VELUX®

AUTUMN 2006 ISSUE 04 **LIGHT** 10 EURO

DAYLIGHT & ARCHITECTURE MAGAZINE BY VELUX

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DISCOURSE BY JAMES CARPENTER

Although we have generally reduced our thinking about vision to optics, it is worth keeping in mind the earliest thoughts on vision and perception – the doctrines of Democritus and later the Greek atomist, Epicurus, as described by Lucretius, put forward the notion that vision and recognition occur in the middle ground between self and object. Considering these ancient interpretations of perception has led me to the contemporary notion of light as 'information', most effectively manifested by glass. Glass, as the most mutable substrate, allows for both the transmission of light and the revelation of usually unacknowledged light phenomena.

We can understand that there are, in the simplest interpretation, two levels of light as 'information' that tell us about our world. There is the conscious observation that becomes the framework for our memory and then there is unacknowledged visual information that becomes the substance of our dreams. In this view of light, occupying our conscious and unconscious selves, glass can clarify the most subtle of phenomena, making visible the subconscious act of perception and cognition, and suggesting that beyond interpreting the world, we have access to our memories and dreams.

The general idea that the ephemeral can be central to heightened experience of a place paradoxically requires the fullest engagement in that place's materiality. This is a process that demands precision across many fields of study, which is why collaboration is at the core of this process. The key to the successful project's development is focused experimentation, animation and construction of physical models and mock-ups. Light is simply the most visible form of energy, but it naturally extends to the other forms of energy, such as thermal and sound energy. This control of energy is ultimately about the human experience and a constructed and functional environment is necessarily sensitive to the human condition. We aim to push beyond the typical concerns of light as it is perceived reflecting off the surface of architecture – dark or light, shiny or matt. Controlling the transparency, reflectivity and translucency of glass with optical and physical methods, such as applying films and coatings, we display light itself, layering views of the world, with their synthesised versions, as if revealing the act of perception itself.

Portrait: Adam Mørk.

Read more about the work of James Carpenter in the article *Light is the real stuff,* starting on page 20.

VELUX EDITORIAL
DAYLIGHT IS VITAL

Daylight and architecture are inherently connected. Throughout the history of architecture, daylight has played an invaluable role in the lighting of buildings. Daylight is essential – not only for vision, but also for the effects on people working in, living or experiencing the built environment. Seen from a biological point of view, daylight is the essential factor for the existence of all life. Humans are diurnal animals. Our circadian rhythm is governed by the alternating presence and absence of daylight. In our waking phase, light allows us to see, to read, to paint – in fact, to live a normal human life. But there is increasing evidence that it has other less obvious effects on our physical and mental health.

The effects of light through window openings have been a tool – sometimes a toy – to the painter, the photographer and the architect throughout history. Few elements in a building are as vitally important to its functional success as the window. Architecture must fulfil visual as well as and biological needs with windows – in a way that gives us full control over how light and heat are admitted into a building and over the view we have out of that building. This branch of architecture has evolved into 'daylighting design'. For it to evolve further, there must be a common understanding by everyone involved in the building process; a grammar, syntax and vocabulary, based on recognised references, for defining what high quality daylighting is and how the right balance in its effect can be achieved. Providing solutions for ensuring the best possible indoor comfort level in any building has been at the heart of our business since the company was founded in 1942, to provide solutions for ensuring the best possible indoor comfort level in any building.

This edition of *Daylight & Architecture* takes a look at the topic of light from a variety of different viewpoints. Pablo Buonocore explains the role of daylight in human culture, from ancient mythology to the more scientific approach that has prevailed since the Renaissance, and to the efforts that are being made today to capture, harness and control daylight in order to enhance the quality of human life. Liz Wells discusses the ever-present importance of light in contemporary photography, and Peter Boyce looks deeper into the effects of light on human health and well-being. In the main article of *Daylight & Architecture 4,* Ole Bouman examines the work of James Carpenter, one of the main protagonists of contemporary daylight architecture. Carpenter, who was trained both as an architect and as a sculptor, has long been considered a mere 'glass specialist' by many, but this description does not do justice to his keen interest in light as a means of communication and human perception. In his most recent work, James Carpenter not only collaborates with recognised architectural offices such as SOM and Foster and Partners; he also expands his task from that of an artist to that of an architect in his own right, creating whole atmospheres that embrace daylight and artificial light as well as ventilation, temperature control and spatial relations – in other words, almost all the channels through which a building communicates both with its environment and the user.

We hope *Daylight & Architecture 4* will be a most enlightening read.

AUTUMN 2006
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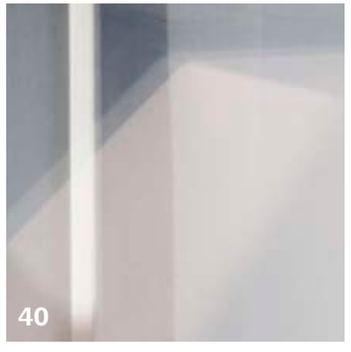
NOW

The latest of **James Turrell**'s "Skyspaces" in which light art meets astronomy has now been installed in Zuoz in the Graubünden Canton of Switzerland. In Stuttgart's **Mercedes-Benz Museum**, more than 100 historic automobiles sparkle under the glare of headlights – and the metal sheet facade of the UN Studio building gleams in the sunlight. Plus the new "light cube" of the **Unter den Linden State Library** in Berlin and the first restaurant by **Tadao Ando** in New York.

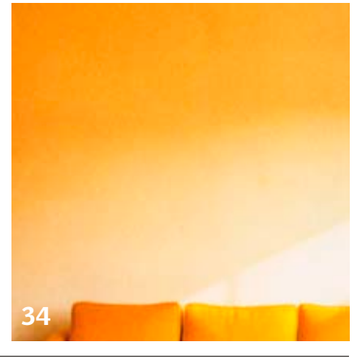


DAYLIGHTING DETAILS
LIGHT AND HEALTH: THE IMPLICATIONS FOR LIGHTING

Put simply, light affects people in three ways: through the skin, through the eyes and through the circadian system which regulates our waking and sleeping patterns. **Peter Boyce** explains the influences of light on the human body and soul, and investigates the consequences to be drawn by the world of architecture.

DAYLIGHTING
JAMES CARPENTER

From being a glass specialist and video artist, in just over three decades **James Carpenter** has developed to become one of the significant cultural pioneers between the realms of art, architecture and engineering. In his article, **Ole Bouman** describes a man poised at the threshold between autonomous art and service, and specialist expertise and the complete art work.



REFLECTIONS
WRITING WITH LIGHT

No photography without light – this principle has remained unchallenged even by the digital revolution. **Liz Lee** explains how contemporary photographers work with the material they use to create their pictures, and the significance they attach to it.

VELUX INSIGHT
VARIATIONS IN WHITE

Through painstaking detail work, **Frank Maali** and **Gemma Lalanda** laboriously liberated a former car workshop in Copenhagen from the ballast of its previous life to reveal the generous rooms and expressive wooden construction of the original building. The lovingly restored premises are now used by the **Mogens Dahl Institute**, which benefits from the ingeniously designed daylight concept that allowed the architects to breathe new life into a once dismal old building.

VELUX PANORAMA

Two monolithic structures, one in Japan and the other in Wallis, which abide by their own sets of regulations but still achieve an amicable dialogue with their environment. **Nunatak Architects** have placed an 'inclined box' made of wood and slate in a vineyard in Leytron, while in a suburb of Tokyo, **Jun Aoki** has erected a residential block in virginal white. Its inner rooms serve the primary purpose of bringing to life the rich and changing tapestry of nuances created by daylight.

NOW

The things that make architecture tick: events, competitions and selected new developments from the world of daylighting.

EUROPEAN ARCHITECTURAL PHOTOGRAPHY PRIZE

CALL FOR ENTRIES

For the seventh time since 1995, the European Architectural Photography Prize will be awarded next year. The competition, which, since 2003 has been coordinated by the registered association 'architekturbild e.V.', enjoys a continuously increasing number of participants. In 2003, 663 photographers from 19 countries presented themselves for the judgement of the jury of photographers, architecture journalists and exhibition organisers. The contestants have to explore a subject specified by the organiser of the competition.

After 'Work Places' in 2005 (the photo below is by Andrea Botto from Rapallo/Italy, the third award winner), this year's theme is 'My Favourite Place'. The term 'place' should not be narrowly understood – it could be a house or just a certain room in a house, it could be a street, a public square or a private courtyard – or it could be an entire town. There are, though, some restrictions. The photographs submitted should not be more than three years old and must portray contemporary architecture (no more than fifty years old). The participants are expected to submit a series of maximum four photographs (as prints, maximum format: 40 x 40 cm).

The closing date for entries is 26 January 2007 and the entry fee is 50€. Besides the first prize (4,000 €), two commendations (1,000 € each) will be awarded. Detailed information and call for entries documents in German and English can be found at www.architekturbild-ev.de.

PHOTO: ANDREA BOTTO

COMING CLOSER TO THE SKY

"So to have this sort of blended light from the stars and this new, 8½-minute-old light from the sun is like having a Beaujolais and then a finer, older mature wine as well."
James Turrell

The 'Skyspaces' by the American light artist James Turrell are sky observatories, spaces of mostly circular or elliptical plan, in which the visitor feels very close to the sky: The solid and mostly bare concrete walls of the rooms entirely blind out the surrounding landscape and focus the view entirely on the round ceiling opening, through which, depending on the time of day and the weather, pale grey or steel-blue daylight, moonlight or starlight enters the room. After dark, fluorescent tubes installed behind the high backs of the benches set the room ablaze with an almost magical light. Then, not only the vaulted ceiling seems to change colour but also the firmament visible in the ceiling cut-out. For James Turrell, one of the fundamental appeals of his 'Skyspace' series is this alternation between 'young' artificial light and the billion-year old starlight. The sky observatories gained fame through Turrell's gigantic land art project 'Roden Crater', an extinct volcano in Arizona's desert. It can be visited by only 14 people a day, so the waiting list is correspondingly long. European art-lovers can experience the 'Skyspace' thanks to a replica installed near the Castell Hotel in Zuoz/Engadine. The circular 'Skyspace Piz Uter' (altar mountain) was converted by UN Studio last summer. The name comes from the mountain near Zuoz that is precisely in the alignment of the entrance, clear and visible from the inside and defining the structure's position in the landscape. The 'Skyspace' was realised on the initiative of the Swiss trust fund Walter A. Bechtler Foundation, whose president, Roedi Bechtler, is the main shareholder of the Castell Hotel. The hotel's art decoration, which presently comprises the rock pool by Tadashi Kawamata, the 'Red Bar' by Gabriele Hächler and Pipilotti Rist, as well as works by Peter Fischli/David Weiss, Roman Signer, Carsten Höller and other contemporary artists, now includes another highlight. The 'Skyspace' is integrated into the 'Art Public Plaiv' art project, for which the Bechtler Foundation, in collaboration with the Zurich School of Art and Design, has already funded a dozen or so artworks in Zuoz and the neighbouring communities.

PHOTO: FLORIAN HOLZHERR

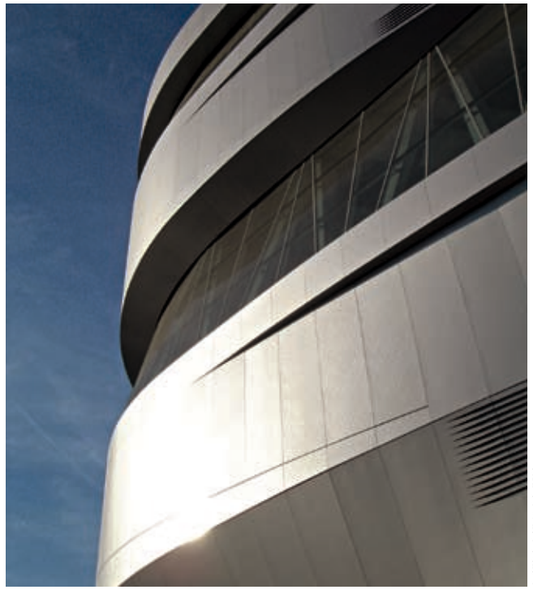


PHOTO: CHRISTIAN RICHTERS

MERCEDES IN A GLITTER DRESS

DaimlerChrysler and Ben van Berkel's architectural practice UN Studio have placed a new highlight in the German architectural landscape - the new Mercedes Museum in Stuttgart. The intertwined building with its exhibition halls arranged in a double helix attracted attention even when it was a building site. The stringent deadline, the complex cast concrete forms and the consequent problematic detail turned the construction of the museum into a media event.

Now the 80-metre wide and 55-metre high colossus, with curved sheet metal cladding resembling the bodywork of a car, and the inward and outward inclined glass surfaces, rises at the Neckar riverside. Access to the museum is via a man-made hill, with the utility and storage rooms hidden underneath the slope's greensward. Inside, the exhibition concept, lighting management and visual links between the interior and exterior have been interlaced to form an inseparable entity. Three lifts transport the visitor through the almost 50-metre high open atrium up to the top floor, where two optional routes wander through the exhibition designed by hg merz architekten. On the inside, facing the atrium, the tour leads through the two-storeyed 'Halls of Myth', where the corporate history is presented alongside other events of the time. Film and sound staging, as well as artificial light, fill the rooms with life and activity. The single-floor 'Collection' Halls, column-free spanning across 33 metres, are located on the outside, offering a panoramic view across the city and the surrounding region. Here the individual automobiles are presented in daylight, within arm's reach of the public. No one glass pane in the facade resembles another, and the panels of the sheet metal cladding were produced with computer-aided manufacturing. A closer look reveals how the facade seems to sprays sparks in sunlight. Here and there, a fine, irregular dot pattern was pressed into the metal sheets, adding a touch of precision engineering to the otherwise rather dull surfaces and cutting down reflection glare on the facade.

PHOTO: SAINT-GOBAIN GLASS

WASTE GLASS MOSAIC

With its deep blue shimmering glass facade, the new centre for the Muslim community in Penzberg, Upper Bavaria, has been catching the eyes of passers-by since September 2005. At first sight, the cubic exterior and filigree steel minaret of the building, designed by the 32-year-old Bosnian architect Alen Jasarevic, does not look like a classic mosque, which is exactly what the client wanted. The objective was rather to create a forum in Penzberg for Christians and Muslims to interact. Jasarevic conceived a structure from pieces of broken blue glass bottles for the facade in front of the prayer-room, submerging the room in a deep blue light. The inspiration for this design came from a glass sculpture developed by 'Glaskontor Erfurt' in the form of an obelisk made of spot-mounted glass trapeziums bonded with pieces of broken blue glass bottles; at night the back-lit sculpture shimmers blue. New solutions for the composition and bonding of the glass pieces had to be developed to apply this method for the construction of the facade. The bottles were broken, sieved and washed. In order to generate the desired light effect, the broken glass pieces were glued by hand onto toughened single-pane glass at a ratio of 80% blue, 20% white and a handful of red per square metre, until the fragments formed a non-transparent surface. With rough cast plate on the inside and heat-absorbing glass on the outside, the components were built-up as a triple-insulation glass.

PHOTO: HG MERZ ARCHITEKTEN

BEAMING LIGHT CUBE

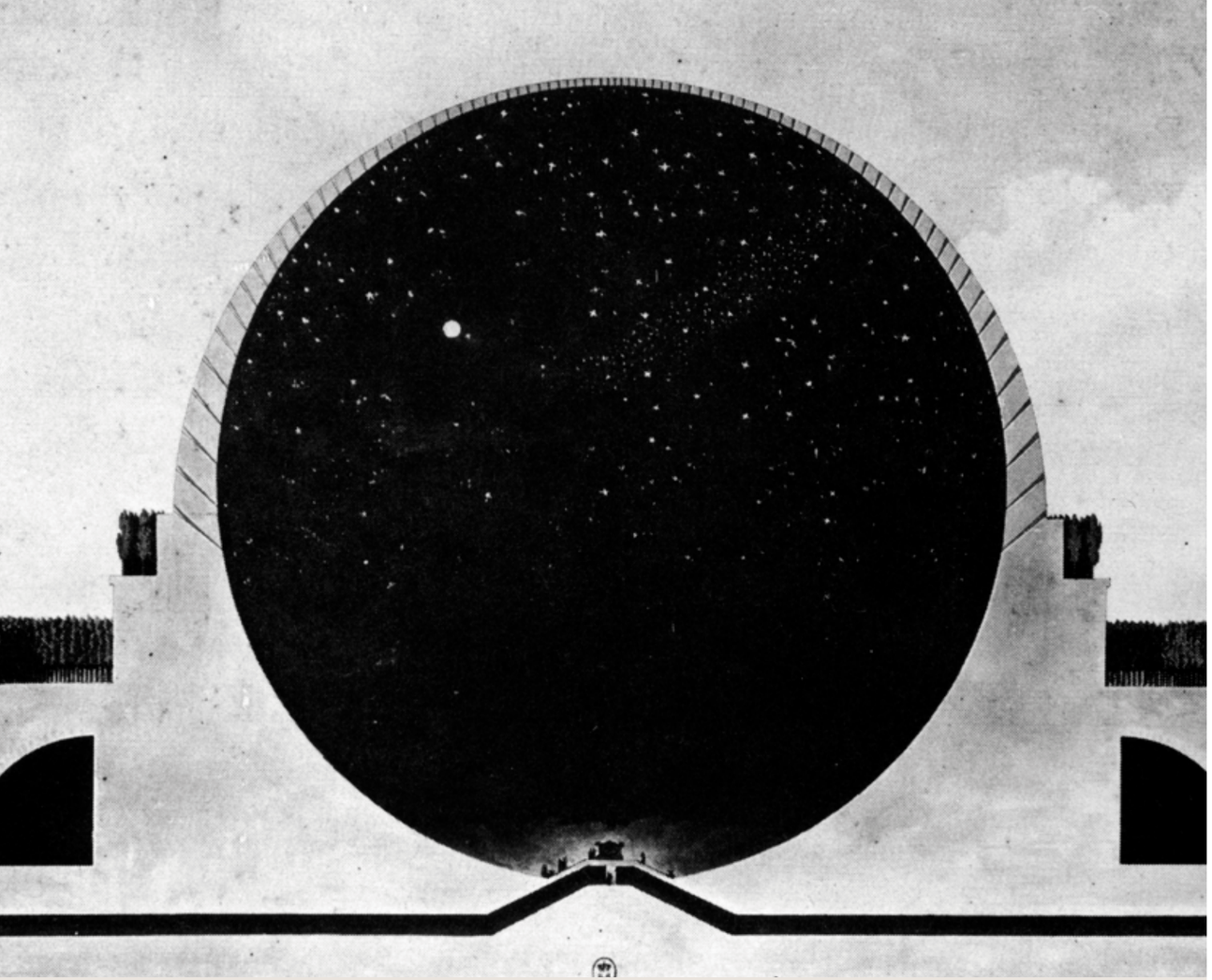
"A man with a book goes towards the light. That's the way a library begins." This maxim by Louis Kahn serves as the basic idea for the Stuttgart practice hg merz architekten when designing the new reading room of the National Library 'Unter den Linden' in Berlin. The Library, built by Ernst von Ihne between 1903 and 1914, is 107 metres wide and 170 metres long and with 13 storeys it is the largest historic building complex in central Berlin. In the course of restoration, which began 13 years ago, a new reading room is being constructed. Once completed, it will replace the domed hall, which was damaged during the Second World War and demolished in 1975. hg merz architekten won the international competition for this new building in 2000.

The architects' design takes its reference from the existing building axis, which leads from 'Lindenhalle' (the entrance hall) via the 'Brunnenhof', the great staircase and the vestibule to the new reading hall, forming the climax of the complex. After alternating light and dark rooms, the visitor reaches the bright and spacious hall. Wooden bookshelves stretch across three storeys that house the open access collection. The translucent glass body rises above this foundation, with parts of the reading and working spaces located on the gallery levels between the facade layers. The double-shell glass facade of the light cube consists of large-scale, thermally deformed glass and a semi-transparent, PTFE-coated glass fibre fabric. A special feature is the deformation of the glass, which refracts daylight and spreads it evenly in the interior. The translucent envelope regulates the admission of light during the day, whilst at night the reading hall looks like a beaming light cube.

PHOTO: FRANK OUDEMAN

SPIRIT IN A BOTTLE

So far Tadao Ando has mainly gained recognition for his impressive churches and museums. Now the Japanese Pritzker award winner has turned his attention to a purely secular building task and accepted the challenge of an unusual material experiment. Ando designed the Japanese restaurant Morimoto on New York's Tenth Avenue, between 15th and 16th Street, for Stephen Starra, a Philidelphia restaurant owner. The facade of the two-floor restaurant with 160 seats consists of a huge arc clad with galvanised steel canvassed with a 'noren', a scarlet Japanese curtain. Inside the restaurant, Ando combined the bare, smooth concrete walls often seen in his architecture, with soft, sound-absorbing materials. The ceiling is a corrugated, glass fibre-reinforced fabric suspended with chains beneath the existing ceiling. But the really eye-catching feature of the interior is a six-metre, nine-ton installation made of 17,400 filled 'Ty Nant' water bottles hanging from the restaurant ceiling, gently swaying to and fro in the stairwell. Ando once again incorporates the water motif that characterises many of his buildings. The bottles not only refract the light entering the space into myriads of single facets, but also shine from the inside. Cold and warm white LEDs have been placed between two layers of bottles in such a way that the light reflected from the surface of the bottles resembles dots of light on the rippled surface of a lake.



MANKIND
AND ARCHITECTURE

Mankind as the focal point of architecture:
interior views of a corresponding relationship.

LIGHT AS A CULTURAL ASSET

Above **Isaac Newton was one of the first scientists to explain the phenomena of the heavens and light without relating them to religion. In his grand plans for a Cenotaph for Newton, the revolutionary French architect Etienne-Louis Boullée attributed a god-like character to the British physicist in 1784. Hundreds of tiny openings in the sphere, which was to have a diameter of more than 150 metres, make it into a depiction of the heavens with the moon and constellations.**

Text by Pablo Buonocore.
Image selection and captions by D&A.

From the sun cults of the ancient Egyptians to the modern-day office workplace, our relationship with the sun, and consequently with daylight, has been a determining factor of human culture down the centuries. In his article, Pablo Buonocore discerns a periodical backward and forward shift in our attitude to daylight.

We need daylight as a framework on which to adjust our natural biorhythm. We need only to glance outside to pick up the pointers we need for the well-being of both body and soul. We unconsciously gather a wealth of information from factors we see as commonplace, such as mood, the position of the sun, the weather situation and the time of year – all of which are essential for the regulation of our bodily functions.

