the 18th-century theory of the arrangement of interior rooms, to the volumetric organisation of irregular plans in the Picturesque movement of the early 19th, thence to the disposition of identifiable elements of the programme in the Beaux-Arts, to the rational organisation of structure and ornament in the Gothic Revival, and operating as an abstract technique of manipulating what Rowe called 'an architecture of pure form' from 1900 to the 1950s, 'composition' emerges in Lucan's account as the primary key to modern architectural thought.

As such the book marks a welcome and long-awaited breakthrough in the history of architectural theory. In one sense its belated arrival can be explained by the history of 'composition' itself, as only when definitively abandoned as a technique, or strategy of design, could its profiles and deep influences be written. Rowe, who made the first attempt, was himself trained in the attenuated Beaux-Arts curriculum of Liverpool in the late 1930s and early 1940s, and indeed his vision of Corbusian and Miesian Modernism was always to be inflected by compositional formalisms – an analytical and design approach which he was successful in handing down to successive generations of architects from James Stirling and Peter Eisenman to many of my own generation at Cambridge or Cornell.

Lucan, as a part of the generation of '68 in Paris, and having previously written the history of that generation in its struggle against the Beaux-Arts system, is well-placed to take a cooler, insider look at the immense success of a word and a concept that, as he concludes, still exercises a considerable, but almost invisible power over architects from Rem Koolhaas to Herzog & de Meuron.

Lucan's narrative, as he develops this 'story of a word', is never dry or dull, as the question is always

addressed through examples – whether drawn from the rule books, or analysed as the processes by which projects emerge. His own order of composition is, however, not entirely chronological, but thematic, moving from an introductory discussion of what he calls the ‘closed order’ of the 19th-century academic system, to its apparent opponent in Viollet-le-Duc’s emphasis on ‘construction’, and only then to a treatment of the question of ‘irregularity’ embodied in the Anglo-American Picturesque movement, itself beginning in the 18th century. His final chapters deal with the ‘open order’ developed in Modernism, and the present day, poised in his terms ‘between composition and non-composition’.

In this thematic rather than chronological treatment, something important about the continuing discourse of architectural order is lost. While satisfying a certain epistemological approach, signalled by Lucan’s citation of Michel Foucault at the outset, the often violent debates and oppositional *partis-pris* of the last three centuries are occluded, and the to-and-fro of argument, treatise versus treatise, not to speak of the battles among different schools – of thought as well as education – seem dropped in favour of the investigation of their inner systems. Thus, to take the most glaring example, the Picturesque is named as a ‘new paradigm’ following the Beaux-Arts and Viollet, as if it emerged as such chronologically. Yet, as we know, the influence of the originally British movement on late 18th-century French composition, especially in the realm of gardens – although, as Laugier attests, in urban planning as well it was strong – remained as a theme for rural architecture alongside and often opposed to the Beaux-Arts before being adopted as the ‘rule’ for American country houses with the Shingle Style.

This lack of a dialectical approach, however, in no way diminishes the innovative nature of the book, with its extraordinarily original takes on individual thinkers and projects. Some of the best analyses, appropriately in regard to Lucan’s earlier research, are of Le Corbusier’s projects for villas. Long buried beneath the apparatus developed by Rowe – neo-Palladian, transparency ‘literal and phenomenal’, and Mannerist –

Below: Corbusier's Ronchamp is among the best known of the 130 case studies in this analysis of windows from around the world. But is the placement of its windows really 'random' as the book says? ... Right: ... and does Barragán's window frame really divide the window 'aimlessly'? MJ Long thinks not

Garches, the Beistegui apartment, together with the Mill Owners’ Association Building, Ahmedabad, are revealed in a new guise as the heirs to the opening up of compositional modes brilliantly reformulated by Le Corbusier.

Finally, the analysis of Koolhaas’s diagrammatic programming gains enormously when placed in the context of the hundreds of previous diagrams in the book. If not the ‘last architect’, Koolhaas is seen as the latest in a continuous history of an idea, that, through the manipulation and inversion of solid and void, volume and surface, interior and exterior, has remained a fertile instrument of conveying meaning, not through style, but through the abstract process of ‘composition’ until today. Whether or not the recent rise of computer science represents a new ‘paradigm shift’ in this history is a question Lucan leaves unanswered.

Window displays

MJ LONG

WindowScape: Window Behaviourology, Yoshiharu Tsukamoto Laboratory (eds), Tokyo Institute of Technology, 1175 Japanese yen

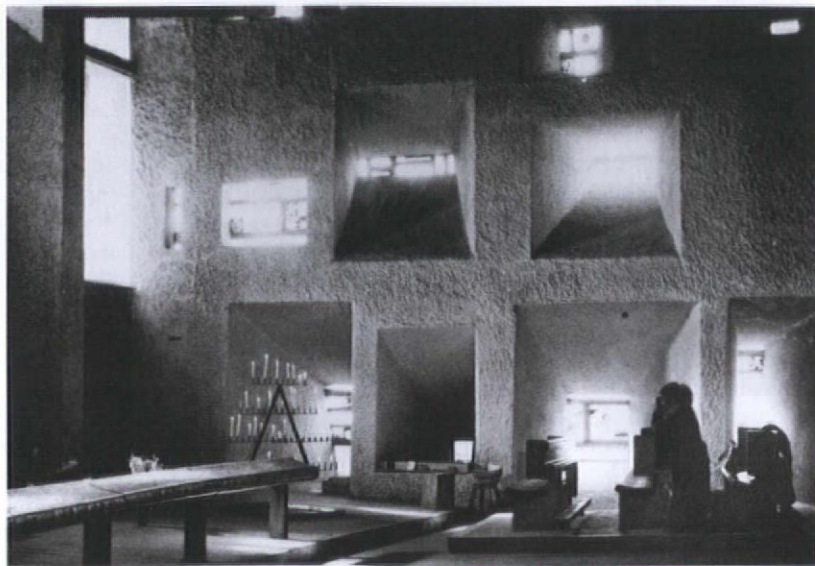
It is often in the detailed design of its windows that the language, performance and formal quality of a building is most vividly represented. This collection of varied examples (about 130 of them) is therefore welcome, particularly since each is illustrated with both a photograph

and an axonometric drawing. In most cases, the drawing gives key horizontal and vertical dimensions, and makes it possible to understand in detail how the human figure relates to the window. Aalto once said to a student: ‘When you are designing a window, imagine your girlfriend looking out of it’, and to do so, the dimensions of eye, hip, elbow must be clearly related to the design.