But each and every one of us is different, and our receptiveness to factors such as the brightness and tonality of a light atmosphere is individual on both a conscious and a subconscious level. People with a more rational disposition will tend to prefer bright, white light, while the more sentimentally minded err towards a more subdued, soft lighting effect with a slightly yellow tinge. This is complicated by personal experience gained in connection with light or dark places which bring out a whole series of moods and associations even before we have made a conscious assessment of a space. Perception is consequently not simply a question of the lighting mood of a space but also of the baggage of individual experiences we carry round with us. These are the factors which cause us to pick up the mood of any space or location subjectively.

But it is not only our own internal experiences that cause us to perceive light differently from our fellow humans. There are without doubt cultural differences to be found, originating from religious beliefs and their interpretation as to the significance of the sun, the light or the sun's rays. Even in the Christian culture, the significance of daylight as a metaphor for God has undergone a continuous transformation over the centuries. Conversely, in our daily lives the cultural significance of the sun has diminished rather than increased. When the sun was superseded by the clock and the calendar as a means of telling the date and time, there was a shift in the dependence of our daily rhythm on the rising and setting of the sun.

The influence of daylight on our lives is not simply cultural but also geographical. In southerly regions, ingenious methods have been devised to provide shelter from the hot rays of the sun. Wide overhanging roofs and shady hallways are among the preferred methods for preserving a pleasantly cool atmosphere away from the oppressive heat of the midday sun. Shady, darkened spots frequently have pleasant associations. Conversely, in Scandinavian countries there is an obsession with "catching light". Since the very beginnings of the Modernist era, architects in this part of the world have looked for ways of collecting the sparse Northern light using funnel or fan-shaped building structures and using it to maximum effect in building interiors.

Like the various epochs that have marked out the history of Europe, the different architectural styles that characterise them have also evolved their own individual position in relation to daylight. At times, during the Romanesque period for example, the light mood was deliberately engineered to be mystic and dim, while in periods such as the Renaissance, a bright and rational atmosphere was preferred. Over the course of centuries, the light mood and its cultural significance have swung regularly back and forth like a pendulum between the rational and the emotional. However, since the Post-Modernist period this pattern has changed, with varying parallel styles now remaining in vogue concurrently. Consequently, we are lucky enough to live in an era in which the architecture of daylight is tailored to the practicalities of the project in hand rather than being subject to the dictates of fashion.

THE CULTURAL HISTORY OF DAYLIGHT

From the Christian perspective, the creation of light stems from the very concept of Genesis. But the special importance attached to light is not exclusive to the Old Testament. The mythology of many cultures equates the creation of light with the beginning of an ordered and living world, while in contrast the shadow and darkness are synonymous with death and chaos. This dualistic approach has served in many of the world's religions to embody good and evil. Since pre-historic times, mankind has venerated light-filled artefacts, and the sun and its light have been deified, particularly by early civilisations. Cult objects were often treated as a medium between mankind and the light. Translucent amber, for instance, was revered as a symbolic carrier of light. The light symbols favoured by ancient civilisations tell us a lot about the human craving for light-filled artefacts and their transcendental significance.

When light was brought into the home during the Stone Age in the form of fire, life underwent a drastic change. For the first time, mankind was able to wield an active influence

"But the architects who design spaces today have lost their belief in natural light. By making themselves dependent upon the pressing of a switch, they are settling for the use of static light and forget the eternally changing properties of natural light that can transform one space into another at any second during the day."

Louis I. Kahn (source unknown)

in the eternal battle between light and dark. The sun as the 'redeemer' of light after the darkness of the night was now no longer the only source of light available for use.

Human observation of the sun and the cultivation of sun-related myths go back as far as the Bronze Age. One example that illustrates this is Stonehenge, whose stone gateways are positioned to allow the rays of the sun at certain elevations to fall at precisely defined points in the centre of the circle. Many findings testify to the use of sun chariots and a variety of other sun-related motifs. Hans Sedlmayer explains: "We see the large, flat golden disk itself, which may be interpreted as an illustration rather than as a symbol of the sun. It is decorated by fine circular and spiral-shaped ornamentation whose primary motif is large annular rings and rows of smaller circles and spirals. Circles and spirals are without doubt used as vehicles of solar symbolism. The reference to the light is provided by the material, the reference to the sun is made by the circular shape." At Stonehenge, experts were also able to verify that the increasing radius of the stone circles is concurrent with increasing calendar precision – to the point at which the stone circles are indicative of the 13 lunar months. This is an indication that Stonehenge was used as a relatively precise instrument for the measurement of time.

It is almost impossible to deal with the subject of light and its significance for any civilisation without looking at the sun and death cult of the ancient Egyptians. While civilisation on the European continent lagged well behind in the deepest Stone Age, the Egyptians had already successfully taken the momentous step into the Bronze and Iron Age. We are fairly sure that the most significant of the Gods worshipped by the Egyptians was Ra. He embodied the sun itself and was worshipped with an unfailing intensity throughout all the dynasties. The picture of Ra, the Sun God, was linked to the conception of the daily path travelled by the sun. The disc of the sun represented his face or his eye. The Egyptians imagined that Ra was born again of the Goddess of the Heavens every day in the east, and then appeared over the horizon (his eye opening). As the lord of the heavens, he then traversed the water of the skies in his barque, depicted as a falcon, watching over the earth.

Findings indicate that the Egyptian pyramids were given a polished finish which took away their dull stony surface, totally transforming their appearance. They turned into geometrically precisely calculated mirrors and thus became symbolic of the status of the deceased king, who was at one with Ra, the sun, the light and the universe. The tips of most pyramids were finished with a capstone called a pyramidion made of precious metal. The capstone was designed to catch the first and the last rays of daylight, and appeared as a light-filled torch beaming out over the earth.

BETWEEN MYTH AND RATIONALITY: FROM ANTIQUITY TO THE RENAISSANCE

Both the Greeks and the Romans attached a far less important role to light. It was the Greek civilisation that developed the geocentric view of the world, placing mankind on the earth in a world made up of light and shadow, moving into the realm of darkness in death. The Greeks set out not to negate nature as a force to be resisted, but to embrace it by accepting and researching its laws.

But still the Greek temples must be seen as a type of bridge between mankind and the immortal world of the gods. Their interiors were no longer enclosed by walls that would prevent the ingress of light, but by columns that thematised the transition between inside and outside. As most of the temples were oriented towards the east, we may imagine how the gilded statues of the gods were lit up by the rays of the low lying sun penetrating the columns at dawn, seeming to awaken them, like the temple statues in Ancient Egypt, to new life.

Right up until the height of the Middle Ages, the abstract concept of light continued to assume the role of mediator between God and the world, and was even used as a symbol for God himself. We are familiar with the use of light as the symbol of Christ's resurrection. His words "I am the light of the world" are still valid today in the Church. The materialisation of light became a spiritual phenomenon considered independently of the sun in Christianity. According to Genesis, on the first day of creation there was light – the sun and the stars were created only afterwards.

The Romanesque cathedrals (900-1250 A.D.) are the last buildings in Europe that were constructed not for people but

1. The meaning of the stone circle at Stonehenge, set up in the Bronze Age is still intensely debated today. However, it was most probably a site for sun worship and death cult. The reason for this assumption is that the circle is aligned with the sun for the summer and winter solstices.

2. The Sky Disc of Nebra, discovered in 1999 in Saxony-Anhalt, is an estimated 3,600 years old and is the oldest known depiction of the heavens in the world. It is agreed by experts that the sun, moon, 32 stars, a celestial barque and a horizontal arc are all portrayed on it.

2

PHOTO: JURAJ LIPTÁK / LDA SACHSEN-ANHALT

1

PHOTO: DAE SASITORN / WWW.LASTREFUGE.CO.UK

3

PHOTO: AKG-IMAGES / ERICH LESSING

3. Obelisks were symbolic monuments in ancient Egyptian sun worship. They represent the petrified rays of the sun god and make the connection between this world and that of the gods. This obelisk in St. Peter's Square was brought to Rome under Caligula (12–41 A.D.).

4. This copper engraving by Christoph Scheiner (1575–1650) illustrates the scientific and secular approach to light phenomena in the Renaissance and Baroque. Scheiner was the first person to observe sun spots, independently of Galileo Galilei, with a telescope he constructed himself.

4

PHOTO: AKG-IMAGES

PHOTO: ACHIM BEDNORZ / BILDARCHIV MONHEIM

5. A compact, solid construction, like this at the Abbey of Montmajour near Arles, is typical of the Roman style of church architecture. Due to the kind of construction, there are only relatively small window openings through which light is barely able to penetrate. The church interior is usually only seen like this at twilight.

PHOTO: AKG-IMAGES / WERNER FORMAN

6. In many early civilisations, the sun was considered to be the highest divinity. On the Aztec sun or calendar stone, the face of the sun god Tonatiuh can be seen at the centre. He is framed by four pictures that represent the four previous suns (worlds) in Aztec mythology.

PHOTO: AKG-IMAGES / ERICH LESSING

7. During the course of his research, Sir Isaac Newton, mathematician and physicist, refracted light through a prism and ascertained that seven colours of the spectrum could be produced from "white" sunlight. In doing so, he discovered one of the fundamental principles of modern optics, and religion no longer had the exclusive rights to the interpretation of light phenomena.

for a godhead that performed visible miracles. Romanesque sacred buildings, solidly at one with the ground, are bastions of faith. They reflect the zeitgeist of the cluniastic reforms, which set out to counteract the influence of secular authority over ecclesiastical affairs. The architectural orientation was aligned here from the outside towards the inside. The exterior of the church sent out a clear message of God's omnipotence and greatness, while the incidence of daylight inside was reduced to create a dim and mystic atmosphere intended to inspire a shiver of respect and awe inside the house of God. In contrast to the cults of ancient civilisations, the church assumed the function of an assembly point and was no longer reserved for the exclusive use of only a small group of priests.

During the Gothic period, churches became a gathering place for ever greater communities. By the middle of the 13th to the end of the 15th century, this tendency led to the construction of enormous buildings with 'divine' dimensions that appeared to defy the laws of gravity. Since the very first Christian churches were built, every conceivable means had been used to represent and build a structure symbolic of 'rising light'. These endeavours reached their peak during the Gothic era. Ribbed vaults and flying buttresses satisfied the demand for resolution of the enclosing wall. The sense of perpendicularity favoured by Gothic architecture was supported by pointing arches whose ribs formed a continuation of the rising columns, drawing them together and sending them upwards into infinity. The cathedral in Chartres is a good example of the use of ever larger translucent membranes in coloured glass. The Gothic window is an opening only as defined by the construction. The impression it creates inside the building is more that of a disembodied wall illuminated ethereally from behind. The opacity of the glass surfaces creates the impression that the walls, of which the glass area form a part, are glowing. The rose window in particular may be interpreted as an effigy of the sun, and the structural embodiment of the equation "light equals God and the sun equals the image of God". To be touched by the light was to be touched, according to popular belief at the time, by the hand of God.

The demythologisation of light began at the end of the 13th century, with the first attempts to explain nature. In the same way that architecture was rendered rational and tangible by proportions and the rules of physics, an attempt was made to rationalise the concept of light. The perception of light changed during the Renaissance period between 1420 and 1660 from the religious to the representative and aesthetic, causing the symbolic concept of light to lose much of its significance. The function of light was now simply one of illumination. Brightness and transparency became associated with progressive building; the mystic twilight of the Middle Ages was now synonymous with a barbaric and backward age. For the first time, large windows permitted transparency from both the inside and the outside of building. Light from above was welcomed as a new symbol of quality, architects such as Bramante and Michelangelo began, for the first time, to consider the use of roof lights. Churches were divided into areas of differently designed lighting effects: the nave as the (laterally lit) passage through the building, the cupola as the (top lit) centre and the choir stalls as the (neutrally lit) end. This concept is clearly demonstrated by the Andrea Palladio church II Redentore in Venice. Here, the significance of light is reduced to its functionality. It illuminates every angle of the nave precisely, reflecting an austere, demystified prayer room. The architectural lighting themes used in the Renaissance are often viewed as reinventions of the Modernist period. In fact, they represent rather a re-interpretation that was to be manifested predominantly in profane architecture.

EXTRATERRESTRIAL LIGHT AND RATIONAL BRIGHTNESS: FROM THE BAROQUE TO THE ENLIGHTENMENT

Between 1560 and 1760, the pendulum denoting the perception of light swung back towards the sentimentality that characterised the Baroque period. A more intense relationship with light was in evidence; the way we experienced the sun was perceived in a more sensual perspective. Once again, the search was on for a diffuse, unreal experience of light avoiding the formation of hard shadows. The most striking achievements of the light architects of the time lay in the creation of a ring of lights above which a cupola appeared to float, its curves illuminated so as to appear totally dematerialised. This effect is encountered with particular poignancy when the sun is low in the sky in the Chapel of the Holy Shroud in the Cathedral at Turin. The complete illumination which floods the zenith of the cupola is achieved by a bank of windows at the cupola tip that is out of view to the observer from the inside.

Profane baroque architecture, on the other hand, linked light with the concepts of reason, liberty and power. An example of this is Ludwig XIV's Hall of Mirrors at Versailles. The splendid mirrored wall along one side of the hall intensifies the incidence of light by additional mirrored surfaces on the opposite side, thus multiplying the efficient use of light and allowing the elaborately painted barrel vault to be admired in all its splendour by visitors. From this time on, admiration for the marvels of architectural beauty was no longer the exclusive province of the churches.

During the Enlightenment, a fundamental shift took place in our metaphysical attitude to light. The concept of a spiritual overworld bathed in eternal light slowly receded, making way for a new and rational way of thinking. The underlying reason for this process of illumination, "whose epistemological title was 'Research' and whose political program title was 'Enlightenment'" (Peter Sloterdijk), is to be found in the new belief in humankind and its ability to construct the world itself. Light was transformed from a medium into an instrument. Once architects and builders had made every conceivable use of the sunlight by the end of the 17th century, mainly in the service of church building, the use of lighting began to assume a slightly less spiritual aspect. In Classicist buildings, the rational use of light to achieve brightness and metaphors of Cartesian reason were dominating themes.

The dawning of industrialisation saw the perception of light become finally and irrevocably demystified. From here onwards, light also served the purpose of illuminating buildings as profane as greenhouses and factory halls. The newly germinated 'appetite for light' was manifested in architectural terms in such projects as the Great Exhibition in 1851, in particular in Joseph Paxton's famous Crystal Palace. Visitors admiring the colossal steel and glass construction realised that the rules conventionally used to judge architecture no longer applied. The significance of Crystal Palace lies not only in the solution it presented in answer to major problems of statics, and not even in the innovative pre-fabrication methods and technical deliberations invested in the project, but in the new relationship that evolved between the technical means and the purpose of representation embodied by the building. Meanwhile, light-filled rooms with glazed facades were accepted initially only in publicly used rooms. Housing construction, for example during the Biedermeier era (1815 – 1848), still favoured the same dim half-light. Living areas were dominated by dark, light-swallowing materials. Bourgeois architecture throughout the 19th century was characterised by a strict separation of the outside from the inside.

SUN, LIGHT, AIR AND SPACE: DAYLIGHT IN THE MODERNIST AGE

The advent of a new sense of practicality now saw daylight making its entrance into the home environment. Brightness illuminating every nook and cranny now became synonymous with 'liberated living'. Plain glass, in undivided panes where possible, turned the home into an appendage of the outdoor world. The light concept reached its zenith with the complete dissolution of form, culminating finally in a house made purely of glass. Bruno Taut designed a Crystal House for the 1914 Werkbund Exhibition in Cologne. The walls and the elaborately formed domed roof were made of multiple glass panes. The impression of anyone inside was that of standing surrounded by pure light. Glass was used as a building material to depict joie de vivre and power. The overnight success of the new perception of light was aided by new sociological thinking and changing attitudes towards living hygiene. The Weissenhof housing complex, constructed in Stuttgart in 1927, provided exemplary proof that the theoretical concept of liberated living was capable of being implemented in practice. The foundation stone for the Modernist age had been laid.

New industrial processes and serial manufacture opened up the scope of young architects to develop new forms for contemporary architecture. "Sun, light, air and space" was the order of the day. Le Corbusier's manifesto "Five points towards a new architecture" advocated detachment of the facade from the supporting construction, which from then on permitted free positioning of openings around the building facade. Horizontal windows were introduced, and with them the possibility to impart complete, even illumination of rooms. The first

8. The Pantheon was built between 118 and 125 A.D. as a place of congregation in Rome. The most predominant feature is a 9 metre wide opening at the top of the dome, which symbolises the sun in its firmament. When the air is damp or misty, the sunlight is concentrated into a visible ray of light that makes it obvious how our most important star moves across the heavens.

room-height glass walls were created, and the 'brise soleil', or sunbreaker, developed as an answer to overheating in summer. From now on, there were no holds barred to free composition using light. Under continual development were new glass types, sun filters, control and deflection devices that permitted natural light to be modulated at will and modified the sun's rays to fulfil their intended purpose.

But even among progressive architects, Le Corbusier's five-point program was not greeted with unanimous recognition. Louis Kahn's rejection of the concept of separation of facade and skeletal structure clearly sets his work apart from the transparency of the Modernist movement. Kahn's issue was the emphasis of mass through structure, a theme taken up by many of his contemporaries, such as Paul Rudolph. Kahn's work sought to create the mystique of a space and bring it to life by using the energy of natural light. He worked with graduations and transitions from the public to the private and from the outside to the inside in order to modulate daylight. He also used light to support floor plan concepts that embodied his notion of spaces serving and spaces served.

The period from the Modernist to the Late Modernist age is characterised by the endeavours of architects to portray incident light situations with exemplary, and occasionally exaggerated, design solutions. Technical progress now opened up the possibility of implementing almost any architectural design concept calling for free placement of openings in the building facade. However, these new aspects were not without their problems in terms of statics, energy and climate technology. The process of finding solutions to these problems frequently lagged behind the inventive creativity of the architects. The all-glass house was acknowledged not to be the most sensible of solutions for a wide variety of reasons. Ways of ideally metering the daylight consequently became one of the most hotly debated issues in the world of architecture during the 20th century.

From today's perspective, the formative years of Kahn and Le Corbusier demonstrated that what is needed is not so much an intellectual approach as individual custom-tailored solutions to create optimum lighting atmospheres. The different ways of emphasising daylight according to specific architectural styles during past epochs have given way to a search for building-specific solutions to the problem of illumination using daylight. There is now a widespread realisation that the heterogeneous building requirements of our age cannot be met by a standardised 'one-fits-all' solution engendered by a single architectural approach. At the same time, problem situations arising in practice have resulted in a situation where similar daylight-related solutions have evolved to address related building assignments. This pragmatic approach is naturally subject to the vagaries of fashion. In recent years, for instance, a new interpretation has been lent to glass facades as the expression of corporate philosophy – in defiance of the resulting overheating problems. Although it is possible, by highly complex technical means, to actually implement an all-glass building that complies with the fundamental rules of design, in these times even stronger ideological foundations are called for in order to justify the construction of a highly mechanised glass structure. Today, we know that the daylight yield achieved in buildings through a glazed area comprising just 50% of the facade is fully adequate to illuminate even the deepest room.

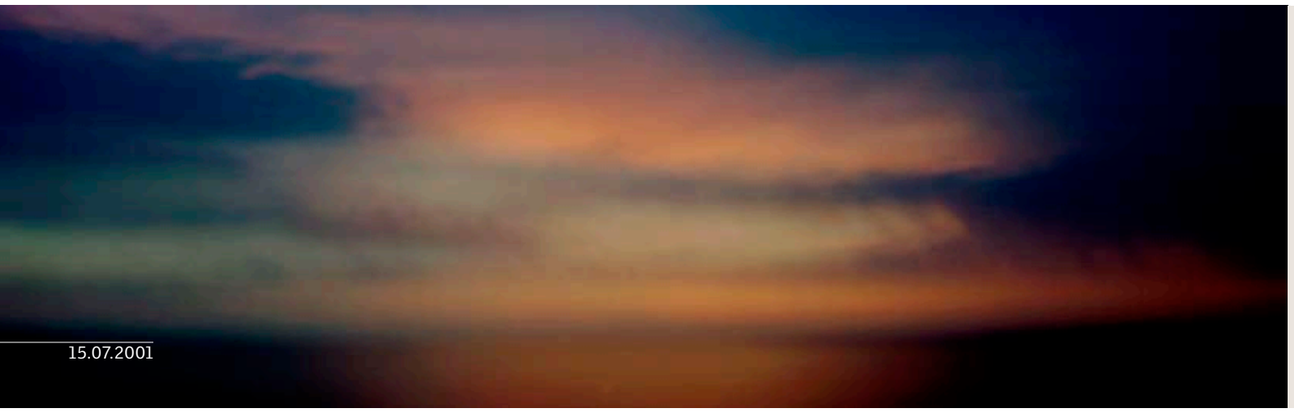
In an oversaturated consumer market, daylight, as an issue of architectural importance, is becoming ever more exaggerated in a bid to grab attention. This tendency is driving architects constantly to push back the boundaries of the technically feasible. In most new developments, once planners are confronted with the currently applicable standards and comfort values, they quickly come to realise that purely conceptional architectural approaches are no longer sufficient as a basis for the achievement of flawlessly functioning light architecture. Constructional physics-related problems and the complexity of home technology, as well as continuous advances in the field of glass technology, call for the technical expertise of specialists. Consequently, architects are being increasingly forced into a position of having daylight planning performed by a team of specialists.

PHOTO: 10FOUR DESIGN GROUP

8

Pablo Buonocore graduated in architecture in 2000 from Zurich University of Applied Sciences. He then went on to work for several years in a number of architectural firms, including Antonio Sanches Griñan, Alicante, and Antonakakis Dimitris, visiting Professor M.I.T., Athens. Together with Michael A. Critchley, he wrote the book "Tageslicht in der Architektur" (Daylight in Architecture), which was published by Niggli in 2001. From 2001 to 2004, he managed his own architectural studio in Winterthur. Since 2005, he has worked as a building client representative and building trustee. He is also engaged on a post-graduate course in Business Management for Architects and Engineers (eMBA) at the Zürich University of Applied Sciences.

61°31'12"N
23°45'36"E



15.07.2001

Like a breath in light

When the atmosphere of melancholy is stimulated in people by rising mist,
then here it is so that thoughts, but also a mood, have learned to breathe,
in so to say beyond-human freedom at the sight of this diabolic flooding sea of light.

That is a special relationship which the human can have with the surroundings
for then it is possible to actually rise to the feelings so that thought
is like breathing in light. The human feels thought like breath, but like breath in light.