The visual record is thus most welcome, but I have to say that I found the classification system and the accompanying text quite mystifying. This may partly be the result of research done by a number of students in different parts of the world; it may occasionally be the result of poor translation. The individual descriptions and texts do vary widely in their quality, and perhaps that is inevitable in a shared research project. But when the windows at Ronchamp are called ‘random’, and Barragán’s window frame is said to divide the window ‘aimlessly’, I feel that further editing should have been done.

The system of classification used to organise the material makes it almost impossible to predict where a particular window might be found. There are 15 window categories such as ‘pooling’, ‘dissolving’, ‘workaholic’ and ‘aligning’. These categories are further grouped under three general headings: ‘Light and Wind’, ‘Beside People’, and ‘Symphonic Poem’. Each window could easily have been assigned to several of the 15 headings, and to at least two of the three master headings.

What is consistent and helpful is that each window is assigned a climatic location, although I would





have found it much more helpful if the windows had been grouped solely by geographic location. What is astonishing, though, is that I think I only counted six of the entries containing information about orientation. Surely a specific orientation should be noted for each entry, since it is fundamental to understanding many of the designs in the book.

The subtitle of the book is 'Window Behaviourology'. Behaviourology is not a word I have found in the dictionary, and it has been used in a very sloppy way to refer both to the behaviour of the window and to the behaviour of the building's occupants. Surely the window functions and the humans behave? We could then understand the relationship between the two, and the important distinctions between them. Perhaps, then, the basic geographic groupings could be subdivided into functional subsets such as 'residential', 'commercial' and 'institutional'.

There is an incidental suggestion that in the days of international commerce along the Silk Road, window design conventions may have been transmitted from culture to culture. This is not supported by the location of the examples shown, few of which are located in the Middle East or central Asia. But the powerful frontispiece photographs of densely windowed streets do start to suggest that some such thesis might be worth considering.

On the whole, the book deals with a subject well worth pursuing. With an expanded representation of locations, more rigorous descriptions, and above all a consistent representation of orientation, it would be a valuable addition to an architectural library.

I do believe, though, that both the subtitle and the subjective system of categorisation should be discarded. What I want from a book like this is good visual and factual information, not inconsistent and subjective notes. I will make up my own mind about the tactile, functional and poetic quality of each example if I am given the information to enable me to do so.

This is a frustrating book in its present form, but the work done is valuable, and it could be expanded into a really beautiful and lucid book on a subject which is right at the heart of architectural form.

Thieving Baltard!

NIAL HOBHOUSE

Victor Baltard (1805-1874), Iron and Paintbrush, Musée d'Orsay, Paris, France, closed 13 February

What, besides its continuous occupation over centuries, makes a city great? Specifically, what can designers do, in periods of spectacular growth, to mediate and preserve continuity (and greatness)? What might an exploding Moscow be learning now from the pattern of change of the built-form of 18th-century London, or of Paris in the middle years of the 19th?

From London, not perhaps so very much. The Georgian city seems to have been a kind of slow accident: a shifting cocktail of land ownership structure (aristocratic, and cash hungry, ground-landlords), a limited material palette (brick and stucco), and low consumer expectations (the primary residences were still in the country). Mostly good luck then, and, for once, a reticent profession.

Paris, in the years between the fall of Napoleon I and the fall of Napoleon III, offers some more positive lessons, when faced with a rate of growth equivalent to London's and with social pressures that were much more dramatic. The recent exhibitions devoted to the work of Henri Labrouste and Victor Baltard suggest one intriguing answer, and together imply that there are sometimes moments in history when architects can indeed assert themselves as useful agents in the city, without necessarily addressing very directly the city itself.

Throughout the period

Below: it is said that the young Victor Baltard, shown here in a self-portrait, could have 'become an excellent doctor, or a remarkable politician, a scientist or a manufacturer, a poet or a merchant'; he only settled on architecture after training as a painter

architectural circles were consumed in a vigorous theoretical debate about the nature, and the styles, of the new building typologies that were appropriate to the modern city. More than anything, it was the precision and tone of this debate that set the scene for the breathtaking quality of the new urban monuments which were built for commerce and public education (in the present context, Baltard, for the markets; Labrouste, for the libraries), while the city reformed itself around them. And if this talk sounded at times rather narrow and abstract, that may just be something that contemporary architects could do well to note before making their own large claims to be the makers of the city.

What is remarkable, certainly, is the quality and passion of a public discussion, begun by Pierre François Léonard Fontaine in his aborted schemes under the Empire and continued (at various tempos and volumes) first by his pupils, through the three decades after 1830 by Labrouste and Baltard, and later by Viollet-Le-Duc and Garnier. Of course it all ended badly, as all long-running architectural arguments tend to do; an exhausted truce was declared by the beginning of the 1860s. One can accept the Opera Garnier as a key moment in architectural history without believing that profligate eclecticism offered it a real future. If the story told in this way sounds a little broad-brush, keep in mind that for much of the same period most architects in Britain were trapped in the narrow frame of Ecclesiology, while the others – the Nashes, the Burtons and the Barrys – just got on with the business of building the city, without any equivalent ideological apparatus to speak of.