Rudolf Steiner

Näsijärvi, Tampere, Finland
Photos by Marja Pirilä

PHOTO: ©DAVID SUNDBERG

7 World Trade Center, New York, NY 2002–2006
Architect: Skidmore, Owings & Merrill
Mock-up of Podium Screen Wall

The reconstruction of 7 World Trade Center, the first highrise to be rebuilt at the site of the former World Trade Center, led to some particular challenges. The electrical transformers at the base of the building require 50% unobstructed access to the outside air to be adequately ventilated. James Carpenter Design Associates proposed a double screen of two layers of triangular wire, experimenting with the angle of these wires and the possibilities of inserting light between the layers. During daylight hours, the outer layer of triangular wire reflects direct and ambient light from the building's immediate surroundings. At night, it becomes a scrim through which the inner layer becomes visible. LED lights fixed to the back of the outer layer project light onto the inner layer of wire, which is set at alternating angles, causing the light to be reflected within the cavity and projected back out through the outer wire.

DAYLIGHTING

The natural gift of daylight
put into practice in architecture.

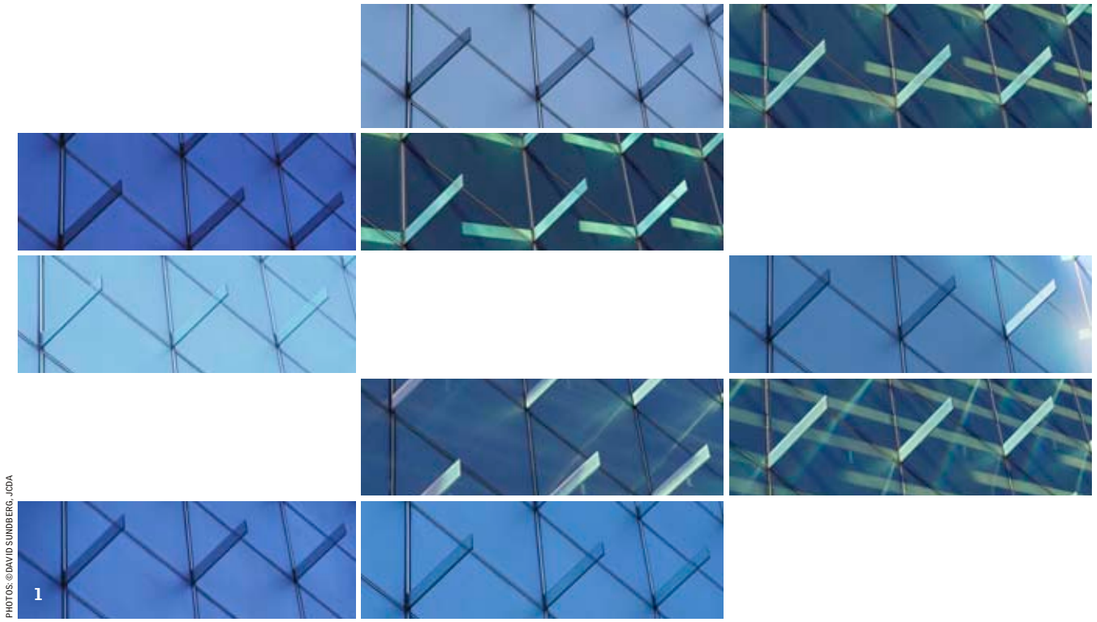
LIGHT IS THE REAL STUFF

By Ole Bouman.
Photography and project texts
by James Carpenter Design Associates.

James Carpenter has achieved fame as a light artist and designer of filigree glass constructions. He has mastered the entire toolbox of light design with a degree of skill attained by only very few of his contemporaries: its refraction and concentration, its absorption and reflection, its colour and its rhythmics. Carpenter designs sensual total art works that constitute far more than simply a decorative add-on to the buildings of others. The pinnacle of his career to date could also be a turning point for Carpenter. Will he remain the author of spatial drama that he is today, or will he take the route of a professional service provider in the subject of light architecture?

1–3 **Dichroic Light Field, New York, NY 1994-1995**

Dichroic Light Field is an installation of glass fins on the east side of the Millenium Tower at 160 Columbus Avenue, New York. The intention of the project was to break down the monolithic and opaque character of a block long brick facade by establishing an illusion of depth. With their design, JCDA sought to dissolve the wall itself while creating a cinematic frame on which the phenomena of projected imagery and light could be displayed. Carpenter's team chose materials that would trace the sun's movement across the city and the pedestrians' shifting points of view as they walk past. The vertical density of the neighbourhood often casts the street in shadow, emphasising the theatrical nature of the city streetscape. By transforming the available light, the installation's reflective surfaces call attention to the phenomena of light, whilst also reflecting that light to illuminate the street as much as possible. The dichroic coating splits the light spectrum, reflecting a range of colours from one half of the spectrum while transmitting the remaining half. When seen from the north, the field ranges from pale green to indigo; when seen from the south it ranges from gold/green to magenta.



PHOTOS: © DAVID SUNDBERG, JCDA

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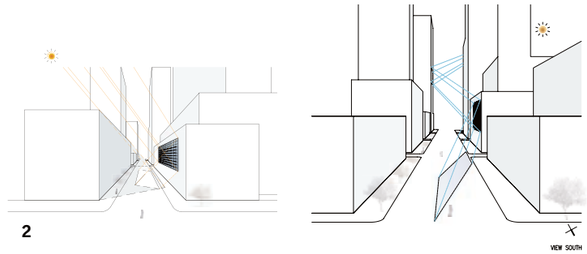

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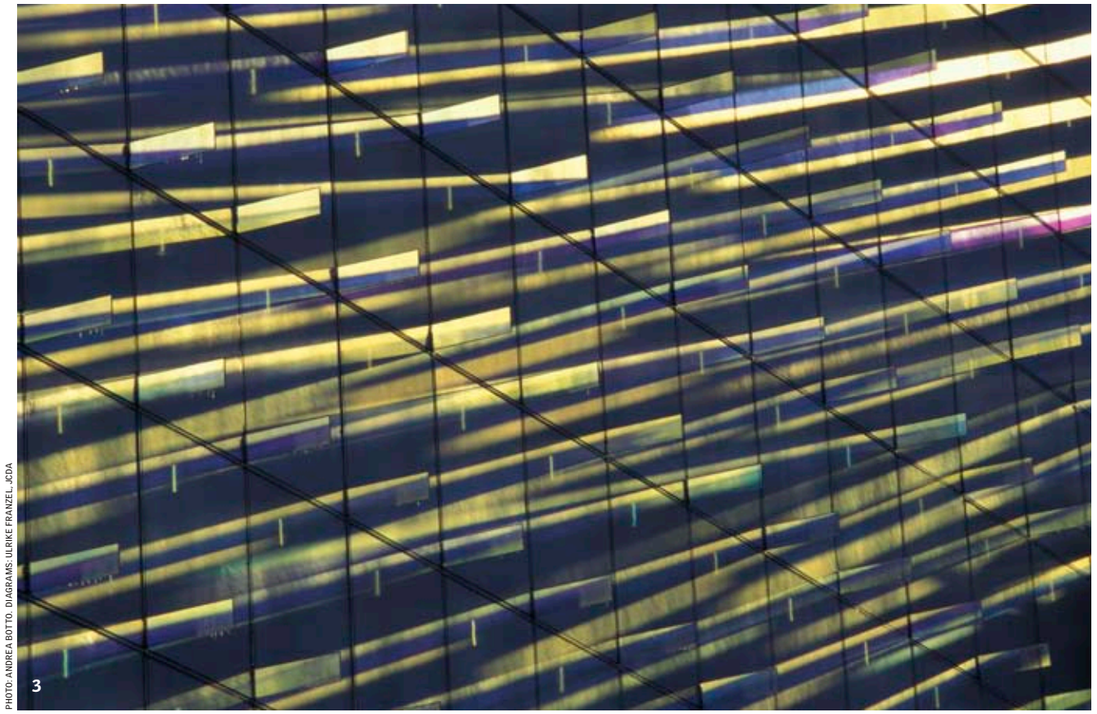


PHOTO: ANDREA BOTTO. DIAGRAMS: ULRIKE FRANZEL, JCDA

3

This is the story of a man who became one of the world's most respected architects of light. Starting his career as an installation artist fascinated by patterns of nature, he became a well known designer of architectural experiences induced by light. He built up a career from someone who provided people with moments of heightened perception, to someone who gave them complete spatial environments to be inhabited over time. From the angle of professional success, this career looks like an ever linear progression. From the angle of the artistic subject matter, one is struck by the continual concentration on perhaps the most important modality of human perception: light. But what happens if success interferes with subject matter? Will it change his subject? Will it affect his perception? Will it open up complete new territories for experiment? Or will it narrow him down to the expectations of other people to do his trick over and over again?

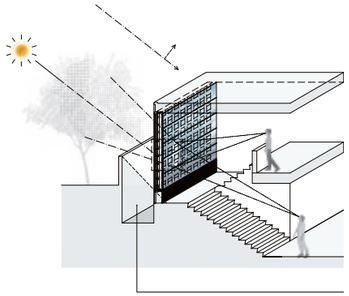
Here is the story of a man at the crossroads. A man facing the paradox of enjoying respect for his past achievements versus the necessity of embarking on new ones. Will he remain honest to his talent to capture light?

Historically, this man is not alone in struggling with this kind of honesty.

Writing my first article ever on a specific building, the Open Air School in the Amsterdam Cliostraat (1928), designed by Modernist master Johannes Duiker, I was almost deceived by his argument about the entrance building opposite the main school, which is situated at the back of the inner courtyard of a typical Berlagian building block. According to Duiker, he cut off one floor of the entrance building, specifically lowering the height of the surrounding perimeter block, because of the need to get sunlight directly to enter the main school building, even on winter days when the sun wouldn't get very high. However, on closer examination, the angle chosen didn't do much for more light to enter the school. What it did achieve, however, was the monumentalisation of the school by providing a straight axial view on it. The argument of more light was used as an alibi to aggrandise the building on a noble motif.

This case is ample evidence of how light, besides being a value to inspire you, can become an asset to persuade you, even if it is based on creative argument or just humbug. Light, to all cultures in all times, is associated with positive feelings and values. People will believe you much faster when you suggest leading them into the light. (Not, as Plato told us, by actually doing so, but that's another story.) So, the man I'm talking about needs to find the honesty within himself. He is surrounded by an abyss of positivism, he is the caretaker of an existential need and no one will challenge his main attribute – the ability to give us light.

Here we need to take the step from the mythical argument to the real value of light. It is not just glorifying light that makes people feel better; it can also be achieved by truly generating, reflecting and acknowledging light as the core of a design. Not only the story of light and the countless references to it, but also light as a physical reality can establish highly positive feelings. For a century now, architects in a secular society have celebrated the power of light by giving it a prominent place in the intended architectural experience. Modernists, with their emphasis on hygiene and



4–5 **Periscope Window, 1995–1997, Minneapolis, MN**

The Periscope Window reveals the outside world in the form of shadows cast onto it, while the lenses simultaneously project an image whose upended horizon suggests a world apart. Located in the stairway of a private residence and facing a view obstructed by a fence, only feet away, and the neighboring building beyond, the Periscope Window creates a richly textured view, layering variously scaled representations of the exterior phenomenon. In the morning, the light traveling from the sun is filtered by the tree: some light is completely blocked and some gets through creating a shadow whose outline of branches and leaves is cast onto the acid-etched screen. The movement of the leaves adds an active sense of the tree's presence. As the morning progresses (fig. 4), direct light reaches more and more of the acid-etched glass, erasing any projected imagery other than the sun from the lenses and becoming a bright screen for the shadows cast from the tree, passing clouds, the installation's structure and its lenses.

6–7 **Double Cable Net Wall, 1999–2004, New York, NY**
Architect: Skidmore, Owings & Merrill

James Carpenter Design Associates, working with SOM, developed a complete scheme for the atrium enclosure at the Time Warner building on Columbus Circle in New York. To match the scale of the volume and the urban street grid, JCDA conceived the largest cable-net wall ever built: the width of the wall matches the width of 59th Street, visually extending it into the building. The exterior cable-net wall presents a unified highly transparent plane of glass, while the interior inclined cable-net acoustically isolates Jazz at Lincoln Center from unwanted sound, while maintaining complete transparency to the street below, providing the audience with direct views of Central Park and 59th Street.

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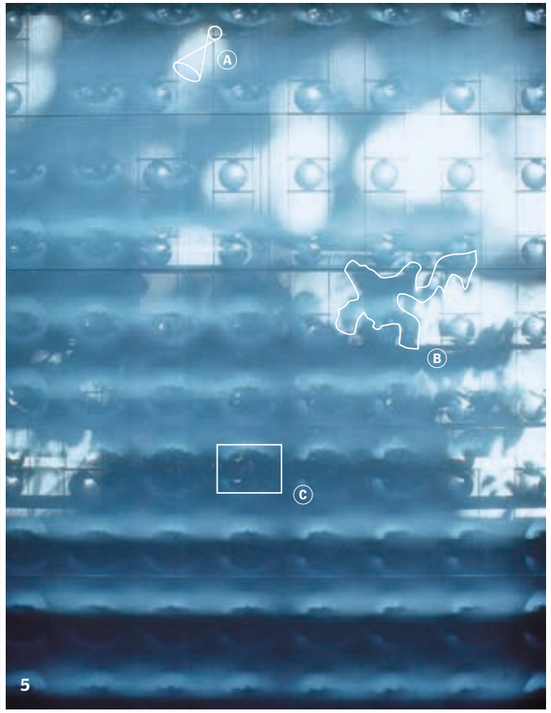

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PHOTOS: ©BRAD FEINKNOPF

functional rationality, stripped the building of its obscure interiority and opened the volume to the outside gaze by illuminating the inside with the free entering light. Neo-Platonic minds translated this scientifically oriented reasoning into a more spiritual dimension: transcending light from a physical reality in an immaterial spirit, an omnipresent *geist* to uplift our souls. So, light in architecture can not only make you healthy, it can make you pure as well. Mens sana in corpore sano. How can you remain honest if there is an inclination in people to see you as a prophet?

At this point, it becomes interesting to examine the palette of this man, the architect. What does he have at his disposal to invite light to his creation. What techniques does he use to maximise the effects of light, transform them, manipulate them. The problem is that to do him justice, we would need to go into a very technical discourse to describe the work. There is hardly any mature debate about light in architecture as a cultural phenomenon, linking it to the key concepts of our time, without falling back in the quasi religious wordings we know from the past.

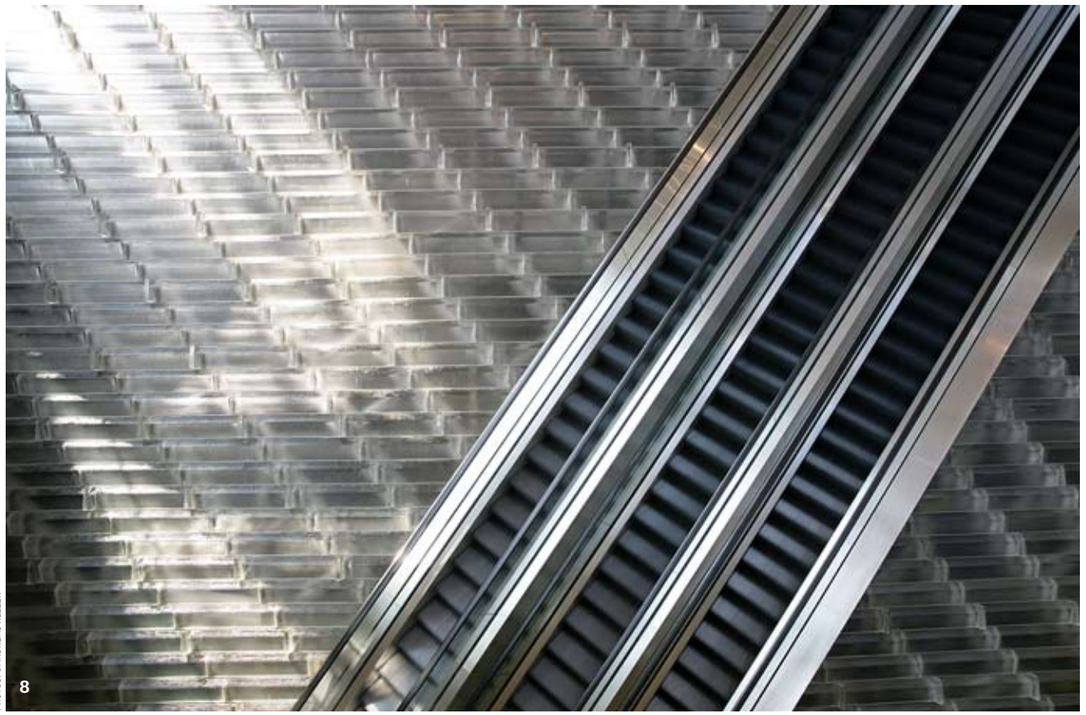
Moreover, although architects are fond of using light to animate and dramatise their designs, the critical reception of architecture often sticks to intellectual intentions or the overemphasis of form. Although light as a vantage point is essential to understand how architecture works, how it has an emotional effect on people and how it is embedded in a larger spatial context, most talk about architecture is neither comprehensive, nor empathic to the way light transcends the building to meaning and emotion. Maybe there is too little knowledge, even among architects themselves, to find words for these. And more likely than not, there is perhaps also a profound lack of expertise in the phenomenology of light. Although architects do manage light in every single work, they think mostly of managing totally different issues. Light comes as a side effect, a result, not as a partner to aim for the highest. In other words: the man I'm talking about is a lonely man.

He is lonely because he is a specialist. As a specialist of light, you will not only encounter many people who will not understand you, but also many people who want to reduce you to that field they do not know. They can remain unaware of a certain field, by limiting you to only that field. As in similar situations in daily life, your specific intelligence can become detrimental to your general significance. People will see you as 'the specialist'. They will respect you, but will also encapsulate you as such. At this point you need to revolt and challenge your own fascinations; or you can decide to remain the supreme player in a certain niche and be happy with it.

This is the point where I consider the career of this man has arrived. For sure, he is a specialist. For him light is no longer the outcome of his design work; it is the starting point. Building upon experience accumulated over more than three decades, light for him is no longer a mysterious entity that needs to be worshipped. It is the stuff that, once modelled in the right way, can manipulate complete atmospheres according to very precise programmatic scenarios. Having acquired an enormous knowledge about the science of light and its psychological effects, he now has reached the stage

8 **Ice Falls, 2001–2006, Hearst Tower, New York, NY**
Architect: Foster & Partners Architects

JCDA's Ice Falls was created to articulate the transition from the street level entrance lobby, constrained on three sides by retail spaces, to the expansive upper lobby. The upper lobby is a space filled with natural light where employees and visitors meet and dine. It is five storeys high and spans the whole length and width of the original building. To animate the ambient light in the space, JCDA designed a 75 feet wide by 30 feet high field of stepped, cast glass prisms, establishing a luminous, cascading plane of glass and water that connects the two lobbies. The rays of light from the clerestory and skylight are refracted inside the facetted glass prisms, accentuating the beauty and brightness of the water's energy. The crystalline beauty of the glass and the flowing water is the result a series of internal reflections and refractive turbulences, creating the phenomenon of luminosity and optical brilliance.



PHOTOS: ©ANDREAS KELLER

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where he no longer presents autonomous works, to be enjoyed as art, nor does he just add light effects to existing architecture. He now is ready to envision complete environments. His latest works are mature pieces of architecture, and are increasingly being judged by comprehensive archiectural criteria, not just aesthetical ones.

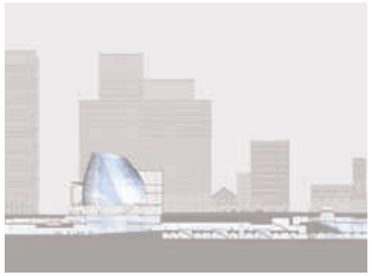
The man is James Carpenter. Since he rose to fame, there is a fair chance you may have enjoyed one or more of his works. Perhaps you have seen the Diochroic Light Field (1994) on Columbus Avenue in New York, a glass work that by way of reflection and refraction creates an illusion of depth along a very austere street facade. Or you may have visited the German Foreign Office in Berlin and been struck by the giant atrium materialising the client's wish to represent itself with transparency. Or maybe you have been shopping in the Time Warner Building at Columbus Circle, enjoying the view of bustling New York from one of the floors behind the giant glass facade. These as well as many other major projects, mark a development towards full designership.

To understand creative dilemmas, it is important to distinguish between knowledge and aspiration. If it comes to judging James Carpenter's ability and capacity to maximise the effects of light to the benefit of architectural beauty, he is an outstanding figure, unparalleled in the field. Where some architects are good in techniques of absorbing and filtering light, where some architects are good in reflection en refractions and where some architects specialise in radiation, emanation and emission of light to tell stories with a building, Carpen-

9 **Moiré Stair Tower, 1999–2002**
Deutsche Post stair tower, Bonn, Germany
Architect: Murphy Jahn Architects

Located along the Rhine River in Bonn, Germany, the new Deutsche Post headquarters is divided into two distinct elements: a 240m (787 ft) high office tower and a three storey base building with a grid shell roof. James Carpenter Design Associates was asked to design a stair tower for the base building. Focusing on the relationship of the stair to the river and adjoining park, JCDA created a stair that acts as a viewing platform, layering views of the surrounding landscape with their reflections as well as the optical effects created by the patterns and their reflections.

PHOTO: ©ANDREAS KELLER



10–11 **Solar Reflector Shell, 2004–, Fulton Street Transit Center, New York, NY**
Architect: Nicholas Grimshaw & Partners

For Grimshaw & Partners' competition entry in the Fulton Street Transit Center competition, James Carpenter Design Associates proposed a metal lining that would float off the surface of the dome above the station. The team devised a perforated metal panel system inside the dome on its northern side to reflect light into the tunnels below and to capture and animate the passage of the sun projected through the dome's oculus, thereby fulfilling the architect's emphasis on the vertical connection between the street level and the subterranean pedestrian tunnels.