The parallel careers of Labrouste and Baltard began more or less at the same moment in the Villa Médecis, each as winners of the Grand Prix. The former had already left before Ingres' arrival as director in 1835, a key event in Baltard's professional formation. Both participated in the revolutionary rethinking of those years, as to what a modern architecture might take from the buildings of ancient Rome. Charles Garnier's *mot*, that the young Baltard could have 'become an excellent doctor, or a remarkable politician, a scientist or a manufacturer, a poet or a merchant', says something



about the fluid human geography of Paris in the 1830s (any trace of the sneer which we can perhaps hear is belied by the phrase in the French, and as pronounced by that *grand fonctionnaire* of the Second Empire).

In fact, Baltard did not choose architecture over his first training as a painter until his departure for Rome (and he was collaborating on canvas with Ingres himself after he got there). On his return he was indeed to deploy many different survival skills throughout an astonishingly successful career which was to last into the 1870s, as an architect in public employ. Thus do youthfully self-conscious radicals become, in their later years, the safest pairs of hands; but his career was certainly accompanied throughout by a level of *médiance* from his competitors – that he had cribbed the iron structure of Les Halles from a rival project by Hector Horeau, or that he had taken the idea of Saint Augustin from Labrouste's great library schemes. At times indeed Baltard does sound exasperated, and too shrill, in his own defence.

What does remain elegiacally memorable is the enormous public popularity of the great market buildings, and the photography and the descriptions of the light as it flooded through the roof and sides of a building of such mundane utility. That, together with the great elegance of its detailed design, in which slender triangular brackets were substituted for tie-bolts at real additional cost, on a slim pretext of structural stability.

The exhibitions in Paris, Henri Labrouste at the Cité de l'architecture (AR December 2012) and Baltard at the d'Orsay, could together have been read as a charming reprise of the professional rivalry of their two subjects; but French institutions are subject to their own curious rivalries, and last autumn no reference in either museum could be found to the exhibition currently on display at the other. In 1841 both architects had submitted projects for the defining architectural competition of the age – a tomb for the returning body of Napoleon I, under the dome of Mansart's chapel in the Invalides.

Labrouste's consisted of a huge oval bronze shield set on eagle brackets which held it just enough above the floor to allow light, and the reverential gaze, to penetrate to the tomb in a simple crypt below. Baltard's proposal, shown for the first time at the d'Orsay, had an equestrian statue by Marochetti in the *Cour* outside, the base ornamented with a bronze door that led down into a plain corridor towards the crypt, where the tomb itself sat below the crossing under a mosaiced vault; in the church, directly above, lay a bronze recumbent Napoleon on a stepped pedestal.

In the event the jury was inconclusive, choosing neither the melancholy simplicity of the one nor the bold grandeur, and smooth expediency, of the other. As sometimes happens, what must have seemed then the commission of a lifetime reverted to Louis Visconti, the architect originally appointed for the job.



Drawing attention

Yael Reisner

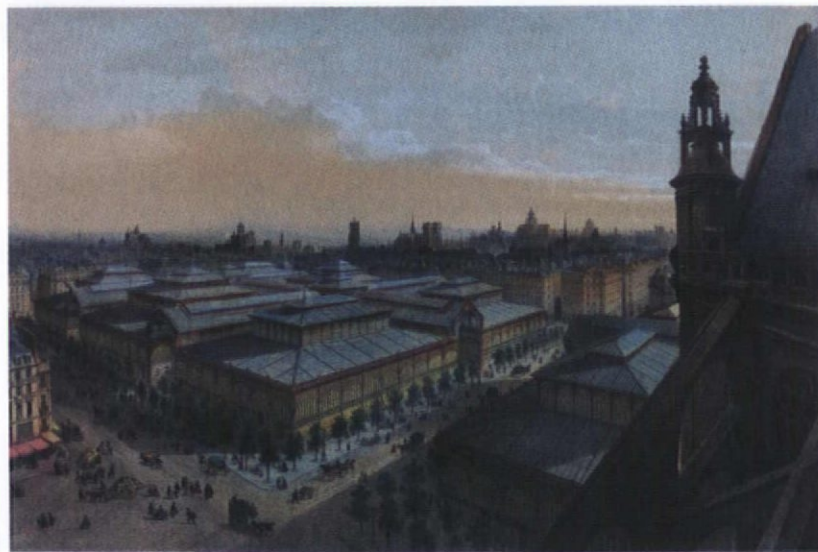
Sketches, Zvi Hecker, Hatje Cantz, Ostfildern, €35

'Hand drawings help to channel the vague ponderings of the mind into visual images of a germinating concept. It is then up to the eyes to trace and decode its meaning,' says Zvi Hecker in this new collection. Naturally that's why sketches were always important and intriguing as they followed one's mind. These days a lot of architects think with the digital mouse in hand, while using software that quickly facilitates a buildable appeal of almost any design, while there is a great danger in shortening the design process and eliminating the core moments that lead to good architecture. Has the assessment of thoughts visually disappeared from the architect's design process? Are a lot of architects rushing towards the end game dropping the necessary middle process of design? What will happen to the intuitive immediacy of the hand drawing in days where one's thoughts are channelled by software?

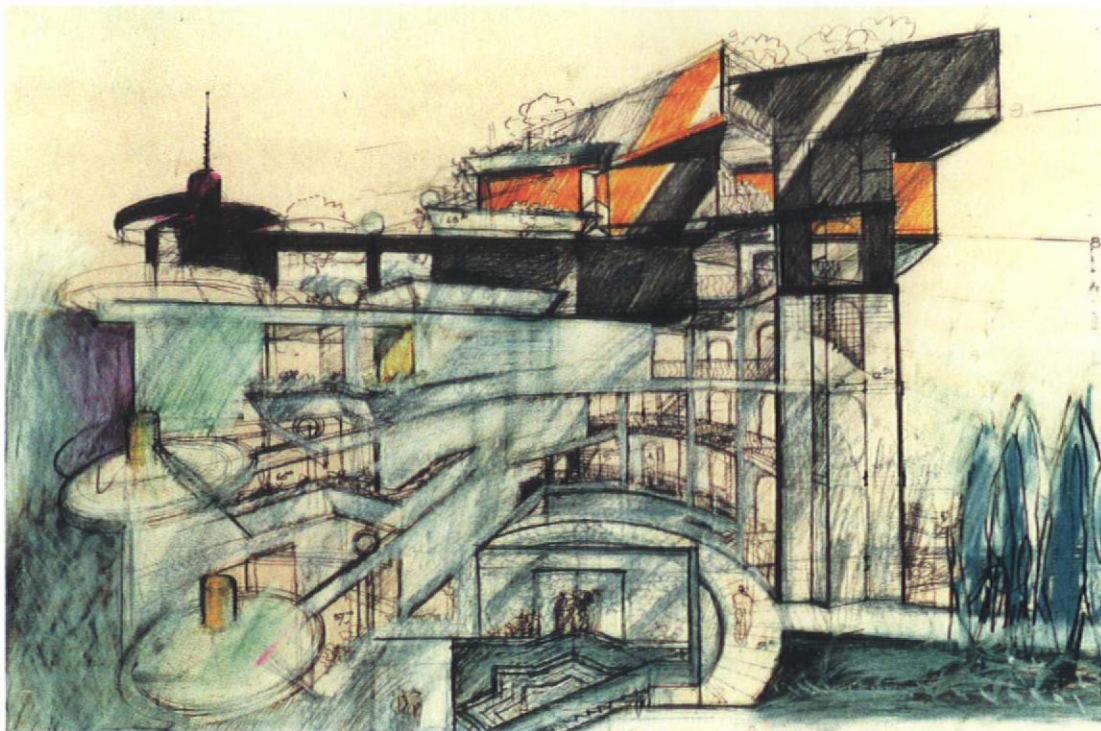
Nevertheless, all is not as it seems; there is confidence among young architects that sketches and drawings are not dead, as some claim, since they are natural and at ease with much software, and seem to be engaged with visual thinking through a wide range of drawing applications that are wider than ever before, leading to a sophisticated architectural output.

Or perhaps such antagonistic observations reflect on a clear schism between professional practice and academic circles? In the practice of today, speed and practicality are the main yardsticks, where Building Information Modelling (BIM) for architects and engineers accelerates dramatically the design process; whereas in the academic context the pursuit of a design process articulated through drawings is highly valued.

Hecker's astute observation clarifies his unique angle: 'I'm an artist whose profession is architecture', and that ambivalent reality was phrased by him knowingly saying 'an architect is always within a schizophrenic situation because, on one hand, he is a professional and, on the other,



Left: Baltard's drawing of Les Halles. The architect was accused of cribbing the iron structure from a rival project by Hector Horeau ... Above: ... it was also said that he took the idea of Saint Augustin from Labrouste's great library schemes



he is within a creative process of searching and developing the design. The beginning of the process is an experiment – much like creating a dish that is not yet cooked and ready to be served. So the architect must admit that the design is still not perfect and is only in development.'

The brilliant structural engineer Peter Rice would have agreed with Hecker, as he dedicated one of his lectures in the mid 1980s, at the AA, to the importance of creative work not falling into the category of being extremely professional. Most architects will agree with that; this is the very nature of brilliant architecture for hundreds of years, so why is it so troublesome?

In this new book the sketches are mostly Hecker's studies leading to his projects, built and unbuilt, and portray his passion for his work, as well as his sincerity and commitment to architecture – the most complex of all arts. They are hand drawn in pencil, colour pencil, ink and acrylic paint, capturing his laborious thought process with doubts and assertions that can be traced as perceived and developed while drawn on paper, recording his sense of responsibility as well as a relentless search for a new aesthetic. His sharp comments are displayed among the visual report of his design process, in short paragraphs: anecdotes, words of wisdom, cynical humour with a few battles illustrated, placing him along other

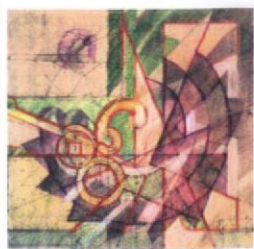
Learning in 1970 about the logarithmic spiral that underscores the growth of sunflower seeds influenced Hecker's later work, such as Spiral Apartment House plan (below) and Spiral perspective (above), both from 1986

maverick artists who often were misunderstood, and even more so in their hometown.

Hecker has selected studies of 16 projects, starting with one of his first building, the Bat Yam city hall, Israel (1960), and ending with his latest building to come: the Royal Military Police District in Schiphol Amsterdam Airport (2001-13). In all, it represents 40 years or so of architectural thinking by one of the most prominent maverick living architects; work that is often exhibited as art work in galleries, private collections and museums.

Three of Hecker's projects, of which two made him known with the international community, are represented in the book by numerous studies. Each starts with the fascinating sunflower's geometry or mathematics, an interest that was initiated in 1970 when he was given a drawing that showed how logarithmic spirals determine the growth of the sunflower seeds in the golden progression.

'It was Frank Lloyd Wright who first considered geometry as scaffolding, which is later taken off' says Hecker. Similarly, Hecker's plans and sections are his common medium for studies with which he often thinks and works out his moves. Most of the sketches tell us about Hecker's struggles and rigorous design process, as when the building has been built the decisive acts hide any traces of the thinking.



Thus the sunflower's line network is hidden or unseen when you are looking at the buildings, but in the Jewish School in Berlin it retained the potential due to openings that capture and spread daylight into the interior of the school. Naturally, it is a similar case with the Spiral House in Ramat Gan, where one of its most unique and contemporary aspects (in one of its earliest appearances) is that Hecker's interpretation of the organisation captures a spatial depth with many openings cutting through, creating this unique see-through for a building that otherwise is rather heavy and unforgiving. These allow cross ventilation, unusual views, connections between interior and exterior, illustrating a characteristic of all Hecker's work that directs the viewer along a series of progressions and delays through the building – much like a journey through a city.