PHOTO/RENDERING: ©JCDA

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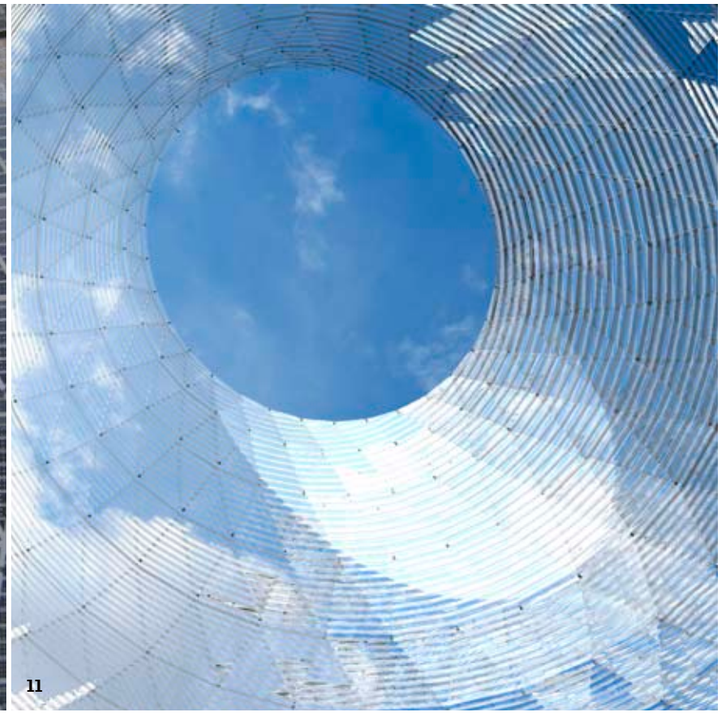

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12 **Luminous Threshold, 1998–2000, Sydney, Australia**
Sculpture identifying threshold to the Sydney Olympic complex

The Luminous Threshold was designed as a gateway to the Olympic Complex in Sydney, Australia for the 2000 Summer Olympic Games. The work is a threshold of light that perpendicularly crosses the northern entry to the park, sited parallel to an existing stream flowing through a mangrove-lined embankment. The design uses a sequence of five 23m high misting masts, at the top of which a singular and ever changing display of light can be seen as one approaches and leaves the park. At the top of each mast is a stainless steel assembly with a series of nozzles that disperse a fine cloud of mist into the air. The drifting cloud of mist is animated by reflecting a yellow/gold stream of sunlight through its centre and off of a system of mirrors controlled by a hellostat and programmed to follow the sun's path throughout the day.

PHOTO: ©JCDA

12

ter does all of these things, sometimes even in one project. In the recent book James Carpenter; Environmental Refractions by Sandro Marpillero, the oeuvre of Carpenter is made understandable by means of many diagrams which reveal the careful manipulation of light in many different ways, ranging from modest filtering to megalomaniacal transformations of light into complete new artificial modalities.

Going from one project to the other throughout his career, one can't help but being impressed by the subtlety (and playfulness) of his light designs that transcend decoration into experience. His light is not just there to illuminate his objects, he creates imaginary objects, lines and surfaces, intersects and distorts them, and lets the viewer become the choreographer of a light ballet. His work is not about the play of clair-obscur. This kind of sublime dialectics doesn't interest him. He is more generous to light, maximising it by reflection and amplification, by using translucencent membranes and special coatings, twisting it by using dichroic glass or lenses, enhancing architecture to a simple time-based art that uses the cycle of the sun to start a dialogue between art and nature.

Here we touch upon the other dimension. If his knowledge of how to work with light and his skill to implement it are superior, the question remains of what he does with it. And again it seems that he might be at the crossroads of his career. What are his aspirations? Will he be hired as a specialist of light, or will he fight for work that makes him the master architect. Will he become a professional who delivers his supreme quality service, or will he remain the author of spatial drama he always was. Will he become the one who cleverly markets his special skills to sell light as the great neutraliser, the common ground that may sanitise our world in an age of fear, or will he keep intensifying the experiences of the people with unexpected animations of architectural spaces even to the degree of the uncanny? Will he be the man who frames our life in predictable spatial formats and scripted experiences in shopping malls and airport lounges, or will he continue to find ways of distorting our perception and make us aware of our environment?

It is not difficult to start a discourse here on the ongoing abstraction of architecture in the age of globalisation. James Carpenter's work (and success) could easily be seen as a function of an ever growing need of clients to manifest themselves in a global competition of cities and creative industries.

His spaces also represent a tendency to create strong icons which are all but controversial. His symbolic order is extremely powerful, and still makes everybody happy.

13–15 **Structural Glass Prisms, 1985–1987, Indianapolis, IN**
Architect: Edward Larrabee Barnes

Structural Glass Prisms, a dichroic window installation, was designed to bring the outside in, illuminating the Christian Theological Seminary's Sweeney Chapel's large space. In keeping with the spare rigor of Edward Larrabee Barnes' design, James Carpenter Design Associates' simple design unifies structure and effect. The vertical 9.75m high glass blades are stabilised with horizontal panels of dichroic glass, creating an all-glass structure free from any steel that might obscure the view. JCDA conducted studies of the sun's penetration to ensure the Structural Glass Prisms' ability to project light into the baptistry niche on the opposite wall at around noon every day. Two reflected and two transmitted bands of color each project onto the chancel wall, combining to form patterns of remarkable complexity that constantly change in relationship to the sun's position. Some imagery is projected onto the chapel wall and floor: when direct light from the sun to the dichroic glass is interrupted by the movement of clouds or birds passing across the sky, those shadows are transmitted into the space by the upward slanting bars of light. At the same time, the leaves of adjacent trees, moving in the wind, are visible in the downward slanting bars of blue light, thus creating a superimposition of landscape and sky.

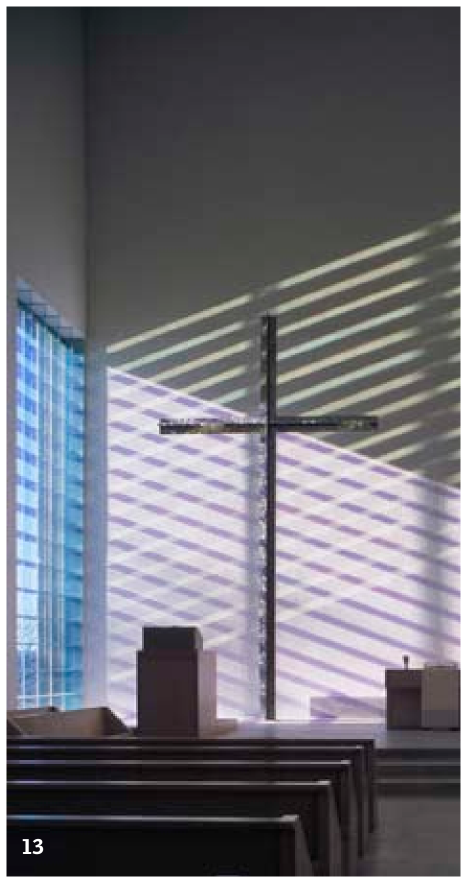
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PHOTO: ©BALTHAZAR KORAB

Within that discourse and tendency, the question is whether or not Carpenter has a clear plan of how to address this tendency with his unique intelligence.

Here we enter the realm of psychology, which is beyond my critical reach. So let us focus on a more disciplinary issue: one that can be seen as a parameter of either creativity or stagnation. Let us focus on the question of whether his work, in his latest big scale projects and collaborations with big firms, has the power to challenge the architectural object and integrity by techniques of blurring and distortion as we know from his earlier work. Here we touch upon that issue again of finding oneself at the crossroads of one's own creative history. I'm talking about that moment where success can hijack one mentally and force one to remain the same. Or worse, to fall back into the comfort and sterility of one's specialisation. Thinking of James Carpenter's work throughout the years, the first thing that comes to mind is the challenge it implies: to the object, to statics, to space as the predominant category of architecture, to fixed meaning etched in stone, and so on. His light works, whether ephemeral or fragile, where ever inventive twists of reality, giving architecture back to the viewer, and bringing a great architectural history of light to its logical conclusion. As with so many other talents in culture reaching the point of general acknowledgement and the surrender of the world to one's unique capacity, the time has now come to choose. Either Carpenter's work will remain at the present height of perfection and elegance and will he enjoy a tremendous success of having the unique selling points at the right moment in time; or he will manage to remain the artist within himself, unadjusted, unsatisfied with the gloss of the object, the smoothness of the discourse and the bliss of the life style that belongs to it. Whatever the next steps, it will be the dimension of light that will provide us with the theatre to witness the creative drama.

16–17, and following spread (p.32–33)
7 World Trade Center, New York, NY 2002–2006
Architect: Skidmore, Owings & Merrill
Podium design and curtain wall collaboration.

7 World Trade Center was the third building to collapse on September 11, 2001, and is the first building to be rebuilt. It is comprised of 42 floors of office space set above eight floors of electrical transformers in large concrete vaults at street level. The use of layers of wire to bring light into the skin of the podium (see p. 20–21 and p. 32–33) led to JCDA and SOM's unique 'linear lapped' glazing detail in which the vision glass overlaps and floats in front of a curved spandrel panel with a built-in sill reflector. The spandrel panel is embossed with a ribbed specular texture that captures the local light conditions, reflecting colour and light and continually projecting it through the lapped section of the glass facade.

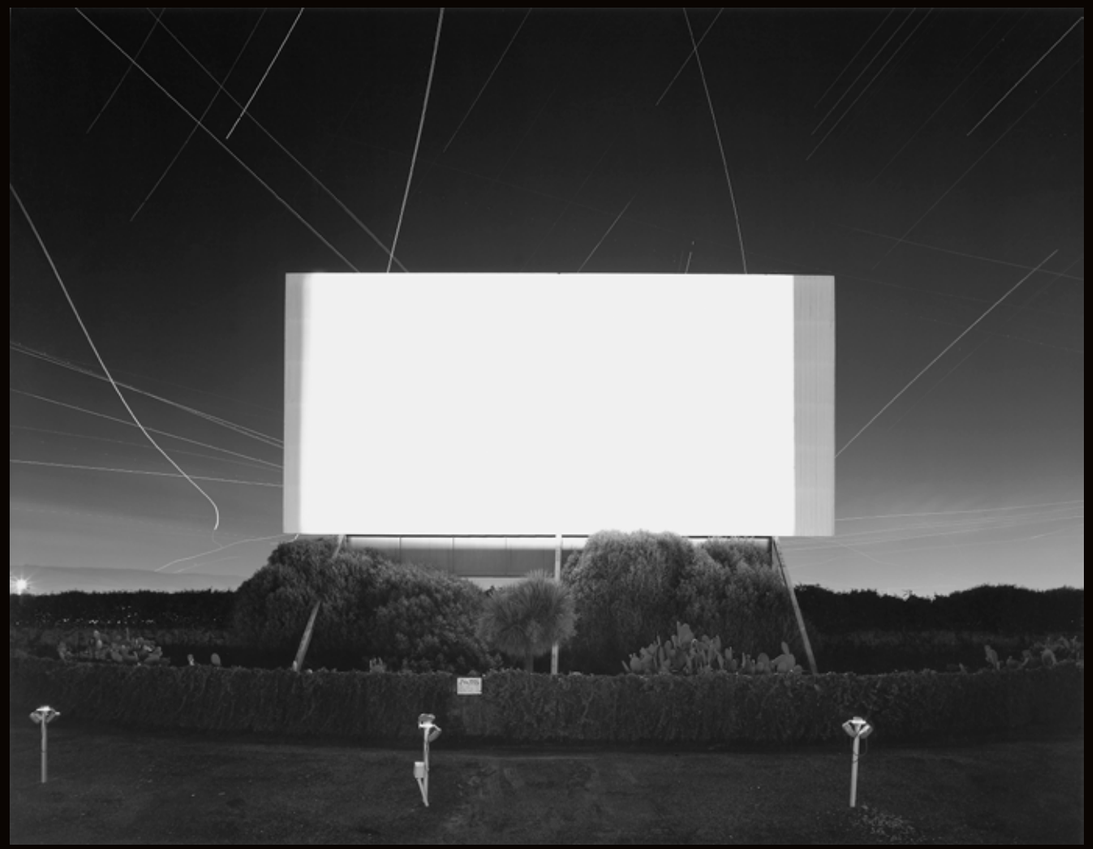

16


17

PHOTOS: (FIG.17 AND PAGES 28–29) ©DAVID SUNDBERG (FIG.18) ©ANDREAS KELLER

*Sandro Marpillero, James Carpenter; Environmental Refractions. Birkhäuser, Basel, 2006.

WRITING WITH LIGHT



Hiroshi Sugimoto, *Union City Drive-In*, 1993. The Japanese photographer Hiroshi Sugimoto used a large-format camera to photograph different drive-in cinemas in 1993. The only source of light is the film itself; the camera's aperture remains open from the first to last scene.

By Liz Wells.

No photography without light – this much is evident simply by dissecting the word photography on the etymological level. This article by Liz Wells analyses the role played by light as the working material of contemporary photographers. Light renders things visible, creates pictorial atmosphere and adds drama, provides information about the time of day and the season, and offers clues about the photographic location.

To talk of 'light in photography' is, of course, to repeat oneself; photography literally means writing with light – *photo-graphy*. Cameras (method) and film stock or digital disc (medium) are also crucial, but without light there is no image. Even newer technologies (X-rays, holography, computer graphics…) have not superseded the photograph. In fact, it was not the use of light which puzzled early 19th century researchers; Plato had noted the principle of the Camera Obscura and, in Europe, lenses date from mediaeval days. Rather, it was fixing the image, making it permanent, which proved troublesome. In 1849, when Louise Daguerre in France and Henry Fox Talbot in Britain both announced their inventions and Fox Talbot claimed photography as 'the pencil of nature', what they had achieved was (relatively) permanent and portable images. The idea caught on, and the rest is history.

Between documentation and drama: light and the photographer

This article considers some of the ways in which contemporary photographers make use of available light to achieve particular image effects. The artists whose projects are discussed, all make work primarily for gallery exhibition and book publication (although some also take on commissions from time to time). Light gives shape to the detail of observational images and may also be used for dramatic effect. The relationship between that pictured and metaphoric affects, is a matter of individual style and also of the purpose or context for which the photograph or series is intended. US West Coast modernist photographers, such as Edward Weston or Imogen Cunningham, were famous for photographic studies that attempted to transcend the literal, to achieve a poetics of form. But the quality of available light, whether natural or artificial, is crucial to image-possibilities. Arctic light produces different effects than the more concentrated 'hot' light of tropical latitudes. Of course some effects can be constructed through digital studio adjustments (although painting-in with pixels remains labour intensive), and landscape photographers may now use digital backs on medium and large format cameras (expensive, but available). But whether using new or older technologies, they work on location, experiencing the particularities of an environment, and enjoying observing and working with the effects of natural light.

Time of day, season, climate and weather all influence angle, colour and intensity of natural light. In pre-visualising images, photographers consider the aesthetic possibilities of particular light characteristics. Many are particularly fascinated by the effects of the sun, lining up to capture the first intimations of dawn, or the horizon before dusk. Ansel Adam's account of driving down the road, noticing the Moon Rise over Hernandez, New Mexico (1941), stopping the car, grabbing his camera – not forgetting a lens filter – and catching the last rays of sunset lighting up the tombstones in the foreground of the chapter is legendary. Such heroics remain commonplace, not the least in landscape photography which attracts the more adventurous.

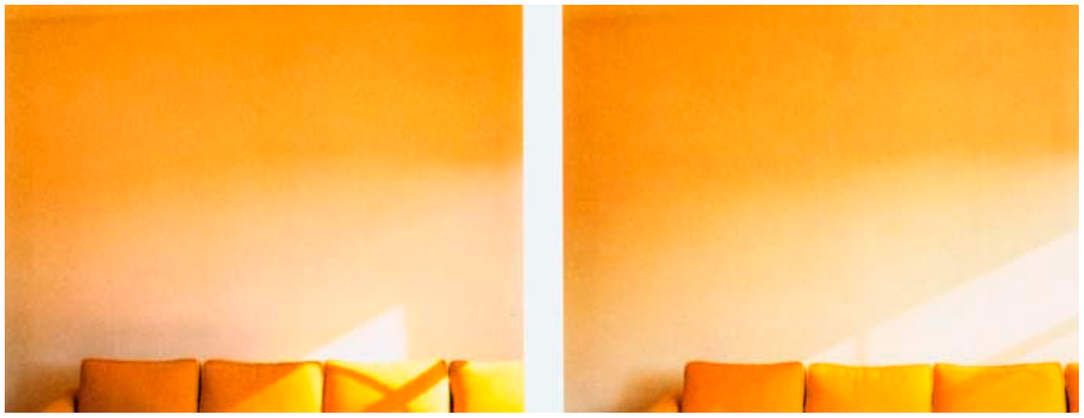
Historically there has been a strong interest in exploring the topographic; light is used to foreground detail in that which is being documented. Among the best known pioneer photographers were those who charted the geographic contours of the American West in the second half of the nineteenth century, often employed on government or commercial surveys. Since the 1970s, Mark Klett and associates (www.thirdview.org) have been revisiting sites, seeking original viewpoints and re-photographing 'views' in part in order to explore problems of accessibility, movement of light, effects of climate and weather, which influenced and limited the achievements of their predecessors. Their work testifies to renewal of interest in older procedures and processes. The process is painstaking. It can be a long wait until shadows replicate the 'correct' time of day.

The time factor: light changes over the course of days and seasons

Re-photography is central to the working method of English photographer, Jem Southam, who revisits sites which he has previously photographed, documenting the same place at different times of day and year or returning after a gap of many years. Through revisiting he becomes very familiar with the characteristics of particular locations and seasonal change. A series of detailed observations of change as the cliffs crum-

Below **Uta Barth,** ***Ohne Titel (aot 7) aus der Serie "... and of time", 2000.*** **In her frequently blurred photographs of streets and empty spaces, Uta Barth avoids anything that would identify the location or how the idea for the photograph originated. The almost ungraspable emptiness of her pictures encourages the observer to dwell awhile and look for fine nuances as in this case, namely the interplay of light and shadow on the sofa and the rear wall of the room.**

ble at Sidmouth on the south-east Devon coast involved regular visits over a period of 18 months (December 1995 to May 1997). Botanical and geological detail is revealed, as are effects of season, light and weather. He usually photographs soon after dawn, and avoids the sharp light of summer. He is not interested in the poetics of shadow play; his observations may have metaphoric implications, but they are not operatic. Rather, his pictures, shot in uniform light, allow us to examine environmental detail.



He is by no means alone in this interest and methodical approach. For instance, Danish-Icelandic artist, Olafur Eliasson, best-known for kinetic light sculptures and ambitious light installations (see *Daylight and Architecture,* issue 1) also makes photographic series wherein, like Southam, he uses repetition to detail change or difference. Gallery installation blocks together separately framed images. One such series shows a series of fronts of buildings in Reykjavik (Iceland), developing from landscape format images on the left across to portrait format frames to the right. Our attention is drawn not only to individual facades depicted, but also to geometric difference as the frame of the picture echoes the shape of each edifice. Evenness of light adds emphasis to formal similarities and differences. A set of landscape panoramas, also from Iceland, is unusual in integrating black and white and muted colour images; the subtlety of change means minor distinctions come to seem highly significant. Both these photographers work very carefully with available light; but my point is that they do not draw attention to it.

By contrast, a number of photographers are interested in the dramatic effects of light. In *Modernistic Journey* (2002) Norwegian photographer, Ane Hjort Guttu, captured the effects of the movement of light on both the natural environment (the mountains or the shore) and on modern architecture. In effect, she explores inter-relations between the natural and the cultural. In one image, the light falls on an earthy-coloured apartment block; in another, it falls from a similar angle and direction illuminating the side of a mountain, likewise the colour of earth. This use of light makes both appear monumental. A further picture captures the reflection of a white block of flats in the lake landscaped into the foreground. The photographer as observer is not modernist in the sense of extolling modernity, so much as post-modern in observing ways in which nature has been re-organised to incorporate culture. We read the reflection metaphorically, whilst noting and taking pleasure in the literal information that we are given as well as the pictorial effect. We are reminded that landscape pictures, however abstract and symbolic, tell us something about place and the effects of human intervention.

"The simplest forms have authority – like a blank white light, and how do you photograph that? You need a framework to make it visible. But this is not simply white light; it is the result of too much information. So too much is nothing, which makes sense to me." **Hiroshi Sugimoto**

THE PINHOLE CAMERA: MEDITATIONS ON LIGHT AND COLOUR

Many photographers are directly concerned with light itself. Uta Barth photographs exterior and interior scenarios, devoid of people. She is not concerned with subject-matter; rather she draws attention to the presence of light and its effects in any scenario, and also to processes of observation and seeing. It is as if she is exploring stages as backgrounds on which a drama might play out, but is not doing so at the moment. Finnish artist Marja Pirilä is similarly interested in the effects of light and the experience of looking (see also p.36–39). She sits, pinhole camera on her knee, facing north across the lake, open to elemental light and colour. Each print is based on long exposure, softened by slight movement as she breathes; the series title Like a Breath in Light seems enigmatic, but, in fact, describes a process which is contemplative. Each is captioned simply with a date, and the series is installed as vertical blocks of images, seemingly ethereal as they are behind glass but unframed, supported by (almost invisible) fishing wire (taut from floor to ceiling). We view the shifting effects of light as a spatial installation; the effect is sculptural. Symbolic interpretation is very open. One response is to consider our own space and how we occupy, impinge upon, or pass through environments. Just being is important. A further series, Interior/Exterior, symbolises the extent to which the natural is incorporated into everyday consciousness. This series uses long exposure and the camera obscura effect of reflected external scenery into internal space; the projection becomes superimposed on the domestic. Her method was to cover the window with black plastic, cut a hole in it fitting a lens. The everyday room is transformed, as was Plato's cave. She then photographed the inhabitant of the room in this intermingled space wherein the reflected exterior transformed the everyday interior. (Pirilä, 2002: n.p.) The effect is unpredictable; the final picture could not be pre-determined, and the imagery testifies to the unexpected or unconscious amalgams. As the artist remarks: 'the photographs began to take form not only as the charting of the living environment of a human being, but also of the landscapes of the mind: reflections of thoughts, dreams, fears and reveries'. (Pirilä, 2002: n.p)

By contrast, a number of photographers explore artificial light as a dramatic force. Brassai's 1930s street scenes from *Paris by Night* exploited the intensity of affects of existing artificial light and shadows cast. Philip Lorca di Corcia placed trigger flashlights in public places, highlighting the facial expression and body language of those who happened to pass by. Hiroshi Sugimoto achieves his dark meditative seascapes through long exposures and even light, exploring the inter-relation of light, time and space. His *Theatres* series (begun in 1978) is particularly notable: working in the USA, he visited old movie palaces (including drive-ins), exposing the film for the length of the projected movie with the film projector providing the only lighting. The lengthy exposure erases all detail in the ensuing image so as to create a white luminescence as a rectangle at the centre of a black frame (building, seats and surroundings have disappeared into the blackness). An abstract landscape! He has also experimented with the effects of candlelight, photographing candles silhouetted against black backgrounds or, in the case of his major exhibition at the Serpentine gallery (London) in 2004, installing a candle so that the flicker of light animated the darkness of the room in which it has been placed.

THE LIGHT OF HOME? LOCAL AFFINITY AND ATMOSPHERE

For his series *Imaginary Homecoming,* Finnish photographer, Jorma Puranen, like Sugimoto, used black and white, in this case to reference nineteenth century photography. He re-photographed ethnographic portraits of Sami people (Laplanders) from the archives at the Muse'e de l'Homme, Paris, printed the images onto acrylic sheets, and carried them to the northern slopes of Norway and Sweden, physically installing them within their 'home' environment for re-photography. Again this was something of a heroic process: having put them in place, he had to wait for the daylight to reach the intensity necessary for photographing, by which time the snow would have softened; sometimes he had to wait all day until the sun went down, the snow froze over again, and it was possible to retrieve the images. He views the experience of waiting, contemplating and listening to the environment in the remote north as a part of the process of picture-making. He uses colour for other series, for instance, in *Language is a Foreign*

Country, likewise made in the Arctic. Here, the strong light produced extreme blues and whites, which he used as backdrop against which to stage pictures which say something of language and difference. He installed flags (white, red, black or blue) on which various words are inscribed, usually in Sami. Sharp colour contrasts lent extra emphasis to the foreignness or 'otherness' to which he is drawing attention.

Quality of light is a key element determining what can be achieved pictorially. This obviously varies in different parts of the world, in part due to local environmental circumstances (industrial smog, sea mists,) and in part due to latitude, that is, closeness to the equatorial range of the sun. There is a striking contrast between the cool white light of Nordic or North Canadian areas, and the more amber tones of Mediterranean or Mexican light. Warmer intensity not only lends colour but also drama to imagery. Mexican photographer, Gerardo Montiel, works with a combination of natural light, artificial light and colour filters to stage images which variously reference well-known paintings, intimating the storytelling functions once ascribed to fine art. Like Puranen's work, the images are highly manipulated. But differences in quality of available light contribute significantly to the very different visual effects, affecting our response to the pictures.

SUN, MOON AND STROBOSCOPE: EXPERIMENTS WITH LIGHT SOURCES

Light need not be sunlight. Susan Derges constructs images through an amalgamation of transient light and specific artificial light sources, thereby creating more-or-less abstract landscapes. In an early series, *The Observer and the Observed*, her own eyes are reflected not so much on water as seemingly behind a surface of water, sometimes garlanded with what appear to be glass beads. In fact these are droplets created through sound vibrations from a strobe light; the drops act as tiny lenses. The same water appears as a flow when exposed under constant light as general light emphasises movement. *Shoreline* (1998), a further series of experiments with light, took her to Devon, on the south coast of the UK. The pictures record the movement of the seventh wave by moonlight – although not full moon as that would be too bright. The method is direct; there is no camera involved. The prints are made through chemically pre-coating paper, carried on aluminium sheets, which is taken down to the beach and exposed below water, responding to ambient light and to the effects of a bank of flash lights positioned above. The sensitised paper responds to the swirl of water, foam, pebbles and sand, all of which leave their mark. The final picture in effect traces the ebb and flow of the tide. Likewise, in *The Streens* (2002) moonlight causes the reflection of plants and trees, and the effect of movement of water, to register as image.

As can be seen from the above examples, daylight, moonlight, and artificial light can all be used to create particular effects that contribute to the rhetoric of the photographic image. From the photographer's point of view, light is a part of the material with which they work. As audience, we may be more or less aware of ways in which we are affected by light in photography. It is, however, undoubtedly a major influence in our response to particular images. The *double entendre* of 'illumination', light and enlightenment, is surely no coincidence.

For further reading:

Vanessa Coutts 'Fire, Water, Air & Earth – Hiroshi Sugimoto at the Serpentine Gallery' 02/12/2003, www.24hourmuseum.org.uk/exh-en/ART18855.html (18.7.06)

Susan Derges (1999) *Liquid Form 1985–99.* London: Michael Hue-Williams

Ane Hjort Guttu (2002) *Modernistisk reise.* Oslo: artist's book

Marja Pirilä (2002) *Interior/Exterior.* Helsinki: Muste Taide

Jorma Puranen (1999) *Imaginary Homecoming.* Oulu, Finland: Pohjoinen

Jem Southam (2005) *Landscape Stories.* New York: Princeton Architectural Press

Liz Wells (2006) 'Arctic sublime' in *Breaking the Ice, Contemporary Art from Finland.* Bonn: Kunstmuseum www.henryart.org/utabarth (14.7.06)

Opposite **Ane Hjort Guttu, *(left) Untitled (Bunes) (right) Untitled (Ammerud)* from the series *Modernistic Journey*. Documentation of observed objects is only superficially the main focus of Ane Hjort Guttus's attention in this series. In reality architecture and natural elements play a only a supporting role to the two main protagonists – light and shadow.**

Below **Jorma Puranen, *Imaginary Homecoming #2, 1990*. Finnish artist Jorma Puranen superposes several levels of time and reality in his black and white shots. Historical portraits of the Sami people are installed in the snow-bound landscapes of Northern Finland and rephotographed. Light and shade occurring in the landscape and on the portraits enter into dialogue with one another.**

Liz Wells writes and lectures on photographic practices. She is curating *Uneasy Spaces,* an exhibition of work by 19 British-based artists working in photography and photo-video (forthcoming New York, Sept. 2006) and researched/curated *Facing East, Contemporary Landscape Photography from Baltic Areas* (UK tour 2004 - 2007). She is editor of *The Photography Reader,* 2003 and *Photography: A Critical Introduction,* 2004, 3rd ed. Her book, *Land Matters* (working title), on critical currencies in contemporary landscape photography, is due for publication in 2007.

Liz Wells is Reader in Photographic Theory, School of Media and Photography, University of Plymouth, and is Director of the Faculty of Arts research group for Land/Water and the Visual Arts.

PHOTO: TORBEN ESKEROD

LIGHT AND HEALTH: THE IMPLICATIONS FOR LIGHTING

By Peter R. Boyce.

Exposure to light can have both positive and negative effects on human health. The existence of these effects implies that the lighting of buildings is not just for vision any more. Rather, consideration also needs to be given as to how lighting might be used to support the health of the occupants. What form this support should take will depend on the availability of daylight and the access people have to it.

Humans are diurnal animals, heavily dependent on the sense of sight. Light is essential for humans to function efficiently. With light we can see, without it, we cannot. But that is not the only role of light. Over the last two decades it has become increasingly evident that exposure to light can have both positive and negative impacts on human health, impacts that appear soon after exposure or only after many years.

The established effects of light on human health can be conveniently arranged in three classes. The first class is that caused by light treated as optical radiation. In sufficient doses, exposure to light can cause damage to the eye and skin, through both thermal and photochemical mechanisms. In the short term, ultra-violet radiation can cause inflammation of the cornea (photokeratitis) and reddening of the skin (erythema). Prolonged exposure to ultra-violet radiation can lead to cataract in the lens of the eye as well as skin ageing and skin cancer. Visible radiation can produce retinal damage (photoretinitis). Visible and short-wavelength infrared radiation can cause thermal damage to the retina and burns to the skin. Prolonged exposure to infrared radiation can lead to cataract and burns. Guidance on the maximum allowable exposures is available, as is a system for evaluating light sources for their tissue damage potential. In terms of optical radiation, the most hazardous light source to which most people are exposed is the sun outdoors.

All these effects of light are negative but optical radiation can also have positive effects on health. Specifically, controlled exposure to light can be used as a treatment for hyperbilirubinemia, some skin disorders and some tumours. Exposure to sunlight is also associated with the generation of Vitamin D, a vitamin necessary for healthy bones and influential in many other aspects of health.

The second class is light operating through the visual system. Lighting conditions that cause visual discomfort are likely to lead to eyestrain and anyone who frequently experiences eyestrain is not enjoying the best of health. The lighting conditions that cause visual discomfort are well known and easily avoided in principle if not always in practice.

The third class is light operating through the circadian system. The sleep-wake cycle is one of the most obvious circadian rhythms so it is hardly surprising that exposure to bright light at the right time can be used to treat some sleep disorders involving the timing and duration of sleep. In addition, exposure to bright light is a useful means of stabilising the rest-activity cycle of people with Alzheimer's disease and of relieving the depression associated with seasonal affective disorder. Unfortunately, exposure to bright light at night is also associated with the more rapid development of breast cancer.

To summarise, light is like fire, a good servant but a poor master. Exposure to light is essential for the visual system to operate, desirable for entraining the circadian system and valuable for the treatment of some medical conditions, but too much of the wrong wavelengths for too long, at the wrong time, and damage or injury may occur.

LIMITATIONS OF CURRENT UNDERSTANDING

The impacts of light as optical radiation and when operating through the visual system are both well understood. The same cannot be said for light operating through the circadian system. Partly this is because the topic of light and the human circadian system has been studied for a relatively short time and partly because what has been found is complex. Specifically, light entering the eye is absorbed by photoreceptors in the retina resulting in a signal passing from the retina to the suprachiasmatic nuclei (SCN) and then by way of the paraventricular nucleus (PVN) and the superior cervical ganglion to the pineal gland (Figure 1). In the dark, the pineal gland synthesises the hormone, melatonin, which is circulated through the body by the bloodstream as a marker of time. Anatomical studies have shown that the SCN, which are believed to be the central clock of the body, are connected to many other parts of the brain that regulate the production of a wide range of hormones and hence are likely to influence many different physiological functions. Some support for this view is given by studies that have shown that light received at the retina influences core body temperature, heart rate, the production of the hormone, cortisol, and the feeling of alertness. Given this diversity of effects, it seems likely that we have hardly begun to scratch the surface of the non-visual effects of light entering the eye.

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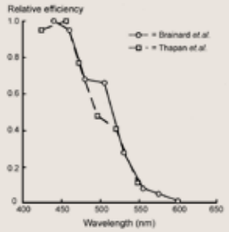

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Figure 1. **A simplified illustration of the paths from the retina of the eye to the visual cortex and the pineal gland. Drawing from Illuminating Engineering Society of North America (IESNA), (2000)** ***The IESNA Lighting Handbook, 9th Edition,*** **New York: IESNA.**

Figure 2. **Measured relative efficiency of electromagnetic radiation at different wavelengths in stimulating the human circadian system, using melatonin suppression as a marker (after Brainard et al., 2001,** ***The Journal of Neuroscience,*** **21, 6405–6412; and Thapan et al, 2001,** ***Journal of Physiology,*** **535, 261–267.)**

Opposite **Light is not only a source of energy in the physical sense. The duration, intensity and spectral composition of light has a decisive influence on the circadian system, i.e. the sleeping and waking rhythm of human beings.**

Even for the circadian effects that have been examined, there remain a number of questions that need to be answered if light is to be used efficiently. They relate to such aspects as spectral sensitivity, the relative sensitivity of different parts of the visual field, whether there is any adaptation effect, as there is in the visual system; how light exposure is integrated over time, and the significance of the timing of light exposure.

Measurements of spectral sensitivity, using melatonin suppression as the marker, have shown a strong sensitivity to short-wavelength optical radiation with a peak sensitivity about 465 nm that is very different from the peak sensitivity at 507 nm and 555 nm of the scotopic and photopic visual system (Figure 2). This implies that light sources designed to maximise the stimulus to the visual system will not necessarily be efficient in stimulating the circadian system.

Another study has shown that the lower half of the retina produces greater suppression of melatonin than the upper half, for the same light exposure. If this is so then the efficient stimulation of the circadian system requires that light be preferentially distributed to the upper part of the visual field. Unfortunately, what constitutes the upper part of the visual field depends on the direction of gaze. If the direction of gaze is predominantly downward towards a desk then the upper part of the visual field in a room is formed by the walls, while if the direction of gaze is straight ahead at a screen the upper part of the visual field is formed by the walls and ceiling.

Yet another question is whether or not there is an element of adaptation in circadian stimulation. It is the cycle of alternate light and dark that entrains the circadian system. But what constitutes light and dark? Is there an absolute retinal irradiance below which it is always dark and above which it is always light, or is it simply the ratio between light and dark that is effective? If the former is true then there is some minimum retinal irradiance required for efficient circadian stimulation. If the latter is true then it might be possible to achieve efficient circadian stimulation by using a low light level for light and complete darkness for dark.

Another characteristic of the circadian system that differentiates it from the visual system is its time constant. The visual system is an image processing system that operates on a time scale of parts of a second. The circadian system is not an image processing system but is more like a simple photocell with a very long time constant of parts of an hour. This implies integration over time thereby making dose the meaningful measure of circadian stimulation. The use of dose implies reciprocity, in that retinal irradiance can be traded off against time. The problem here is that at some point reciprocity breaks down. Where that might be for the human circadian system is not known.

Finally, it is necessary to consider the importance of the timing of light exposure. That timing can matter is evident from the fact that exposure to bright light during the afternoon has very little, if any, effect on the phase of the circadian cycle in the next twenty-four hours. However, bright light given early in the night tends to delay the circadian cycle but bright light given late in the night tends to advance the phase of the circadian cycle. This phase shifting effect has been used as a means for more rapid adjustment to and from night shift work and for overcoming jet lag. However, the significance of the timing of light exposure for many other outcomes remains to be determined.

IMPLICATIONS AND APPLICATIONS

There is much still to be learnt about the non-visual effects of light. Nonetheless, it is already possible to identify two general implications for lighting practice. The first is that the lighting of buildings should no longer be considered solely in terms of the effect of vision. The non-visual effects of light discussed above are real and need to be taken into account in the design of lighting. The second is that the spectral content of daylight is well suited to stimulate both the visual and the circadian system. This implication is consistent with what is known of the spectral sensitivities of the visual and circadian systems. It is also supported by the fact that both the visual system and the circadian system have evolved under daylight. The alternative electric light sources have only been available for about a hundred years, a very short time in evolutionary terms.

Given that it is desired to take the effects of light on health in account, the first step should be to consider the latitude of the site. In low latitudes, the amount of daylight available is almost always enough to ensure that a short exposure outdoors will entrain the circadian system and provide the necessary vitamin D. In such latitudes, protection from tissue damage is the main concern so limiting the exposure to daylight is what matters.

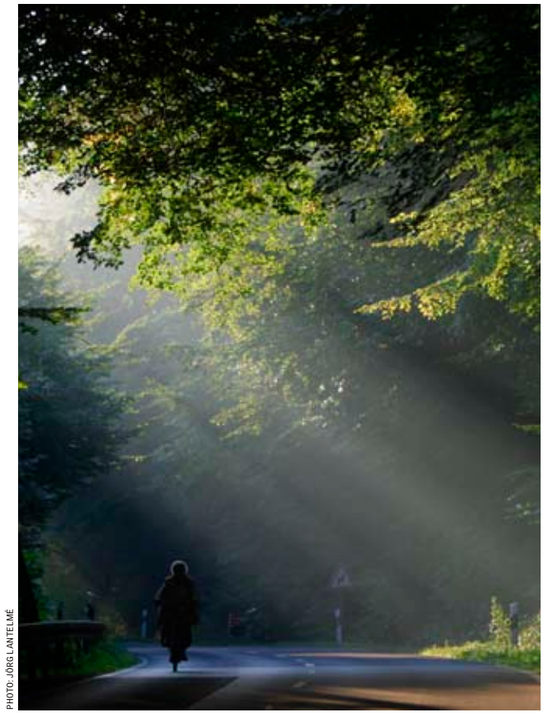


PHOTO: JÖRG LANTELMÉ

In high latitudes, where there may be very little daylight available for several months, the possibility of providing a clear light-dark cycle using electric lighting should be considered. This is possible because many light sources can be effective in stimulating the human circadian system, although not always as efficiently as daylight. The circadian system does not care what the source of the radiation received at the retina is only what that radiation is, so there is a wide range of light sources to choose from, including some that will provide the ultraviolet radiation required to generate vitamin D.

For intermediate latitudes, where the amount of daylight available requires considerable time spent outdoors for exposure to be effective and societal constraints make this difficult to achieve, the provision of extensive daylighting in a building has a role to play in supporting the health of the occupants, particularly those who have a fragile circadian system. This can obviously be done by careful design but where the site does not allow for extensive daylighting it should always be possible to include a special space, a sunspace, where the objective is to bathe the occupants in daylight provided, of course, that this can be done without causing visual or thermal discomfort.

The range of buildings in which the provision of extensive daylighting or sunspaces might be justified will depend on the answer to another question, namely whether the effects of light exposure on health are limited to the ill, or is light valuable for everyone, even the healthy? There is no doubt that light can be used as a treatment for a number of clinical conditions but the effects of light exposure on the healthy is less clear. What is known is that exposure to bright light at night can induce a greater sense of alertness in the healthy and that apparently healthy people report greater vitality, alertness and improved mood following exposure to higher light levels. It is only if the non-visual effects of light can be shown to apply to the healthy that light and health will become a consideration in all building types rather than those designed specifically for the ill.

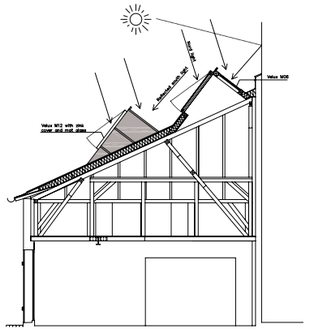
Dr. Peter Boyce has spent most of his career working in the field of lighting. From 1966–1990 he was a Research Officer at the Electricity Council Research Centre in Capenhurst, UK, and from 1990–2004 he was Head of Human Factors at the Lighting Research Center, Rensselaer Polytechnic Institute, New York. He is now resident in the UK and working as a consultant. He is a recognized authority on the interaction of people and lighting, being the author of the classic text Human Factors in Lighting, as well as numerous papers and articles.

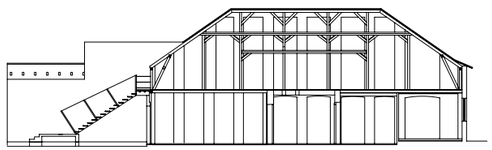
VARIATIONS IN WHITE

Mogens Dahl Institute in Copenhagen

By Jakob Schoof.
Photography: Adam Mørk.

A new centre for classical and contemporary music has been created on Islands Brygge, a former dockworkers' district in Copenhagen. At the beginning of 2006, the Mogens Dahl Institute for Music, Choir and Conducting moved into a converted car workshop. Its light-filled, spacious and yet intimate rooms are the result of a strenuous process of archaeological recovery and conservation supervised by architects Frank Maali and Gemma Lalanda.





Like many other cities in Europe, Copenhagen is currently re-discovering its waterfront. Islands Brygge, a former dockworker's district in the east part of the city centre, in particular has developed into a focal point of new Danish architecture. This has followed a social transformation that has taken place in this part of the city. In the residential buildings from the late 19th century, the workers who once lived there have been succeeded by the young, the creative and finally the affluent, while feverish construction activity has started in the industrial facilities strewn around the quarter. Warehouses have been converted into lofts, a pencil factory now accommodates a photo studio and fitness studio, and a former barracks now houses the offices of Deloitte accountants. The 'Gemini' building has become a symbol of this urban reconstruction: two former silos, right next to the water, that Dutch architects MVRDV turned into very different apartment towers for well-off customers.

Snorresgade is one of the few spots on Islands Brygge to retain their original, slightly chaotic character. The change from temporary to permanent buildings gives the area something of the atmosphere of the Klondike. Opposite the district's old church there is a new kindergarten, next to it the brick building of a shipping company and, right at the end of the street, a collection of wooden huts whose owners rent out horse-drawn carriages.

In this colourfully mixed community of buildings, the site at Snorresgade 22 stands out due to its well-cared-for exterior. Erected in the early 20th century, the main building was originally home to a printing company. On the opposite side of the yard, an annex with a porter's lodge, coach shed and stables for horses was built at the same time. Later, it was used as a car workshop for many decades.

Today, two simple but striking black strips of lettering characterise the two buildings' facades, which face the street and are covered in broken white plaster: 'Vipp' and 'Mogens Dahl Koncertsal'. Vipp manufactures soap dispensers, toilet brushes and, above all, waste-paper baskets that have become design classics in Denmark. Now the company of Mette Egelund, the wife of Mogens Dahl, has moved into its offices in the old printing company. Dahl's Institute is accommodated in the former stables.

Mogens Dahl explains his motivation for establishing his Institute for Music, Choir and Conducting: "For a long time, I worked for universities, conservatories and opera houses – old 'heavy' institutions in which it is frequently difficult to change the way things are done and initiate new decisions. After all those years, I felt I was ready to dare the step into freedom and become self-employed."

Dahl came up with his ideas for what should constitute the new institute even before the process of conversion started, some of these ideas being developed through many conversations with visitors and colleagues during the one and a half years of construction work. Today, the institute in Copenhagen offers a unique mixture of master classes for song, piano and conductors, as well as jazz, choir and chamber concerts.

The former carriage shed is an elongated building with a mono-pitch roof next to the firewall of the neighbouring building, which is considerably higher. After passing a glass wall set back behind the front of the building, visitors arrive in the foyer – a space to pass through rather than somewhere to spend time – with cobblestones (new but matching the colour of the ground surface in the yard) and an unplastered brick rear wall. On the left, there is an open cloakroom and then comes the 'little' hall, around 100 m^2 in size and complete with bar, that is used for small musical performances, music theatre and receptions.

On the right-hand side of the foyer, there is the 130 m^2 music hall with gallery. The latter serves as a 'second tier' for choir performances and also as an audience gallery when concerts are given. "It was always our plan to make the best possible use of the high room and the two very heavy steel beams, which are reminders of the workshop era, were left in place and serve as buttresses for this elongated 'bridge'," said Frank Maali, the architect responsible for the conversion.

The large hall is a multi-functional room. Singing lessons take place here as well as rehearsals and chamber music concerts. As a result, the room has to be re-furnished fairly frequently – there is no fixed seating. For a concert hall, the room is extremely intimate. This closeness was important for Mogens Dahl: "Normally, the audience in concert halls is a long way away from the musicians. But here people can see all the details, smell the wooden instruments, hear the breathing of the musicians and the turning of pages of the score. Similarly, the musicians feel every change in the mood of the listeners. This kind of direct feedback is enormously important."

With the exception of the foyer and its oversized staircase with its high steel sides, the rooms of the Institute are almost completely white. The brick walls have been plastered but the structure of the brickwork is still detectable. The wooden roof beam and the heavy steel girders of the gallery have been painted white. Even the new, three centimetre thick wooden floorboards have been treated with a translucent white paint. Only the black, slim steel frames of the windows and glass doors through which the hall opens onto the yard contrast with the monochrome interior.

At first glance, you might think that the conversion of the old stables has changed it very little, as if this constituted its special strength. But that would be a mistake.

Until just a few years ago, the ground floor was used as a car painting shop, housing all the associated equipment. The first floor was divided into small chambers by numerous partition walls and was jam-packed with spare parts. Even before the planning phase, the building had to be completely cleared. Only gradually did the parts worth retaining come to light. Mogens Dahl compares this process of uncovering with 'modern archaeology': the impressive roof beam was left as it was and the necessary additional heat insulation applied. No decision on the acoustic measures necessary was made by the client and his architects until the conversion process itself. They were assisted by the experienced acoustics planner, Jan Voetmann. After a series of exhaustive tests, he decided on the installation of perforated acoustic panels on the rear wall of the large hall. They were necessary because of the extensive hard surface materials such as steel, wood and glass and are intended to reduce the reverberation time in the room to an optimum.