Hecker's sketches are naked since no materials are expressed, though his use of materials communicates few of his intentions: a cultural critic as in the spiral apartment-block, or touching a nerve of the collective memory as in the Palmach Museum.

Hecker's freehand sketches of people, city landscapes, old historical buildings or trees inform us he can draw well naturally with elegant lines that portray the subject. Nevertheless, when designing he avoids being seduced by his lightness of hand, thus the sketches' attraction is more about framing thoughts and early ideas that often are incomplete, and (for an architect who wished to keep this sense of incompleteness through his architecture as well), it's fascinating to see the build up for that. His painterly sketches are three dimensional, capturing the building's dynamic in space, and are often expressive – more about an impression than about the completeness of form (another feature that software cannot handle).

Designing through numerous sketches of plans and sections is a reflection of a 20th-century design medium that is disappearing, where these days the rigorous design is taking place three dimensionally, and plans and sections are often cut at the end of the process, dissecting the end product so as to provide working drawings and building instructions. The three-dimensional thinking is through software and always looks complete, leaving the charm or attraction of an incomplete sketch as a memory from the past.

PEDAGOGY

KADK, Denmark

MATTHEW BARAC

Recent managerial appointments across the board at the Royal Danish Academy of Fine Arts (KADK) have set in motion, according to Katrine Lotz – an Associate Professor at the School of Architecture – ‘a long-term change in the academy culture’ rather than targeting easily-defined objectives. The institution is engaging students and staff alike in ‘a transparent process of hearings and debates’ ostensibly framed by the 2011 merger of the Danish Design School with the Academy’s Schools of Architecture and Conservation. Emphasising both internal connections and external collaboration, KADK hopes to reinvent itself for the future and, in so doing, to reappraise its continuity with an august and dignified past.

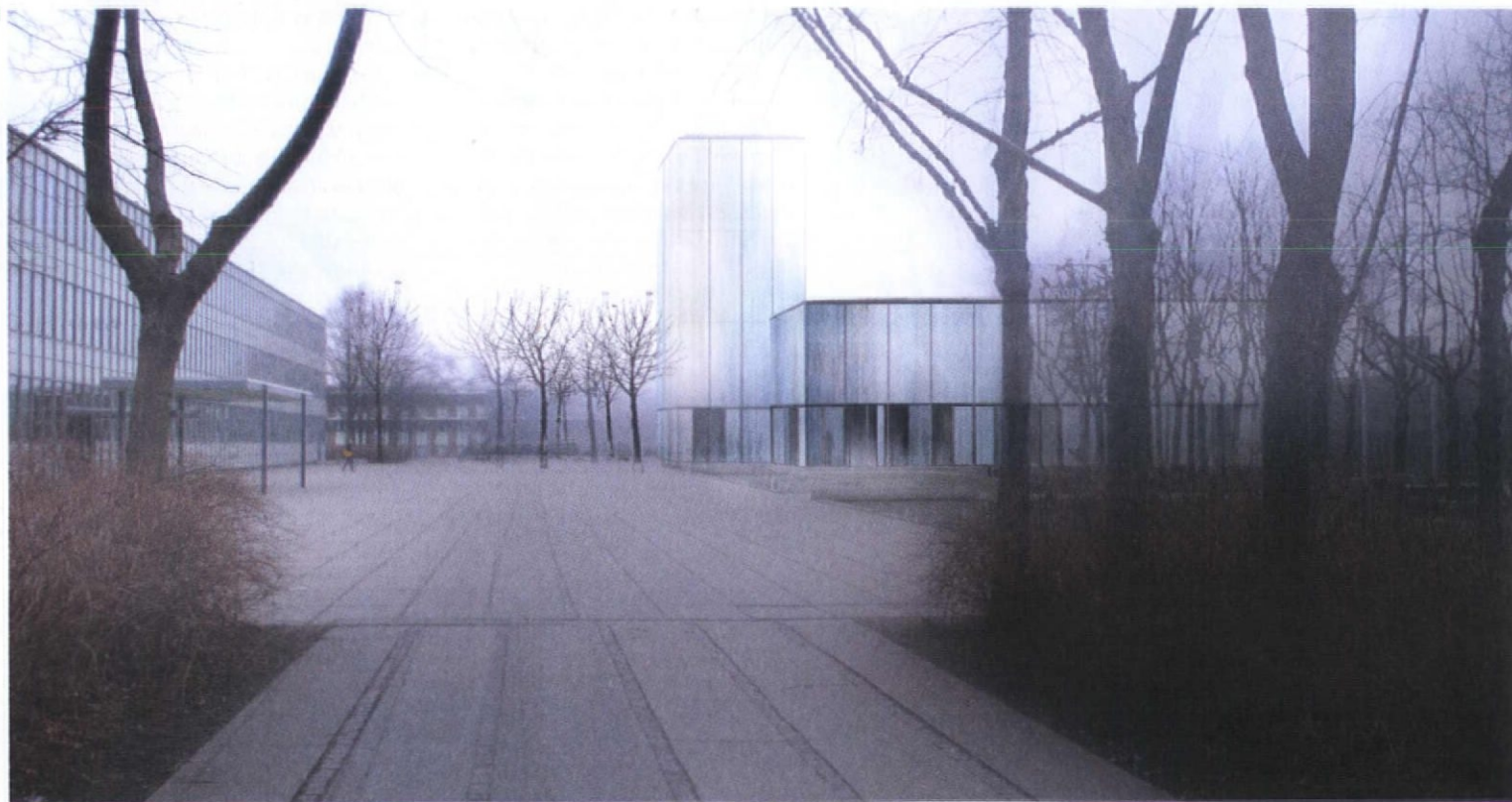
Founded in 1754, the school – which was originally an academy of ‘painting, sculpture and building’ – was a birthday gift for King Frederick V. During the early years of the institution, the king would regularly attend its meetings; his intense involvement underscoring the pivotal role played by culture and its historical association with Europe’s nobility.