Before the conversion, Frank Maali and

P.44–45 **All the surfaces in the large hall are painted white – the brick wall facing the adjacent house, the load-bearing woodwork and the acoustic panels. The skylights produce a gently alternating rhythm of light and dark.**

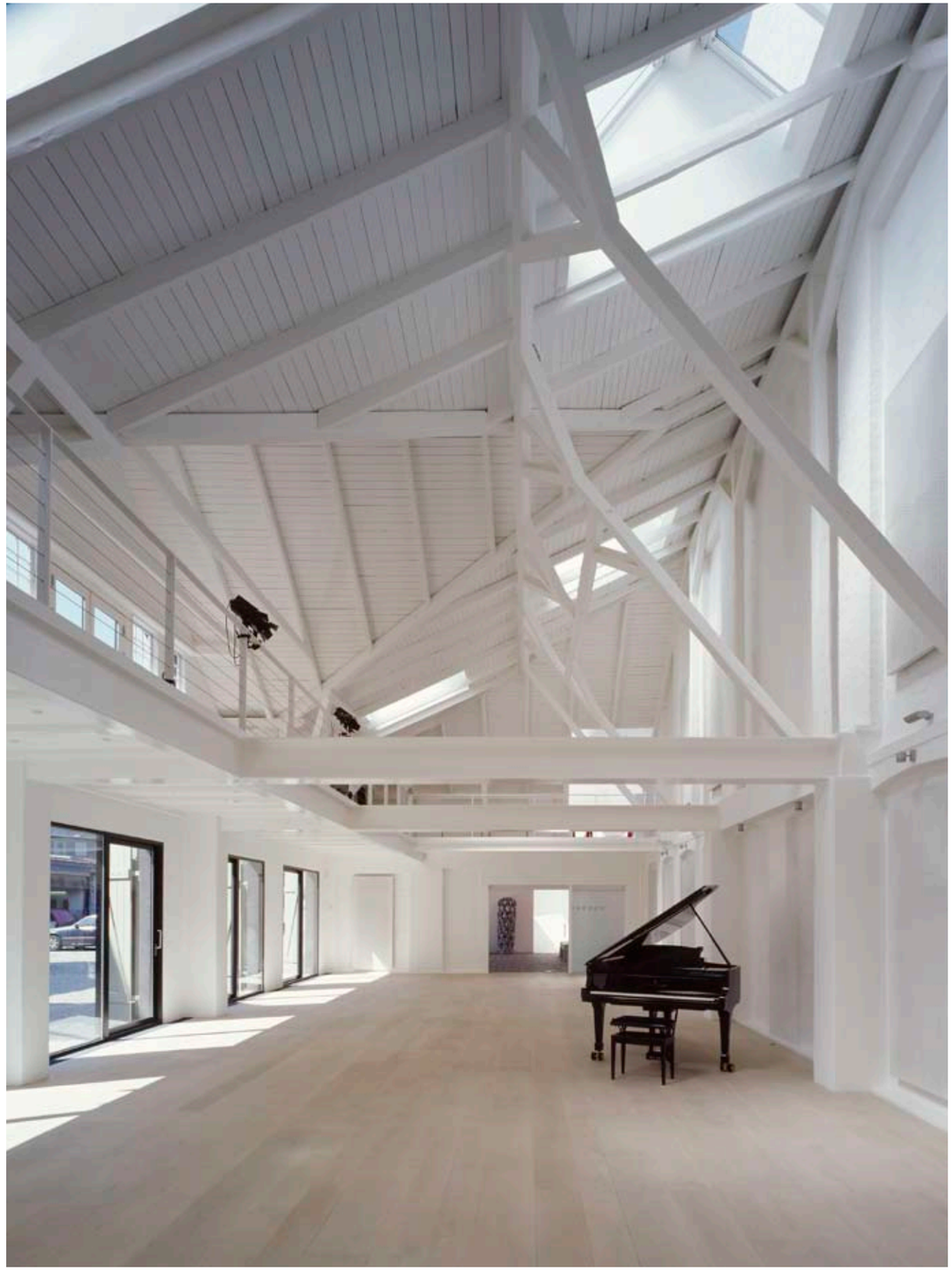
Opposite (clockwise from top) **Cross-section with daylighting concept. Longitudinal section. View from courtyard.**

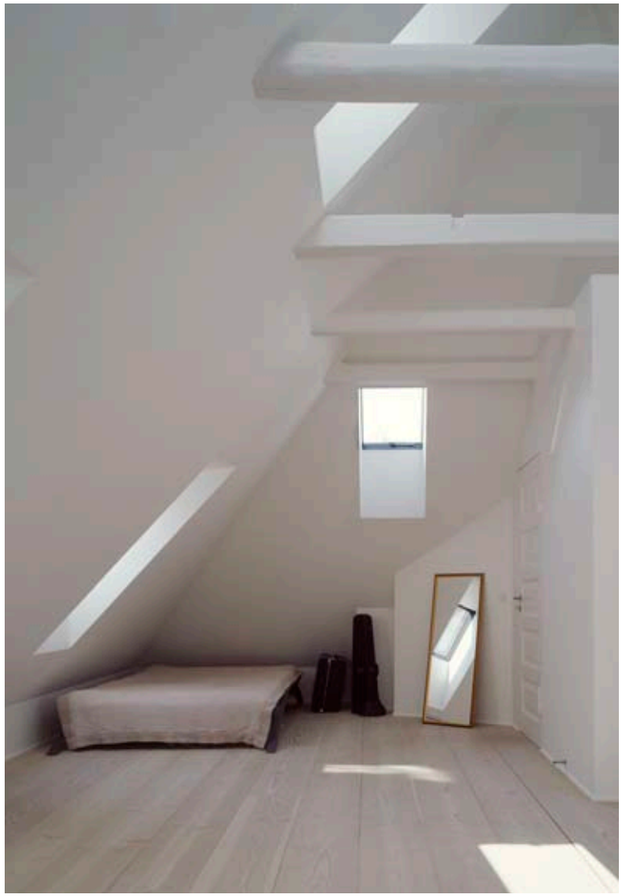
Right **In contrast to many other concert halls, the Mogens Dahl Institute was not conceived as a 'black box' – instead it's large panes of glass open up towards the courtyard. This becomes especially clear at night when the large skylight turrets on the roof shine in the dark like enormous lamps.**

Left **In the cloakroom and in the small hall, additional openings were created in the roof to allow daylight into the dark and gloomy workshop rooms.**

Gemma Lalanda were clearer about the light effect they wanted. In place of dim daylight coming in through a few vertical windows, they decided on allowing generous amounts of light to enter the room from above but without any glare. To this end, four new skylight turrets, from both sides of which light enters the interior, were mounted on the roof. The direct south light is diffused by large alabaster glass windows whereas the indirect north light reflected from the neighbouring firewall enters through smaller windows with clear glass. At midday especially, when the sun is at its highest, the large hall is filled with a soft but accentuated light. The sharp rhythm of the pilasters, wooden beams and acoustic panels on the rear wall of the room is then superimposed by a rising and falling vibrato of fractured light and penumbras, following the position of the window openings.

The old porter's lodge next to the street is now dual-purpose. On the ground floor, there is the Institute's administration office and the first floor can be used as a guest apartment, a meeting room or a restroom for the musicians. Originally, the light in the lodge was very dim after coming in through the windows facing the street. Now, more than half a dozen new skylights have been added. On the north side, large centre-pivot windows have been fitted and, in the south, small windows with dark semi-circular arched frames that were specially developed for old buildings that are listed as historical monuments. With the exception of the stay peg that holds the window in the open position, they are based on a historical model. Frank Maali never tires of stressing the importance of daylight for his design: "Daylight is enormously important and now that the building is finished, it's clear that we were on the right track in terms of design when we decided to install skylights or high side-lighting in the dark rooms. The building could never function as a music school if we hadn't done all this."





Left **The new quality of light is perhaps most apparent in the flat on the first floor of the house at the front. Numerous new skylights enable views of the outside and the ingress of daylight, thus opening up the rooms that used to be illuminated only through the facade.**

Below **The main building of the former printing company (on the left in the picture) and the former stalls are freshly plastered in a radiant, flawless white. For the location near the centre of the Danish capital, the buildings have more of a small-town feeling.**

P.50–51 **Daylight enters the large chamber music hall from three sides and on two levels. The two formerly separated levels were combined to create one large room and are additionally illuminated from above by four new skylight turrets.**

Facts

Location	Snorresgade 22, Copenhagen
Type of building	Music institute with chamber music hall and guest apartment
Clients	Mogens Dahl, Copenhagen
Architects	Maali & Lalanda A/S, Copenhagen
Completion	2005

HAPPY INTIMACY WITH THE DAHLS

A new elegant venue for jazz in Copenhagen is more than promising

By Henrik Wolsgaard-Iversen

Sunday morning, third day in the now-famous Copenhagen Jazz Festival with more than 900 concerts and music events all over town. And there is an intimate musical experience in a new setting for music – Mogens Dahl's Institute for Music, Choir and Conducting close to the central Copenhagen harbour.

'White on White In White', a lily on each table, tasty brunch, gaggles of grown-ups in summer shorts and greying hair make up the audience, waiting for the duo Christina and Carsten Dahl to appear in the room – on their way to international fame. Charming, modest, playful and tall, the Dahls make their entrance and begin to play their own 'Signs', a modal and meditative composition with the theme 'read the signs you receive and listen unafraid'. Christina's mature and searching tenor sax tone fills the room, followed and filled with her husband's attentive piano. The room listens and the two musicians find the acoustics and the feeling of the place before launching into more jazz-like standards and their own compositions as the morning becomes noon. One number is "Softly as in the Morning Sunrise", delivered with stride and intimacy and a touch of humour.

A comment from the couple during intermission about playing here for the first time: "The place you play in makes a world of a difference. Playing in small, funky clubs or concert halls or churches, these locales all send back their message to us. This place has great acoustics and the feel of the room makes it easy for us to find inspiration," says Carsten Dahl, who sends a questioning look to Christina. She agrees and adds, "It's mellow and the nervousness vanishes after a little while, maybe because you can see the audience as well as they can see you."

Jazz and Architecture is a love affair that ran through most of the 20th century, and it is still hot. Though perhaps not entirely reciprocal. Le Corbusier went on an expedition to find Louis Armstrong up in Harlem in the thirties, The Bauhaus people 'dug' the early jazz, artists and architects have been fascinated with Coleman Hawkins, Sonny Rollins, Duke Ellington, Thelonious Monk, Errol Garner and Charlie Parker. Their music was played – and is still played – in the studios for inspiration. With its roaring bands and screaming trumpets, jazz has been associated with the Skylines of New York. In Denmark, famous lamp inventor and architect Poul Henningsen was an ardent jazz fan, Max Brüel built great houses and played an awesome modern baritone in the '50s and '60s. Then there were Mogens Breien and Anders Dyrup. The latter designed the famous Montmartre Club in Copenhagen back in 1958 with the help of five painters and sculptors.

When the cool West Coast jazz emerged in the late '50s, it was dubbed "Architectural Jazz" by some for its logical lines and free harmony structure. It was not always meant as a compliment.

In the Dahl Place – designed by Gema Lalande and Frank Maali in the setting of the old horse stables (later, a chaotic car workshop) – the music feels at home. This becomes clear when the Dahl Duo (no relation, as far as they know) enters and introduces Arlen's "Over the Rainbow" and portrays it with all its wishful and wistful emotion. They roll into an original number – "Too Early to Wake Up". The inspiration for this tune comes from being young parents of small children, one of whom has a habit of waking up a few hours after the musician parents finally venture into dreamland after coming home late (or early) from gigs or concerts. We hear it all: the lullaby, the sweetness, the desperation, the too-early blues and – finally - the peace. It's funky and direct and everybody in the room nods with sympathy... message received and understood.

Some time next year, Carsten Dahl will embark on his most ambitious project – a full recording of Bach's "Goldberg Variations" for Deutsche Gramophon, played from memory not the music. He plays with deep concentration or with a blue-eyed smile. In one number he quotes Errol Garner for one bar – and everybody smiles back at him. He can draw the listener into his amazing musical world and everybody leaves it richer than when they entered. Christina Dahl is now a complete musician with a full tone, respecting the tradition of Don Byas, Ben Webster, Lucky Thompson and elegantly avoiding the John Coltrane trend, where so many other European tenors seems to dwell.

The lilies nod at the tables and the applause becomes a standing ovation. It is high noon, the sun lights up the room and it's time to move on to the next venue. But it's going to be difficult to find music as inspiring as we just enjoyed in these lovely surroundings.

PHOTOS (P. 51–53): GORM VALENTIN

Christina and Carsten Dahl performing in the Mogens Dahl Institute.
Photo: Gorm Valentin

BOULDER IN THE VINEYARD
MAISON ZUFFEREY IN LEYTRON

Facts	
Location	Leytron, Wallis, CH
Type of building	Single-family house
Clients	Janick and Guy-Claude Zufferey, Leytron
Architects	Nunatak Architectes Sàrl – Chervaz & Vassaux, Fully, CH
Completion	2003

Leytron, a wine-growing village in the Swiss canton of Valais. Between grapevines and rock walls a slate-clad cube rises into the sky. The inclined box by Nunatak Architectes reveals its function as a residential building only at second glance. It is not just the form that testifies the will to create something exceptional; with remarkable precision the building also reacts to the requirements of the young clients and the location's climatic conditions.

The village of Leytron, which is located on the north bank of the Rhône between Sion and Martigny, is not the kind of place typically mentioned in guidebooks. There are numerous villages in the area that have conserved their villagescape in a more picturesque and tourist-friendly way. But Leytron provides an exemplary study of how different uses and social ambitions have superseded each other in a village of winegrowers. The old barns in the centre of the village still remind passers-by of the time when the inhabitants were fully dependent on viniculture to make a living. Many of the contemporary houses on the outskirts of Leytron, however, now bear little or no relation to the landscape and traditions around them. They belong to the heirs, who don't practice viniculture anymore, but still settle in the place of their ancestors; perhaps due to a bond with their native soil or maybe simply because their parents have bequeathed them a building plot.

Amongst them are the Zuffereys. Their house is the last one at the eastern edge of the village, about 50 metres from the road but still leaping to the eye of the passers-by. The grapevines stretch uphill as though drawn with a comb. In the middle, a box of grey slate stands out, not unlike a freight container that has accidentally rolled out of an aircraft's cargo hold. Roland Vassaux, partner in the practice Nunatak Architectes, has another ready version for the genesis of his design; he writes, "The mountain is in labour and gives birth ... to a house!" With slightly less harmonious contours, Maison Zufferey could indeed qualify as a reduced copy of the L'Ardévaz massif towering in the background: an imitation that, according to Vassaux, "only makes sense in this particular location". The resemblance is not at all restricted to formal aspects. The rock formation of the mountainside served as model for the velvety shimmering slate cladding of the housing box. The local stone, which gave the traditional Valaisian architecture its slightly rough character, is here industrially processed and becomes a delicate dress for a perfectly proportioned building.

The Zufferey House breaks with the local architectural tradition not just formally, but also regarding its orientation. Usually the buildings in the Rhône valley open up towards the south-west, towards the afternoon sun, but also towards the frequently unpleasant wind blowing up the valley, especially in the afternoons. The terrace of Maison Zufferey, however, faces east, offering shade and protection from the wind. The carport and the entrance to the house are located underneath the upward tilted western end. The entrance wall shines in a supernatural yellow-green, as if the singularity of the design needed emphasis. For Janick Zufferey, the client and herself an architectural draftswoman in the practice Nunatak Architectes, the presentation of the design came as a sort of positive shock. For weeks during the planning phase, she was denied admittance to her principal's office. "He wanted to surprise me with the concept. Everyone in the office knew the plans, and I could only conclude from the reactions of my colleagues that he was up to something exceptional." At the design presentation, Roland Vassaux started by showing his client the plans for the first time: a ground floor with kitchen, living and dining room, guest toilet and storeroom, an upper level with three rooms and two small bathrooms as well as an open attic with study and TV room: in short, functional rectangular plans with no design extravagance. Only then did Vassaux retrieve a perspective drawing from his drawer. The surprise was complete.

With planning and construction costs of some 500,000 Swiss Francs the 185 m2 building was comparatively reasonable. The main reason for the relatively low price was the timber construction that allowed extensive pre-fabrication. Only the foundations and floor slab are made of reinforced concrete; the inclined box is a structure of glue-laminated fir. The interior walls (also in the bathrooms) were clad with oriented strand boards partially sealed with waterproof paint; the floors and ceilings of the upper storeys are made of fir boards. To keep costs down, the ground floor was finished with a cast concrete floor containing the pipes for the underfloor heating. In some places, where the clients asked for light but not for visual links, between the bathrooms on the upper floor, for example, white, translucent panels of acrylic glass were installed. Viewed from the outside, the windows, the only elements foiling the impression of the inclined box with their horizontality, correspond to the interior room without repeating the design. All windows are of a different size and installed at different heights, so that the children can also enjoy the view across the valley, the vineyards and the surrounding mountain scenery. Especially impressive is this 'screen change' that runs along the north facade from the living room via two single flights of stairs up to the TV room. When the residents lower the grey-varnished louvres to block out the low sun, the house externally becomes a man-made stone monolith, blending in with the surrounding mountain world, and yet alien in the alpine panorama, an extraterrestrial with a magic hood that makes it less striking in its surrounding, yet without completely concealing its presence.

Their home, says Janick Zufferey, was a pioneering work. Comparable, modern architecture did not exist locally, nor did a land-use plan that could protect the area from uncontrolled architectural developments. Their application for planning permission was approved without objection, thanks mainly to the former community president of Leytron, whom Janick Zufferey describes as great lover of architecture. At first, the Zufferey house stood on its own, but neighbours have since moved in. A rustic-style blockhouse has been built next door, with sunflower-yellow plastered facade shining between the grapevines. In the meantime, the community has passed a land-use plan that prohibits all further new buildings in the surrounding vineyards. So the Zufferey family will always be able to enjoy the unspoilt view of L'Ardévaz.

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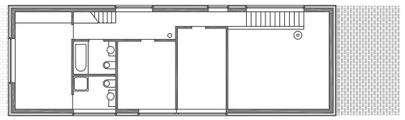
1. The view from the road and through the vines makes the design concept of the house clear: scaled down and strongly abstracted but clearly visible, the Zufferey house reflects the form and structure of the mountains behind.

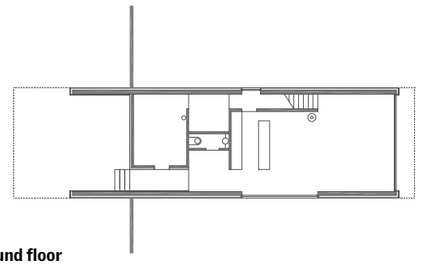
2. In the west part of the first floor, directly above the carport, is the parents' bedroom. Two skylights allow the afternnoon and evening sunshine to penetrate deep into the room.

3. The inclined position of the building also has functional reasons. Under the upward tilted west end, there is a covered carport as well as a house entrance that is thus protected against the weather.

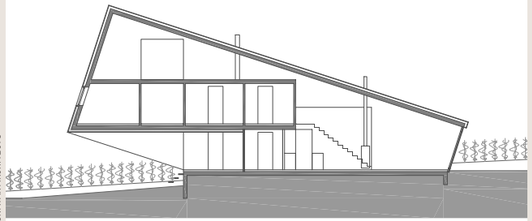
4. The access passage on the north side runs through all the floors of the house in the form of a 'promenade architecturale'. Windows of different heights and sizes allow all the occupants, short or tall, a view of L'Ardévaz, the local mountain of Leytron.



First floor



Ground floor



Longitudinal section

DRAWINGS: NUNATAK ARCHITECTS

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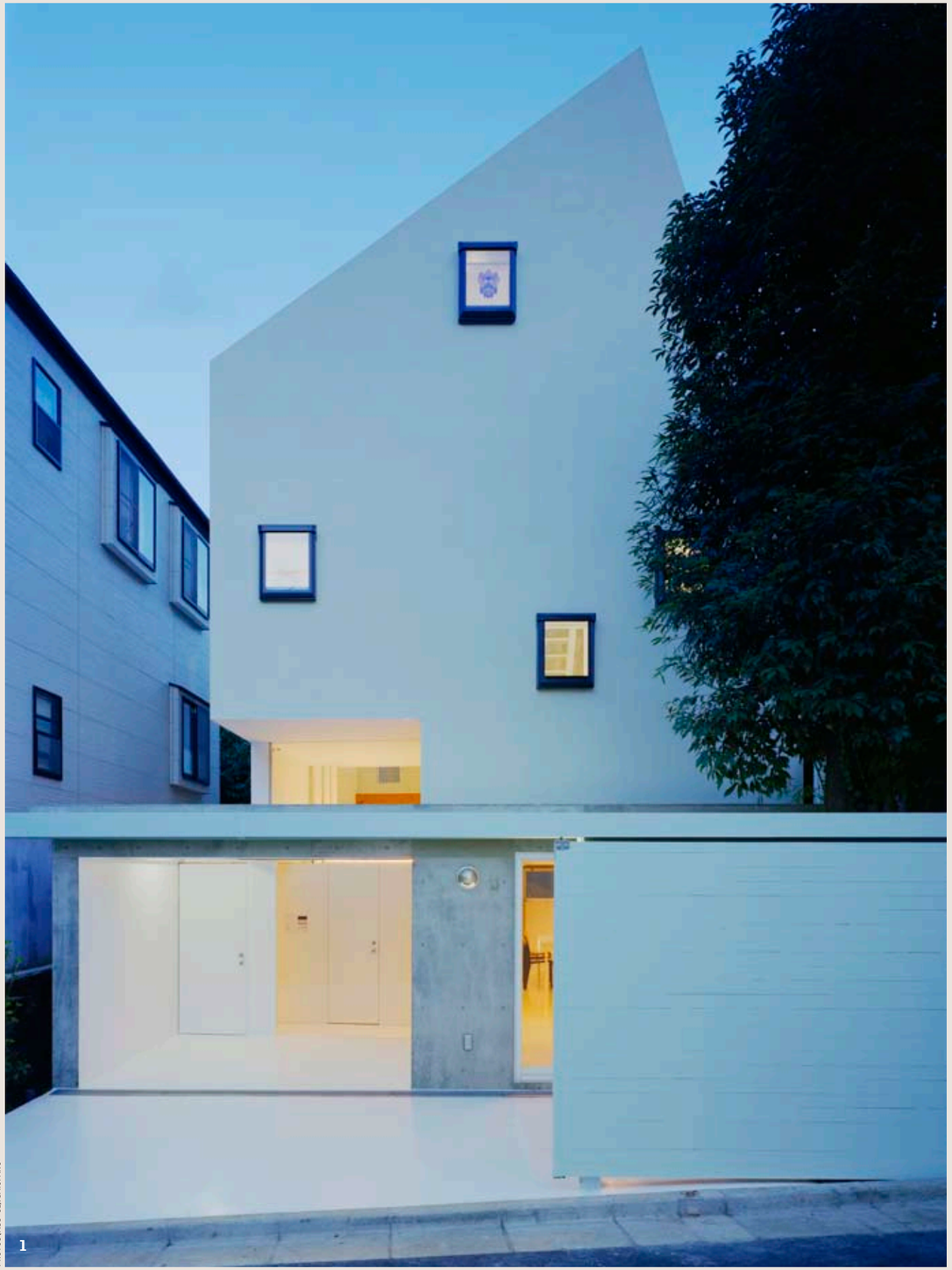
PHOTOS (P. 54–57): FRANCESCA GIOVANELLI



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PHOTOS (P. 58–61): DA|C| ANO

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TRADITION IN NEW CLOTHES
"G" IN TOKYO

Facts	
Location	Meguro, Tokyo
Type of building	Single-family house
Clients	Anonymous
Architects	Jun Aoki & Associates, Tokyo
Completion	2004

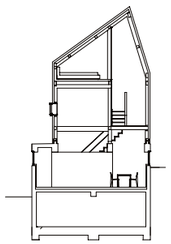
The residential area around "G" in Tokyo's Meguro district is characterised by detached though densely packed single-family houses, which is very typical for the suburbs of large Japanese cities. Due to the risk of earthquakes in the region, the residential house had to observe a minimum clearance of five metres on all sides to the neighbouring buildings. This spacing also roughly defines the exterior space as the plots are small and garden areas are few and far between. The restricted plot area of about 107 m² is taken up with a living area of around 155 m² distributed over three storeys.