Placing building alongside painting and sculpture, the academy’s formulation of culture aimed to unify craftsmanship with the fine arts. Equally significant has been an insistence at KADK, since the mid-20th century, on prioritising research in the evolution of architectural knowledge. Such enlightened attitudes have contributed to the popularity of a school which grew so rapidly in the 1970s that a restrictive admissions policy was introduced.

I. KADK tutor Charlie Steenberg encourages her students to adopt a practical approach to their studio projects. Here master’s student Mari Proll Lien attempts to address the concern of effective energy optimisation in a historic setting. She proposes a series of alterations to an ageing Modernist campus in Copenhagen

KADK hopes to recover a reputation for being ahead of its time, especially in regard to the role of research. Peter Thule Kristensen, the new Head of School, specifies the integration of research ‘including research by design and artistic development’ with studio teaching as crucial to KADK’s current processes of transformation. In addition, he highlights the need to balance a desire for consistent standards across the school with promoting difference and innovation – especially in the teaching of design.

There is nothing new about a school of architecture, particularly at diploma or master’s level, promoting its programme in terms of diversity: as a menu of studios offered to students. This suits both the academic superstructure’s natural wish for broad appeal and also the design tutors: those who teach each studio, often on a part-time basis,



charged with providing a distinctive approach. And yet, at KADK the desire for difference overshadows claims to a collective vision; Niels Grønbæk suggests that he and his tutor colleagues consider the very idea of 'one school' to be 'restrictive'. As Lotz clarifies, this is not just about exercising the right to assert a point of view. 'We are really embracing difference – what it means that some things are different from others but have to coexist. Perhaps this is a challenge to our culture of consensus.'

Grønbæk agrees: 'Copenhagen is not one thing.' Celebrated for its liveability, the city is regularly characterised as a democratic venue for multiple viewpoints rather than a single vision. The implication of mapping this multiplicity back, from city onto school, is that difference is vital if architectural culture is to flourish. For Lotz, this entails more

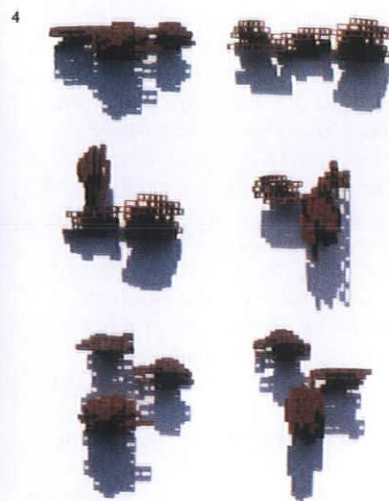
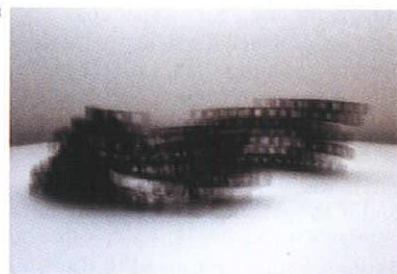
2. Rigorous realism in detailing the scheme allowed Proll Lien carefully to enhance both the technical and phenomenological performance of the refurbished buildings 3 & 4. A distinctly different approach to studio work taken by tutor Niels Grønbæk informed his student Karin Björsmo's proposal for a historical archive in Havana. Experiments with multiple exposure photography and sequential modelling were used to generate a tectonic form for the project

than passive acknowledgement of plurality, 'not only allowing for differences but actively pursuing how they are done'. The resulting debate is played out across a range of pedagogical attitudes in the master's level studios at KADK.

A project by Grønbæk's student Karin Björsmo exemplifies such an approach. Her Mausoleo de la Revolución proposes an archive for historical reflection in Havana. A series of exhibition and study spaces display documents and artefacts, excavating Cuba's revolutionary history in settings that progressively dig deeper into the ground and swing out to describe an arc in plan. Björsmo uses drawing and imaging techniques – sequential sections and multiple-exposure photographs – to test ideas about time, notation and recollection. In Grønbæk's studio, representational methodologies are exploited for both

their creative and critical potential.

By contrast, Charlie Steenberg's studio adopts an emphatically practical approach to address 'how things are actually done'. Although most master's level students are well-acquainted with the wider challenges facing architecture, a 'feeling of deficit' often holds them back. In her teaching, Steenberg aims to balance conceptual knowledge and technical capability. Student Mari Proll Lien's project investigates the pressing problem of energy efficiency, but with a focus often overlooked at architecture school: renovating old buildings. Lien's proposed alterations and additions to a Modernist scheme aim to bring its technical and social performance into step with current demands. Her project emphasises detail, building an argument for strategic intervention in the existing fabric only when necessary.



REPUTATIONS

Filippo Brunelleschi

PAUL DAVIES

Filippo Brunelleschi had a wicked sense of humour and was one of the first great modern architects. He was also the only one to sit firmly in Florence in the early 15th century.

His first biographer, Antonio Manetti, who actually knew him, describes him as amiable, never known to boast, and never angry except when provoked by the 'most insulting or disrespectful acts'. However, over a century after his death Vasari jazzed him up, and by 1568 Brunelleschi had developed a heart of irresistible vehemence alongside his beauty of intellect. Today adjectives cascade; he was beaky, balding, blunt, little, spiteful, cantankerous, volatile, competitive, suspicious and unkempt.

Sporting this original artist's temperament, he was prone to playing practical jokes, the most complex of which illustrate perfectly the dawn of humanism. I like to think Brunelleschi put at least one enemy in the madhouse because of his fresh understanding of the laws of perspective. He certainly convinced a fat carpenter he was somebody else. I imagine it like this: Brunelleschi got the man drunk, proceeded to slink off to the man's house and rest in his bed; when the carpenter arrived home, Brunelleschi greeted him, pretending to be the carpenter, who went promptly mad with confusion.