The building is not noted for its clear though unusual form, or by generous interior spaces and the absence of almost any kind of decoration, but for its exceptional structure. The house has been built in conventional Japanese timber construction, but this wooden structure has been put on top of a single-storey reinforced concrete base. On the ground floor the concrete is visible internally as well as externally, revealing the two different construction principles. A 77 cm horizontal joint marks the change from wood to concrete by visually separating both constructions.

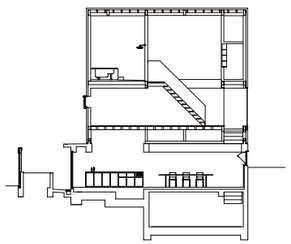
The house's neighbours bear the typical regalia of classic residential buildings in Japan (tiled roofs, eaves, oriels and balconies). The seamless transition from exterior walls to roof surfaces gives the building the appearance of a large, minimalist sculpture. This impression is emphasised by the uniform, white plaster façade and the windows, which are irregularly distributed over the wall and roof surfaces, thus divulging no information on room layout from the outside. Only in the entrance area has a full-storey cube been cut out of the building volume in order to create a parking space for the owner's car, despite the limited plot area.

Generous, partially two-storeyed voids interlace the different levels and allow sundry visual relations internally. The skilful arrangement of usable floor space provides a great amount of open areas in order to stage-manage the ground floor, especially with the irregular window openings and the incident light. With a few exceptions, dormer windows with timber frames have been installed in all window openings. One interesting feature is the slight protuberance of the frames, the only elements marginally projecting beyond the otherwise completely plain façade; the purpose is to ensure waterproofing on the vertical and horizontal exterior surfaces.

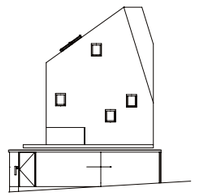
Fair-faced concrete and timber are the predominant materials. The colour concept is reduced to different shades of white, which pointedly underlines the light effects in the interior. The only interior decorative elements that have been applied by Jun Aoki are the silk and lace curtains in the bedroom (a material otherwise used for kimonos) as well as flock fibre wallpaper and wall cladding in the kitchen and dining area on the ground floor.



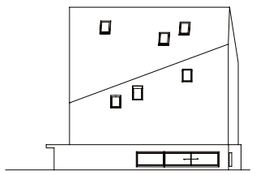
Transverse section



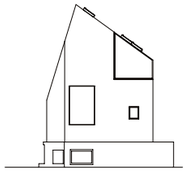
Longitudinal section



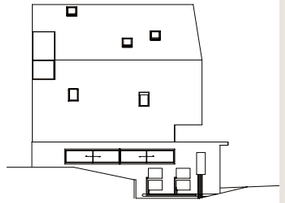
North elevation



West elevation



South elevation



East elevation

DRAWINGS: JUN AOKI & ASSOCIATES

1. The ground floor can be shielded from the views of passers-by with a sliding gate. The interior is then only visible through the timber frame windows, which protrude slightly from the facade.

2. A small roof terrace is accessible from the sleeping gallery on the upper floor. To the right the generous, two-storeyed void above the stair is visible.

3. Above the dining area on the ground floor, the transition from reinforced concrete to timber construction becomes visible. A 77 cm horizontal joint accentuates the change in style.

4. "G" is on the right in a densely developed residential area. Unlike the architects of the neighbouring buildings, Jun Aoki has rejected the regalia of classic single-family houses, such as tiles roofs, oriels and balconies.

4

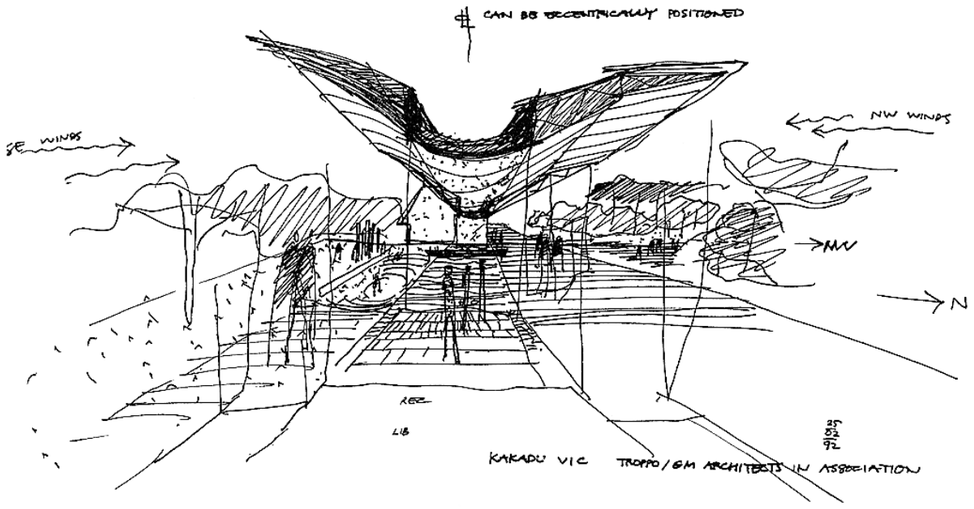
INTERVIEW WITH GLENN MURCUTT

Glenn Murcutt is one of the best and most opinionated architects in the world. The Pritzker prize-winner of 2002 is known for his humanist architecture, which draws on the wealth of materials and shapes of modern times but still has an unerring feeling for the special aspects of the Australian climate and light. At the opening of an exhibition in Zagreb, Glenn Murcutt answered questions by D&A.

PHOTO: ORIS

Zagreb, two in the afternoon on a warm Tuesday in April. The House of the Croatian Artist, built in 1938 to plans by Ivan Meštrović, is a monumental but still finely proportioned neo-classicist rotunda. Its impressive, almost ceremonial rooms do not, at first glance, have much to do with Glenn Murcutt's architecture. But still, it is hard to imagine a more suitable place for exhibiting his works than the gallery on the top floor of the rotunda: daylight falls through a dome made of hundreds of small glass bricks and fills the room with a magical glow. The exhibition about the Walsh House in New South Wales – Murcutt's most recent masterpiece – is due to open in six hours. Before it does, the Pritzker prize-winner will give a stirring lecture lasting more than two hours just a few blocks away to packed audiences in the seats of a Zagreb cinema. For which he will be applauded frenetically by his mainly young audience. The exhibition and lecture were organised by Oris, the leading architectural magazine in the country, and sponsored by VELUX Croatia.

The House of the Croatian Artist begins to fill with people; there is a dominating atmosphere of bustling business and a strong feeling of excited anticipation. On the gallery on the top floor stands Glenn Murcutt, giving two assistants short and precise instructions about hanging up the exhibits. A press conference is actually on Murcutt's schedule now, but the presentation of his work has priority. More than thirty photographs, sketches and working plans need to be put into a meaningful order. Murcutt still draws everything by hand, even his implementation plans. This is perhaps not the only possible method of illustration for a great designer who has been searching for perfect detail and the optimum combination of building materials for more than 35 years, but it is an absolutely logical one. On this day in Zagreb too, Murcutt often stops to think and then explains a detail or a sketch to the people standing round him. The great architect seems approachable; he takes time to explain his architecture to everyone who wants to listen. This impression continues during the press conference, which does begin soon after all. Murcutt takes time for everyone; he sees every question as worth answering and discussing at length. His responses are precise and formulated almost like the printed word. They are evidence that he has many years of experience talking to the general public, but they are never rehearsed. Rather, the enthusiasm Glen Murcutt has for his work can still be felt today in his words– an enthusiasm that has already infected thousands of visitors to his lectures and hundreds of his students all over the world.



D&A Mr. Murcutt, we have met here in Zagreb, the capital of Croatia. You visited this part of Europe early on in your career. What impression did it make on you?

GM When I travelled down the Dalmatian coast in 1963, it had a very powerful influence on my thinking because of the integrity of the architecture that can be seen here. What so impressed me there can be described with a very old-fashioned English word: authenticity. It is an honesty, a truthfulness, an understanding of material, all of which are very important issues in these days. The real problem for young architects in particular is that you have this marvellous architecture so close, but you do not really know it. I think that one has to leave one's environment to see it more clearly. So young architects so often throughout the world are looking for direction. One understands this issue, but the problem is knowing your own place first to be able to see and find what is the most appropriate direction – not the most fashionable direction.

D&A Your work is often described as modernist, humanist and, at the same time, highly individual. Usually, however, the concept of Modernism is connected with the notion of collectivism. How would you approach the practice of Modernism today?

GM I was raised on the work of Frank Lloyd Wright, his work before Modernism as it were. I was brought up in a family that introduced me to the work of Mies van der Rohe when I was 13 years of age, I learnt about Philip Johnson – particularly his early work, such as the house in New Canaan –, and I got to know the work of Craig Ellwood, remarkable work, which in our days few architects in California know about. All of this raised in me a great interest in the modern movement in architecture. However, to me the modern movement fell short because it turned into dogma. If a movement turns into dogma it dies. Dogma is no longer thinking, it is accepting without thinking. So I could see that there would at some stage be an opening for a new movement. This movement turned out to be Post-Modernism. And that movement I rejected from the day I heard the first word. Instead I 'rode down the backstreets of architecture', thinking about what I considered relevant in my place – Modernism, as I said – what was irrelevant because it was not working, and what was appropriate to my landscape, and how my landscape could inform modern architecture. So in a sense, I became a pariah in my own society. Everyone was moving in one direction, whereas I was moving in another direction And it was not until 15 years ago that all of a sudden, I emerged again at a time when we were in an energy crisis. This crisis of all a sudden saw my work in Modernism, but at the same time in the 21st century in terms of respect, in terms of how you put things together. There is a large ecological issue in how you put things together in a way that you can pull them apart again and maintain the usability of that material for future construction. There is a whole issue of the material cost having been spent in the beginning, so the re-use will come at a very low cost. There is a whole issue in recognising that architecture is not static but it moves on and that there will be changes, we have to make these changes without letting them compromise the design of our architecture.

D&A Would you be happy with the term "Neo-Traditionalist"?

GM No, because I am not a traditionalist. I am very interested in tradition, in a way that I think it is a very important part of our present and future, and it has its justification as an integrative force for the past. However, if you look at the work of an architect like Sverre Fehn, for instance, you will notice that he and I have a similar attitude about the old and the new in a sense that you can draw on the old to make the new, but you can also make the new 'very new' without replicating the past. I am not interested in a new way of reviewing the past in a Neo-traditionalist sense; I am much more interested in the future. But what I am interested in is a directness in architecture, which often relates to the past, because traditional architecture had a very direct way of resolving things. We shouldn't complicate things, but make them simple. And remember: Simplicity is the other face of complexity. Simplicity – as opposed to 'simplistic' – embodies complexity. A neo-traditionalist person may very well also be a 'neo-simplistic' person. I, on the other hand, am not interested in simplicity; I am interested in the complexity of the past and the complexity of the present and how you can resolve this complexity in a very simple way. Traditional architects and people of the past had what was obvious and what was logical in their bodies, had it in their minds. Show me modern architecture in this part of the world that can equal the quality of the walls of Dubrovnik. Show me an architect of today who can produce an architecture that can equal the quality of Trogir! These are fantastic buildings, because they are obvious in their beauty. They have a logic that also embodies the poetic, representing a continuity of tradition where the logical and the poetic 'sing' together. And it is precisely this junction of the rational and the poetic that I am interested in.

So, to get back to your question: I would not consider myself a neo-traditionalist, as I am much more interested in the present and the future. On the other hand, I am interested in the past for its sensible attitude. I like sense, common sense. I dislike games of the mind that are stupid. And much contemporary architecture in my point of view is games of the mind that have no relationship to our spirit, our being, our landscape and our environment.

PHOTO AND DRAWING: GLENN MURCUTT

P.63 **In a 'marathon' lecture at Zagreb's Cinema Europa that lasted for more than two and a half hours, Glenn Murcutt explained both his working principles and his latest projects to a mostly young Croatian audience.**

Opposite and left **The visitor centre of Kakadu National Park in Northern Australia was designed by Glenn Murcutt between 1992 and 1994 with Troppo Architects. Typical of Murcutt's buildings in tropical regions is the light structure and widely projecting roof that provides a lot of shade and under which a cooling breeze can blow through unobstructed.**

D&A What is your experience with students? I heard that you like to work alone. How do you transfer your experience to others then?

GM For 35 years, except for a very few times, I have worked absolutely alone. Only for larger commissions, I have occasionally worked with others, such as for the Arthur and Yvonne Boyd Center, which came at a time when I couldn't do it. My wife, who is also an architect, and does not employ either, then joined me, and we worked in equal collaboration. So it is either entirely ourselves as individuals who are working on a project, or ourselves as partners.

Of course, not having students in the office, you are not transferring your knowledge or your attitude. By teaching internationally, I am communicating to in the order of 60 students every year. Take 60 students over a period of 30 years, and you have some level of influence.

The other important thing is that I have not done big-scale work. I think that most big scale work comes from clients that are less than the clients you would like to have. In my early years in practice, my father said to me: "Now that you are entering your practice, you must start off in the way you would like to finish. And for every compromise you knowingly make in your work, the resulting product of that compromise, its built form, represents the quality of your next client." This is a truism of the greatest order, and compromise for me has nothing to do with ego, or arrogance; it is when you know you're doing something that you ought not to. It does not mean that when a client does not like what you have done, you cannot turn around and rethink and do it again. This is something I am very happy to do and I have often done it. But every time you do this, make sure that the subsequent result is better than the previous one.

So the interaction and my passing on knowledge to students is there all the time. I am a professor at the University of New South Wales, and I am taking up another professorship at Sydney University. At the same time I am a self-practitioner. I am working flat out all of the time, even on airplanes, and the mornings when I am not working I am dedicated to the task of teaching. I spend an enormous amount of time with students, including travelling with students when I am in Australia.

D&A One surprising feature about your architecture is its lightness, compared to other kinds of architecture we know from subtropical regions. How do you cope with the issue of thermal storage in your buildings?

GM Consider the size of Australia for a moment. Its height roughly equals the distance between Oulu in Finland and Tunis, its width is similar to that between the west coast of Spain and Tel Aviv. So if you move through Australia from north to south, you will encounter the monsoonal tropics, the wet tropics, the subtropics, the warm and cool temperate climates and the hot arid climate. So, in short, we have all the climates you could possibly have to deal with.

Now 90 Percent of Australians live between the Great Divide or within 100 km of the coast. Of these, 70 Percent live on the East Coast of Australia. When I am working in the monsoonal tropics, the buildings are extremely light, because the temperature varies between 26 degrees and 33 degrees, whereas the humidity varies from 30 percent in winter to 95 percent in summer. So the climatic change requires ventilation – an enormous amount of ventilation. The buildings come off the ground, the floors are open, the outside walls are open from the waist-height up, and the roof is open in a way that it has suction points at the top. In the monsoonal tropics, a lightweight building that has no thermal mass at all is absolutely required.

Moving further down the coast, we arrive at the subtropics of Brisbane, where so far I have not worked at all. I sometimes get close to it – such as with the museum and the Short House – but I do, in fact, not work in the subtropical regions as such at all.

Still further south, my buildings stand on the ground, have concrete floors, brick walls inside, and stud framed timber outside. They are insulated very well, have either timber or metal cladding on the outside, and are oriented properly towards our North, which corresponds to your South – very few people actually realize that the sun in the southern hemisphere is in the northern sky, where it ought to be. So, by designing a linear building and orientating it towards the North, I get the best out of the light that is available. Consider that in winter time, the sun rises 25 degrees north of east and reaches only an angle of 31 degrees at noon. At equinox the sun rises due East and hits 55 degrees at noon. In summer, the sun rises 25 degrees south of east, reaches 78 degrees and drops back to 25 degrees south of west. This means that you have to design a building that is protected from the summer sun by overhanging eaves, so that in this period of the year, the thermal mass is not working at all. In winter, on the other hand, when the sun stands only at 31 degrees, light pours deep into the belly of the house and heats up the brickwork inside. The thermal mass is warm and the insulation holds the heat inside. At five in the afternoon, you then close the outside walls, and the brickwork radiates the interior of the building throughout the night.

So I do exactly what you are asking for: employ the concept of thermal storage. When I build in the hot arid region, for example, as with my design for a museum in Broken Hill, you will find that the building has walls to the North that are 800 millimetres thick, and 600 millimetres to the south, because we can capitalize on the diurnal difference in temperature between 40 degrees at daytime and 18 degrees at night time. So you see that in fact, I am using parts of the construction to

PHOTO: JAKOB SCHOOF

Left **Interior view of the 'House of the Croatian Artist', where the exhibition was housed. A dome made of hundreds of small glass bricks lights the exhibition room.**

cope with climate in a similar way as you might do in parts of Europe or North Africa.

D&A Generally, how do you assess daylighting in your buildings? Do you build models?

GM No. I have a natural feeling that allows me to anticipate what the lighting situation will be like.

D&A And a lot of experience that helps you in doing so, I presume?

GM Sure. If you have not gathered some sort of experience when you have arrived at the age of 70, you are in trouble.

D&A Does a site you work on have to impress or inspire you in a special way to accept a commission?

GM No. The most important thing in accepting work is a good client. Good clients are just gold. So I have structured a way – initially, not consciously, but it is conscious now – which means that if you asked me to build a house for you in Australia, you would have to wait for me for three to four years before I could do it. I have a sequence of projects ahead – maybe 13 or 14 projects– so if you wanted me to do a project for you, you would have to get into a line. And that sorts clients out very quickly, because the very best ones will wait. And you have no difficulty at all, because they are so relieved and so grateful when you start that they are dreams. And most of my clients have ended up as my friends.

D&A So you develop quite a close relationship to your clients?

GM It's a big relationship, with discussion after discussion the whole way through, and from the time I say "yes" to the time I start actually working on a project three or four years later, we meet several times, we go to the site several times and we discuss the brief several times. What is interesting is that, if you compare the brief I get from them at the beginning to what the brief is like in the end, the modifications are amazing. In the beginning, there are many more "wants" than there are necessities. Then, over the three years of waiting, sometimes the children have gone from sixteen to nineteen, and where they originally wanted to be a children's room, there is now to be a (smaller) guest room, because the children have left to study at university. So by waiting, they have actually saved some money. Things like this have happened to me quite a lot of times. So, working with a waiting list actually works very well – and clients wait!

I will tell you a short story about my client relationship: I first met Kenneth Frampton when I was teaching at the Graduate School of Fine Arts of the University of Pennsylvania. He was invited to interview me on stage, in front of an audience of between 400–500 people. The interview went very well, as Kent usually asks very good questions. Then, about five years ago, eight years later, he introduced me at Columbia University. He told the audience about when and where we first met, and then continued: "There were one or two answers in that interview when I did not quite believe Glenn was giving me the full truth. So", he said, "I investigated further." His question was the issue of selection: How do I select clients? Do I select them, do they select me, or do you select one another? He said: "We had spoken about this waiting list, and I frankly did not believe there was a waiting list." And – you know Kent is an Englishman – he added: "We English consider Australians to be rough at the edges, tough, thoughtful, creative – yes, all of these things – but just a bit uncivilised as well. But when I made connections to people in Australia, I found out that he'd actually told the truth. He does have a waiting list! So, when I found out about this, I had to revise my opinion about Australia considerably. Because any society that has their people prepared to wait for three years for an architect is the most civilised nation in the world!"

BOOKS

REVIEWS
For further reading:
recent books
presented by D&A.

JAMES CARPENTER – ENVIRONMENTAL REFRACTIONS

Author: Sandro Marpillero
Birkhäuser Verlag
ISBN 3-7643-6249-9

James Carpenter, who briefly studied architecture and subsequently sculpture at the Rhode Island School of Design, acquired his own personal trademark in the ten years he worked as a consultant for the American glass manufacturer Corning. Even today, Carpenter is occasionally categorised as a 'glass artist', an appellation that fails him because "Carpenter's creative route [...] over the past 25 years has moved away from the self-referential domain of artistic glass objects towards a broader agenda and a closer integration with the process of conception and development of architectural design," as Sandro Marpillero explains in the introduction to his book. In the three chapters of 'Environmental Refractions', Marpillero, himself an architect and lecturer at Harvard University, presents 23 works by the artist. The first chapter, 'Refractions', deals with Carpenter's work with light and glass, a material the artist never used purely because of its transparency. Carpenter deliberately breaks with the Miesian tradition of the ideal, because entirely transparent glass volume, by using dichroitic, etched or sanded special glass that reflects and refracts light, thus allowing the beholder to experience the sun's course around the building.

The focus of the second chapter, 'Constructions' is the office tower block '7 World Trade Center' in New York completed in the spring of 2006, for which Carpenter, in collaboration with the architects SOM – Skidmore Owings & Merrill, developed the façade and lighting concept. With this project, Marpillero documents the entire design and construction process, illustrating how seamlessly the works of architects, artists (Carpenter and the light artist Jenny Holzer), as well as civil engineers (Schlaich Bergermann und Partner) intertwine.

The third chapter, 'Apparatuses', finally presents Carpenter's early video works and contemporary architectural designs. The common denominator of both is the interaction with the visitor's kinaesthetic perception. For Tulane University in New Orleans, Carpenter, together with Vincent James Associates Architects and the civil engineers at Transsolar, conceived the conversion of the formerly insulated, artificially air-conditioned university centre into a 'breathing', transparent frame structure resembling the traditional porch house. A system of visible and easily understandable shading, cooling and ventilation elements now takes the place of the air-conditioning system, making the building's reaction to the exterior climate generally comprehensible.

Sandro Marpillero has approached his task as author of 'Environmental Refractions' with scientific seriousness. He never considers himself satisfied with mere amazement at the optical effects in Carpenter's works; he strives always to clarify their structure and function for the reader. His analytical texts are sharp-witted, but only immediately understandable for Carpenter connoisseurs. The project documentations, which Marpillero and his team have illustrated with numerous diagrams specially re-drawn for this book, are therefore very useful for the novice. With the rather small-scale layout of the book, they make it a very technical textbook-like publication but of high information value.

In view of the major interest of the media, which other frontier runners in architecture, art and civil engineering are currently experiencing, 'Environmental Refractions', the first explicit Carpenter monograph, has actually appeared rather late. What makes it particularly delightful is the author's endeavour to find logic, clarity and traceability, qualities that generally give art and architecture books a half-life extending beyond the present day.

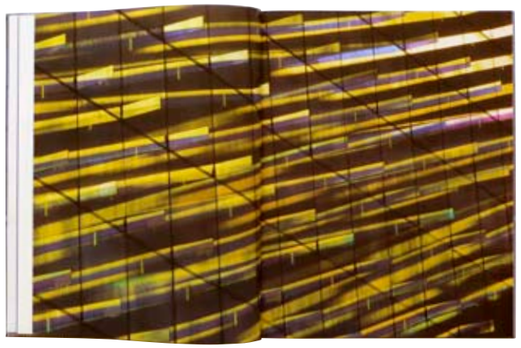
MADE OF LIGHT

The Art of Light and Architecture

Authors: Mark Major, Jonathan Speirs, Anthony Tischhauser
Birkhäuser Verlag
ISBN 3-7643-6860-8

Light is the foundation of our visual perception, accountable for 80 percent of all sensory input processed by our brains. Architecture is an art that communicates with people in a mainly visual way. It is therefore logically consistent that the profession of the lighting designer emerges in the process of increasing specialisation of architecture over the past 20 years. Amongst the most renowned representatives of this genre are British Jonathan Speirs and Mark Major. Together, they are responsible for such famous projects as the Burj Al Arab in Dubai, the Gateshead Millennium Bridge and the new opera house in Copenhagen. In their book "Made of Light", Speirs, Major and the architecture critic Anthony Tischhauser attempt to analyse the medium they work with and its basic qualities. The chapter headings such as Source, Contrast, Surface, Colour, Movement, Boundary and Magic immediately suggest that pure lighting engineering plays a minor part in this volume. The three authors start by giving a short account of the history of architectural lighting; they go on to daring abstract territory. It soon becomes clear that this is somewhat problematic. How, for instance, can the interplay of light and surfaces be put into words without slipping into platitudes or delving too deeply into the details of optical physics? The authors were obviously aware of this difficulty and therefore illustrated their book with numerous inspiring, though rather cramped photographs. Nonetheless, the book is still rather text-heavy, which does not exactly enhance its quality. Unlike the photos, the articles are seldom inspiring or even instructive. Nor are the many quotes from architects and theoreticians on the "light" theme that precede each chapter of any real help; regrettably they have not been properly integrated into the text.

"Made of Light" is therefore not a book for straight reading – it is more of an illustrated book for flicking through and putting back on the shelf. The book's value lies in its illustrations and the occasional (and almost too seldom) excursions into fields remote from architecture. Interspersed in the chapters are quotations of representatives of different occupational groups on the "light" theme: quotes from miners, pilots, a visually impaired artist, an actor and a dentist. These comments and a few light-weight artistic statements from photography or installation art, for example, enrich "Made of Light" and make it more palatable.



CHICHU ART MUSEUM

Tadao Ando builds for Walter De Maria, James Turrell and Claude Monet

Editors: Naoshima Fukutake Art Museum Foundation
Hatje Cantz Verlag 2005
ISBN 3-7757-1460-X

The Chichu Art Museum opened in 2004 is the brainchild of Japanese publisher and art collector Soichiro Fukutake. As the owner of one of the biggest collections of Monet water lily paintings, his dream was to find a new museum capable of presenting his pictures in a contemporary setting, which would be supplemented by works commissioned from American artists James Turrel and Walter De Maria created specifically to be housed in this same location.

On the coast of the island of Noashima in West Japan's inland sea Seto, which can only be reached by ferry, Tadao Ando made this dream a reality in close cooperation with the two artists. What was created was an underground building comprising basic geometric volumes and lit only from above. The work of each of the three artists is installed in a separate, independent exhibition room whose dimensions were initially fixed at 10x10 metres, although these initial measurements began to change in step with evolving the art installations. The rooms are linked by corridors designed as labyrinthine passages encompassing a sequence of spaces to stop and rest between enjoyment of the different art works. Two open, light courtyards complete the museum tour. One of them is square and grassed over, the other has been filled with coarse rubble. The only outside view afforded by the museum is of the sky – visitors increasingly lose orientation in relation to the surrounding countryside as the introverted structure concentrates on itself and its art works, and makes the same playful use of light as the installations it houses.

The book, published in 2005, contains 208 pages, and features not only colour plates of the museum architecture and the exhibited art works, but also sketches by Tadao Andos, model photos and black and white pictures taken during the construction work. The illustrations dispense completely with captions or explanatory ground plans and sections. Readers may search in vain for detailed information about functional or room layouts. The focus of interest lies firmly with the mood of the location, the atmosphere evoked by the spaces and the art itself. Containing "just" nine art works, the Chichu Art Museum is a highly selective but impressive collection.

YOUR ENGAGEMENT HAS CONSEQUENCES

Editor: Olafur Eliasson
Lars Müller Publishers
ISBN 3–03778–075–4

The Danish-Icelandic light and installation artist Olafur Eliasson can hardly complain about poor media response. In the bibliography of this latest book, it is apparent that now fewer than 24 books have been published by or about Eliasson since the turn of the millennium alone, and the number is increasing almost every month. The artist starts the 25th publication with a brief account of the motivation behind his work: "My interest in architecture, space, time, and art ... comes from a fundamental interest in human beings...". In Eliasson's case, what could sound like a platitude may be taken seriously. He possesses a rare talent for effective stage-management and, even after many years of living an artist's life, a genuine interest in the interaction with the viewer, who, for Eliasson, is always the user and part of his installations. Eliasson exposes the spectator to light flashes, sends him across ice surfaces and through scented tunnels, stage-manages artificial geysers and sunsets.

With 'Your Engagement Has Consequences', Eliasson now seems to have called a halt to the escalating flood of publications. The more than 300-page catalogue documents 3 exhibitions at the same time, with expressive colour photos and four texts on significant themes relevant to present day Eliasson. The rather lengthy essay 'Vibrations' forms the prologue, in which the artist debates the dimensions of his work: space, time and, as the quasi 'fifth dimension', the visitor's perception.
In the next chapter, Italo Calvino's wonderful text 'Reading a Wave', demonstrates how natural phenomena can be portrayed in a succinct, condensed and almost meditative fashion. The Italian author describes his impressions when observing the ocean (the wave as symbol of movement and simultaneous manifestation of light, takes a central role in Eliasson's work).

Also a good read is 'The Hegemony of TiO^2', a conversation between Olafur Eliasson, Daniel Birnbaum and Mark Wigley on the colour white and its significance in contemporary architecture, especially in museum construction. Wigley, whose "White Walls and Designer Dresses" is a groundbreaking book on this theme from the mid-1990s. In it, he makes an eloquent and critical evaluation of the status of classic-contemporary architecture. According to his thesis, this type of architecture is very little white, as white can be considered to be a 'neutral' colour in architecture.

Whilst Eliasson's text contributions form the philosophical-scientific reference framework of his work, the book's photographs by Jens Ziehe are convincing without words. Whatever Eliasson conjures up in the predominantly night-black rooms from light and matter (predominantly water and steam, metal and movable glass) comes as a surprise and inspires meditation and understanding. Why? Because he has made a point of always revealing the secret of his installations to the viewer: every projector, every mirror and every colour filter. Nevertheless, it is a cause of constant amazement that so much effect can be generated with so little input.

BOOKS

RECOMMENDATIONS
European architects recommend
their favourite books in D&A.


1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4

1 FRANÇOISE-HÉLÈNE JOURDA RECOMMENDS

The Architecture of Ralph Erskine
Authors: Ralph Erskine,
Peter Collymore
John Wiley & Sons
ISBN 1854903845

Peter Erskine, who was born in London in 1914 and emigrated to Sweden in 1939, belongs to the major humanists of Modernism architects. After the Second World War, the confirmed pacifist Erskine, together with like-minded persons in 'Team Ten', made the attempt to render a more human face to functionalism, which, in his eyes, had become much too sterile. Although Erskine had left his mark in his home country of England with single projects such as the famous 'Byker Wall', he lived and worked in Sweden until his death in 2005. Peter Collymore's book, first published in 1982 and then revised and updated in 1995is one of the first attempts to unite Erskine's extensive life work in one book. time to find any other similar 'inter-cultural' survey of worldwide ecclesiastical architecture.

2 SADAR VUGA ARHITEKTI RECOMMENDS

Cabinets of Curiosities
Author: Patrick Mauriès
Thames & Hudson 2002
ISBN 0–500–51091–1

Chambers of curiosities, housing those strange (and mostly unscientific) collections of little 'wonders' from all over the world, were a typical attribute of the baroque era and especially of royal baroque residences. Everything that was precious, exotic or simply quaint, was kept in them: stuffed animals, fossils, tribal artefacts, wax figures and death masks. After this type of room fell almost into oblivion with the Age of Enlightenment, in recent years it has returned to the focal point of interest for art historians and interior designers. In his book, Patrick Mauriès rekindles the era of chambers: he documents what has been preserved and reconstructed, and what has disappeared; he portrays the collectors who want to go down in posterity for these cabinets, and he examines the factors that have contributed to the revival of the chamber of curiosities.

The Good Life
A Guided Visit to the Houses of Modernity
Author: Iñaki Abalos
Editorial Gustavo Gili 2001
ISBN 84–252–1830–6

In his essay, the Spanish architect Iñaki Abalos takes his readers for seven 'walks' through archetypical residential buildings of the 20th century. Not among them, however, are none of the buildings usually documented in the history books – no Tugendhat Villa, no Savoye Villa and no Fallingwater. Instead we see rather imaginary constructions with which the author exemplifies the characteristics of 20th century architecture in a condensed form. According to the publishing house, the excursions to the realms of fantasy should "not just celebrate the diversity of the 20th century house, but also stimulate the pleasure in thinking, planning and living intensely and promote the appearance of a house that does not yet exist."

L'Invention du Chic
Thérèse Bonney et le Paris moderne
Author: Lisa Schlansker Kolosek
Éditions Norma 2002
ISBN 2–909283–72–0

This book allows the reader to rediscover the Paris of the years between the World Wars and classical modernism. The illustrated archives of the journalist and photographer Thérèse Bonney (1894–1978) has been in oblivion since the 1930s but is now kept in the Cooper-Hewitt National Design Museum in New York. Bonney is considered as the founder of the first American photo agency specialising in architecture and interior design photographs. Through her work, many of her fellow countrymen came into contact with the works of Eileen Gray, Pierre Chareau, René Herbst and other renowned European interior designers. The main emphasis of Bonney's work (and of this book) however is put on Robert Mallet-Stevens' villa for the Noailles Family in Hyères, as well as the private home in Paris designed by Jean-Michel Frank for the same client.

Sense of the City
An Alternative Approach to Urbanism
Editor: Mirko Zardini
Lars Müller Publishers 2005
ISBN 3–03778–060–6 (English)
ISBN 3–03778–061–4 (French)

The catalogue 'Sense of the City' was produced for the exhibition of the same name that took place in the autumn of 2005 in the Canadian Centre for Architecture in Montreal. The book questions the dominance of visual signs in contemporary urban landscapes, and instead gives priority to a more complex analysis of quality, communication systems and sensorial features of our cities. The themes range from the (ever-diminishing) darkness at night and the city's ambient noise to air quality and urban climate, quite in line with the philosophy of Cedric Price, who commented that "mental, physical and sensory well-being is required" in our cities. Photos from the exhibition illustrate the texts, were written by such people as Constance Classen, David Howes, Emily Thompson, and Mirko Zardini.

3 HENNING THOMSEN RECOMMENDS

Ecological Reflections in Architecture
Author: Claus Bech-Danielsen
The Danish Architectural Press
ISBN 87-7407-340-0

Almost half of the energy consumed in the western world flows into the construction and operation of buildings. For good reason 'sustainability' and 'energy efficiency' have therefore become two of the most frequently used keywords in the architectural debate. In his book, in essence based on his doctoral thesis at the Danish Building Institute and the Technische Universität Berlin, Claus Bech-Danielsen examines the socio-cultural and philosophical aspects of our attitude towards the environment. He pleads for a turning away from understanding ecology and good design, two reluctant factors in architecture, in favour of combining both as a harmonious whole.

Techtonic Visions – in Architecture
Author: Anne Beim
The Danish Architectural Press
ISBN: 87-87136-59-7

"Tectonics and the ethics of construction" is the subtitle of this book. Tectonics deals with the design of shaping elements and their combination as a large entity. According to the thesis by Anne Beim, it also has an effect on the ethical dimension of our architectural environment. At the very end of her book the author explains how both factors are correlated. Prior to this she describes the reciprocity of idea, form, construction technology and structure with reference to the masterpieces of relevant classics ranging from Mies van der Rohe, Le Corbusier, Charles and Ray Eames to Louis Kahn and the Smithsons.

Great European Gardens
Authors: Margrethe Floryan, Sven-Ivar Andersson
The Danish Architectural Press
ISBN: 87-7407-339-7

In this book, the word "great" has a double meaning. With her large-format (35 x 35 cm) work, Margrethe Floryan and Sven-Ivar Andersson have realised an idea that the great Danish landscape architect C.Th. Sørensen put into words 50 years ago: the documentation of the greatest European landscape gardens, with their historic original plans, in an omnibus volume. With the many sketches and drawings, the reader can follow the history of European horticulture from the renowned St. Gallen cloister plan to Moorish horticulture, French parks of the baroque era and English landscape gardens up to the present day. This opulent book provides at least as much information on the development of architecture and landscape illustrations through the ages as on gardens themselves.

P.V. Jensen-Klint
Author: Thomas Bo Jensen
The Danish Architectural Press
ISBN: 87-87136-69-4

Peder Vilhelm Jensen-Klint (1853–1930) is one of the prominent multi-talented people in architecture and art in the late 19th and early 20th centuries. His lifework comprises furniture and commercial art, ceramic objects and paintings as well as ecclesiastical architecture. In the latter category, his foremost work is Grundtvigskirken in Copenhagen, an expressive and elegant brick building, which, together with the surrounding residential blocks dating from the 1920s, forms a unique ensemble in the Danish capital. In his book, Thomas Bo Jensen gives a sensitive portrait of the remarkable Jensen-Klint, who has been almost forgotten for a considerable time and is still virtually unknown outside Denmark.

4 FRANCINE HOUBEN RECOMMENDS

New Sacred Architecture
Author: Phyllis Richardson
Laurence King Publishers 2004
ISBN: 1856693848

In her book Phyllis Richardson offers an overview of the present developments in global, not merely Christian, ecclesiastical architecture. 41 churches, synagogues, mosques and temples, all recently completed, answer the question of how belief is presently expressed architecturally. Richardson has subdivided the buildings, which are illustrated with large colour plates and precisely documented with plans, into five chapters. Special emphasis is placed on the issues of location, scale and entertainment quality of the buildings; religious contents, and therefore coherent occupancy, are considered less important. The book offers hardly any recourse to possible historic archetypes. Nevertheless it might at be difficult at the present time to find any other similar "intercultural" survey of worldwide ecclesiastical architecture.

Modern Architecture: A Critical History 3rd Edition
Author: Kenneth Frampton
Thames & Hudson 1992
ISBN 0500202575

Since its original publication in the 1980s, this retrospective of architectural modernism has become a classic. The book, which, since the age of Post-Modernism, has frequently been summarised as pleading for the modern movement, is impressive for the density of its content and the author's extensive knowledge. Frampton succeeds in bringing the almost inextricable threads of development of 20th century architecture into a stringent narrative order. His kind of presentation is not always easy to comprehend, particularly for the layman, especially as he aims to communicate the most significant buildings and their architects as well as the mindset that 'binds Modernism at heart". In the third edition, published in 1992, Frampton updates the history to the early 1990s and historically classifies more recent movements, such as deconstructivism.

Delirious New York: A Retroactive Manifesto for Manhattan
Author: Rem Koolhaas
Monacelli 1997
ISBN 1885254008

The book, which made Rem Koolhaas famous almost overnight, is an analysis of and tribute to his former home, New York City. At the same time, he laid the foundation for subsequent publications by his architect practice, OMA. Language and presentation are as rich in facts and images as they are associative; the reader learns a great deal worth knowing about the 'Big Apple', and Koolhaas' ever-provoking thesis coerces the reader personally to reflect on the past and future of the world's metropolises. Although Koolhaas makes New York his theme and refers to the city at one point as the 'Rosetta Stone' that makes it possible to decipher the 20th century, 'Delirious New York' has, for good reason, been accepted as the manifesto of 'urbanness' worldwide, with its radius of action reaching far beyond Manhattan itself.

A Pattern Language: Towns, Buildings, Construction
Author: Christopher W. Alexander
Oxford University Press 1977
ISBN 0195019199

With their ground-breaking, 1,000-page-plus presentation of a 'Pattern Language' for town planning and architecture, Christopher Alexander and his co-authors offer the reader plenty of stimulation for the design of living environment appropriate for human beings. The 250 or so chapters range from the organisation of entire states to the ideal positioning of windows in living spaces. Some of the ideas are rather speculative and others utterly utopian. What remains is an almost exuberant abundance of thought-provoking discourses on all aspects of our architectural environment. His approach starting from the human being and his recourse to timeless values of building has not made 'A Pattern Language' the most quoted publication ever printed, but it is undoubtedly one of the most significant architecture books of the 20th century.

White Flowers by Thea Bjerg.
Silk Screen – Elastic backing.
www.theabjerg.com
Photo: Roberto Fortuna

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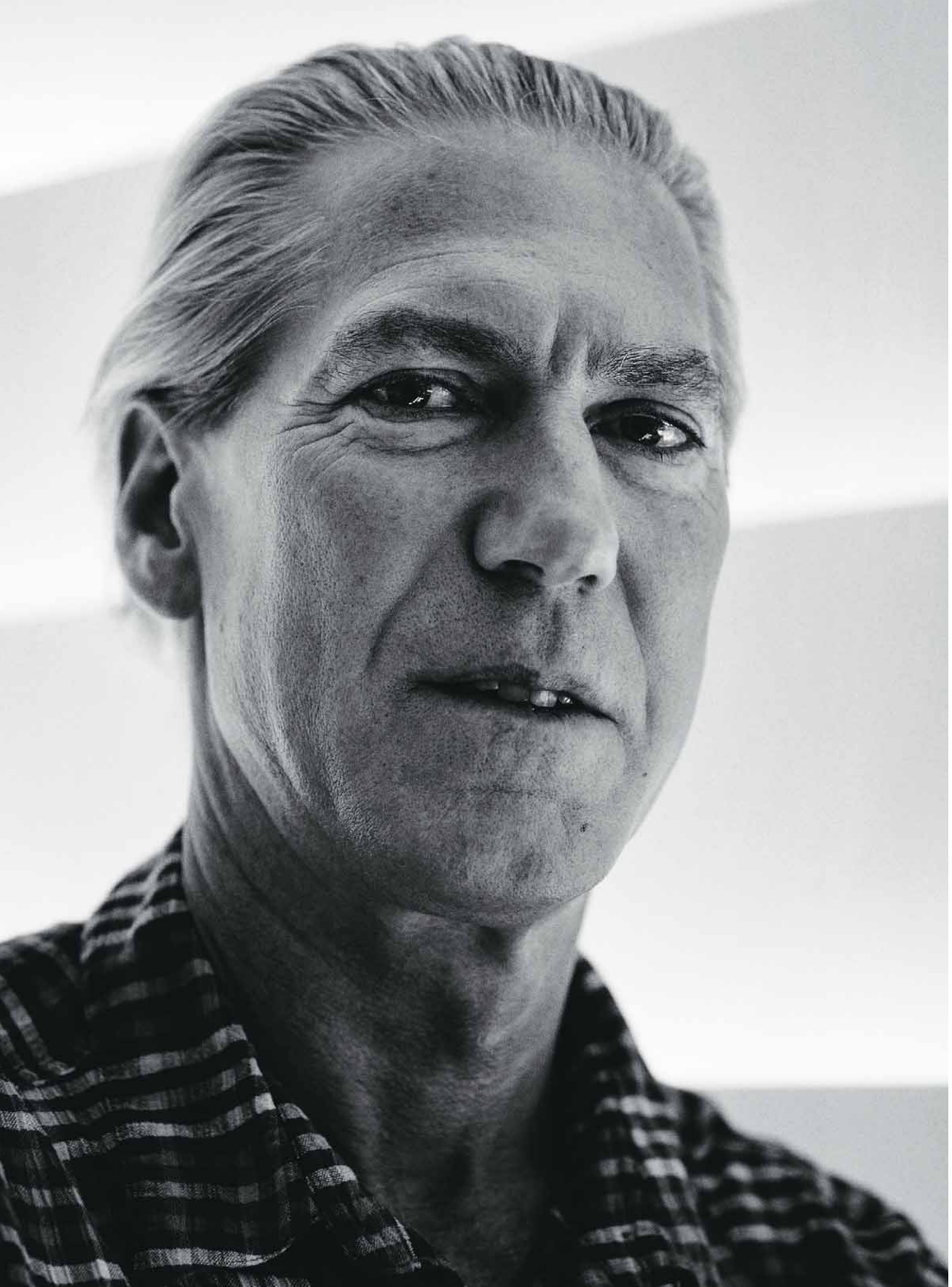
TEXTURE & LIGHT



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