The principles of perspective assured that the eye was an apparatus receiving information and that light performed in accordance with strict laws, it assured us there were natural laws, and by implication that figments of the imagination were just so, figments we would today consign to the subconscious. The common medieval view was that the eye projected, like a ray gun, as an extension of the body and mind. This is why Brunelleschi's victim went mad; his head was full of goblins

that were real, and Brunelleschi knew they didn't exist. This allowed man to dominate the landscape and not have it populated any more by goblins, and spelt the end of the medieval.

Perspective revolutionised painting and upended architecture, but Brunelleschi's consequent mature work is instantly recognisable as satisfyingly proportioned, oozing harmony in its rhythmic grey and white, and featuring mere dabs of iconography suddenly extraneous to the purpose at hand. The Chiesa di Santo Spirito (1434) and the Ospedale degli Innocenti (1419-27) exemplify calmness and rigour, even if, from the perspective of the newly discovered perspective, harmony is technically as elusive as it might be universal, simply because this harmony of nature, music, mathematics and man was of course easiest illustrated in just plan, section and elevation.

The Ospedale (foundling hospital) plan is especially elegant on a difficult site, the parallel composition united to the piazza by the perpendicular full-length loggia, while the section seems clearly predicated on healthy cross-ventilation. That quality of knitting order into context is also evident in the modest Palazzo di Parte Guelfa (1420), and even seems naggingly universal; the Pazzi Chapel (1429) could have been done last week and probably has been, in the dreams of architects the ilk of Eric Parry, Ed Jones or Demetri Porphyrios.

Brunelleschi was a notary's son but showed a talent for the ingenious rather than the bureaucratic. In early life he took to goldsmithing. His familiarity with clocks – and the principles of balance, jointing, connection and (by extension) bonding – would take him into a world beyond aesthetic harmony, and into architecture as engineering. He first tried sculpture but in an early outburst renounced it after losing a contest for the Florentine baptistery doors to Lorenzo Ghiberti. It was reasonable he was aggrieved,

'Brunelleschi put at least one enemy in the madhouse because of his fresh understanding of the laws of perspective'

**Filippo di Ser Brunellesco
1377-1446**

Education

Trained as a sculptor and goldsmith

Legacy

Developed the laws and principles of perspective

Designed the largest spanning brick dome in history for Florence Cathedral (from 1436)

Key buildings

Cupola, Santa Maria del Fiore (1417); Ospedale degli Innocenti (1419-44);

Pazzi Chapel (1429-61);

Cupola, Florence Cathedral (from 1436)

Anecdote

At a meeting to award the construction of the cupola of Santa Maria del Fiore, Brunelleschi challenged other architects to make an egg stand on end on a flat piece of marble. The artists duly tried, but with no success. Brunelleschi took the egg and cracked its bottom on the marble to make it stand upright, thus winning the commission

the commission set Ghiberti up for life. Brunelleschi sold a farm and with his equally volatile friend Donatello ventured to Rome, where, on and off, he spent a decade. He measured the proportions of ancient columns and studied the ruined aqueducts. He researched the Pantheon, and contemplated techniques of Roman vaulting now lying in ruins, especially the question of centring, for timber of size was scarce and expensive. Accused of being a literal treasure hunter, the more lyrical truth seems 'in clods of earth he saw veins of gold', and in around 1416 he returned to Florence ready to put the 're' in Renaissance.

The problem for the Opera del Duomo was how to raise the cupola over the huge Santa Maria del Fiore and remain true to the grandiosity of its planning and the works already completed. Brunelleschi was now over 40; he died in 1446, almost as its lantern was finally consecrated. It is the largest spanning brick dome ever, with two skins and an ovoid section, constructed entirely without timber centring. Not only were there obvious physical challenges, but also political ones. Not trusting Brunelleschi, the Opera forced him to share the responsibility and fees with his old enemy Ghiberti. Brunelleschi took to his sick bed in pique, hoping to expose Ghiberti's inadequacies. After each of many squabbles the Opera relented and he got his way.

In *The Life of Brunelleschi*, Manetti respectfully describes him thus: 'During his life not a small stone or brick was placed which he did not wish to examine to see whether it was correct and if it was well-fired and cleaned: something which no care was expended upon afterward, since today attention is paid only to what appears to be economical, and stones from the river and rough bricks and all sorts of crudity are employed. The care he gave to the mortar was wonderful. He personally went to the brickyards regarding the stones and the baking,



MH. JEEVES

the sand and lime mixture, and whatever was required. He seemed to be the master of everything ...'

So Brunelleschi's clockmaking bore fruit. His creation of the cranes and scaffolding for the cupola inspired even Leonardo da Vinci. He invented a clutch on an ox lift so that the animal could always walk in the same rotation whether lifting or lowering material, he invented clasps and fixings and proved especially able designing the iron reinforced stone rings necessary to confine the outward forces of the cupola's masonry without flying buttresses (which Brunelleschi found ugly, and politically Milanese) and presumably without complex modelling either.

So there we have it, the birth of the modern, that quest for harmony with science. Even if we can't yet see the industrial revolution and the Faustian spirit bloom, Brunelleschi seems to anticipate it by three centuries. His story refutes any Spenglerian notion that our civilisation finds its source in the Gothic, and reasserts it with the Ancients. He becomes a pathfinder for the Enlightenment project. No wonder Brunelleschi was secretive; securing his fees and fearing copyists was one thing, but such thoughts were actually dangerous.

However, while dwelling on wider harmony, his death mask shows him unattractive, and in personality he was hardly diplomatic. Given his wealth and status this should hardly have precluded marriage, but women are conspicuously absent from his story, even though he adopted a son and heir. Perhaps he was simply not interested and women were an unwarranted intrusion to intellectual tidiness. However, Vasari is insistent that Brunelleschi and Donatello were inseparable, and in the Florentine Renaissance homosexuality was so rife and deemed so sapping of the strength of the army that the authorities bade female Florentine prostitutes wear bells on their heads, as if to wake men up.



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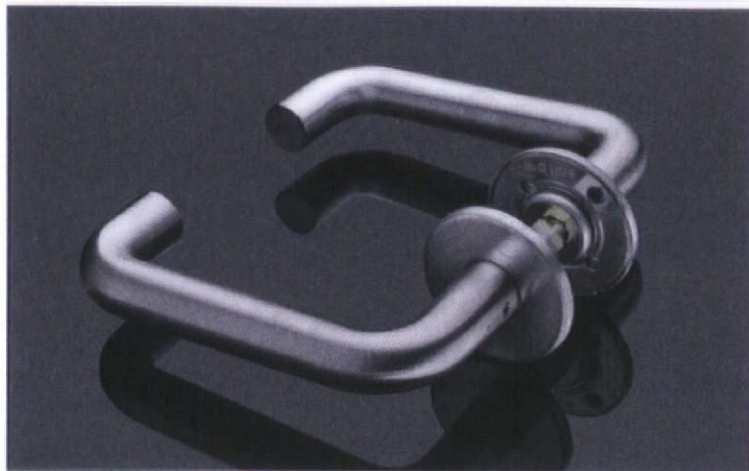
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Product review



Making the benchmark the norm

d line, the distinguished Danish manufacturer of door and bathroom hardware equipment, is the benchmark for design, quality and performance in

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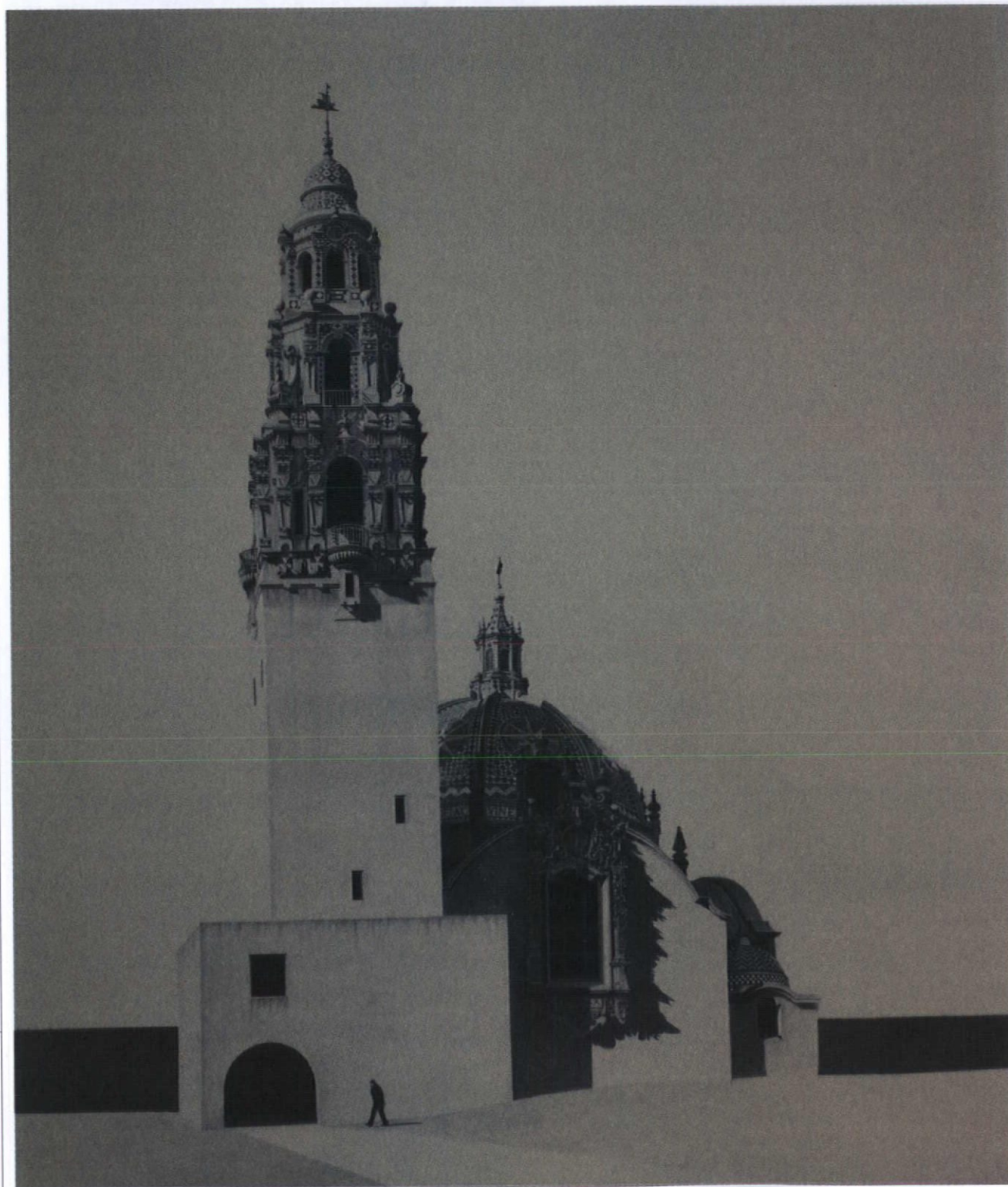
Shown is a recent installation of Grace & Webb's laser-cut lift cladding for new apartments in London. The vine design winds its way up five storeys extending over 41 separate panels. Based in the Cotswolds, Grace & Webb utilises the area's wealth of specialist manufacturers resulting in quality assurance and tight production times. www.graceandwebb.com



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This finely detailed drawing by Kansas-based architect Gary Schuberth skilfully evokes the texture and depth of a fantastical domed building. The elaborate art work won the annual Ken Roberts Memorial Delineation Competition for best hand drawing by a practising architect

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