The redesign issue

DESIGNING FOR TONY BLAIR
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Dexia Tower, Brussels:

38 FLOORS
150,000 LEDS
& one hell of
a light show...

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The Dexia Tower, located in Place Rogier at the end of Brussels' main thoroughfare, redefines the term 'landmark building'. Each day and night the 144 metre-high building plays host to spectacular light shows, thanks to the installation of a unique system which controls over 150,000 LEDs installed in 4,200 of the building's 6,000 windows. At the bottom of each window is a rail fitted with an equal number of red, green and blue LEDs, allowing any window to be lit in any colour. Thus, each window behaves like a pixel in the giant screen that is the building's façade, displaying images and graphics that can be seen from across the city.

While it has been de riguer in recent years for banks to stick their logo triumphantly atop their skyscraper HQs, Dexia, the bank that owns the tower, has, in its lighting system, a tool to turn the entire building into one giant branding message. Thankfully, a more subtle route has been taken. Dexia has been working with Brussels-based collective, LAb[au], the 'Laboratory for architecture and urbanism', to ensure the tower's light shows are as original and intriguing as they are vivid.

Touch, LAb[au]'s first project devised specially for the tower, saw an interactive station installed at the foot of the tower, at which members of the public could interact with the tower's lights in real time, creating a composition of lines and colour using a touch-screen. At the press of a button, their composition could be commemorated in a snapshot of the tower (taken from another tower block, across the city) which could be forwarded via email to friends or printed out and taken home. LAb[au]'s Manuel Abendroth describes this interaction as a "triangulation between citizen, public space and the city - it's a new form of relationship made possible through technology – a new urban experience."

LAb[au]'s four members, Manuel Abendroth, Jérôme Decock, Alexandre Plennevaux and Els Vermang, all met while studying architecture but they show little interest in actually designing buildings. "For us it was important to make a clean break from the building process," explains Abendroth. "We choose instead to spend our time and energy doing more research-based projects." Essentially, LAb[au]'s main concern is the "expression of data variables through light and form". Does that make them artists rather than architects? "Questions about disciplines aren't really that fruitful," suggests Abendroth. "Disciplines are blurring as we move forward – so we call what we do MetaDesign. 'Design' is a reference to the Bauhaus (also hinted at in the group's name) – even painters and artists of the ➤

The Dexia Tower light show
How it works

Behind the glass, along the bottom of 4,200 of the Dexia Tower's 6000 windows (on three out of four façades) there is a rail that houses around 12 light bulbs, each with three LEDs – a green, a red and a blue that can be combined into a complete colour palette. A rapid change in the colour of the lamps instantaneously gives an impression of movement.

The façade can show figures, letters, geometric shapes with various effects and also graphics – with each window acting just like a pixel. To make it work, all the blinds need be closed as the LEDs are not strong enough to light the façade alone. The reflection on the closed blind illuminates the whole surface of the window. If the blind remains open, only a horizontal light line at the bottom of the window would be visible.

The system is controlled by a super-computer which calculates, for each window, the exact colour required in order to display the programmed pattern or image on the façades. The data is sent through a rapid computer network to three distribution centres spread out on the various floors of the tower. These centres translate the data for groups of about 100 windows each.

Isn't all this a waste of resources? Dexia says that "The Dexia Tower is equipped with a highly effective energy-saving LED lighting system (electro-luminescent diodes). Each LED, at its maximum capacity, uses one watt. As a result of the various colour and movement effects, this maximum capacity is never achieved. The different creations presented so far have never exceeded one third of this total capacity. During the night, the tower is illuminated nine hours in the winter and five hours in the summer. Recent tests reveal that the Dexia Tower uses about a third less electricity than the Eiffel Tower in Paris, while the energy required to light a football stadium costs no less than seven times the energy consumed by the Tower." So there you go.

< Bauhaus movement called themselves designers to differentiate themselves from the traditional old way. 'Meta' is coming straight from computer science. It seems for us to be a very good way to say this is our practice – it's a new word, it's interdisciplinary –though most of the time what we do is still architecture in the end."

LAb[au]'s involvement with the Dexia Tower began after they saw the lights being tested for the first time in 2006 and so called Dexia up to ask about it. "Initially they told us that it was all top secret," recalls Abendroth. But, eventually, Dexia called back and asked LAb[au] to come in for a chat about the potential of the tower's lighting system. Now the group is working with the bank on an ongoing programme of events and installations. Every year there will be a big interactive event (such as Touch) and also various lighting programmes or cycles that appear on the building. One such was the Chrono Tower project from last year, which was the first LAb[au] project in a series of light cycles entitled Who's Afraid of RGB? The name, explains Abendroth, is a direct reference to abstract painter Barnett Newman's work. "We always said that what should be used on the tower is an abstract language – not figurative, image-based or text stuff. And, of course, RGB is light in its basic colour components. So the idea is really 'who's afraid of being abstract' and using light as a code/language."

"We call what we do MetaDesign. Design is a reference to the Bauhaus. Meta is straight from computer science"

In the case of Chrono Tower, red, green and blue relate to the basic units of time: hours (red), minutes (green) and seconds (blue). Areas of colour on the tower's façades grow according to the time, thus expressing the progression of hours, minutes and seconds. The colours blend into each other over time and when all three overlap you get white (R+G+B=white).

"So no-one can really read the precise time," admits Abendroth, "but this is a system that is driven by the element of time and the closer we get to midnight, as it gets darker, then the brighter the tower becomes. The new day comes at midnight, the lights blink a bit, to celebrate the new day, and then the whole process starts to invert. As the daylight starts to appear, the white light slowly migrates to the top of the tower and disappears. The passing of time is symbolised by a logically programmed cycle of light."

The second project in the Who's Afraid of RGB? series of installations, Weather Tower, was displayed on the tower at the end of last year. Here, different colours and patterns represented the following day's weather forecast. "We will do a third variation for March," says Abendroth. "This series also acts as research for us as we try different formulas in order to find a synthesis for something that is on the tower every day. For us it's important that there's something on the tower everyday – otherwise it's not a landmark."
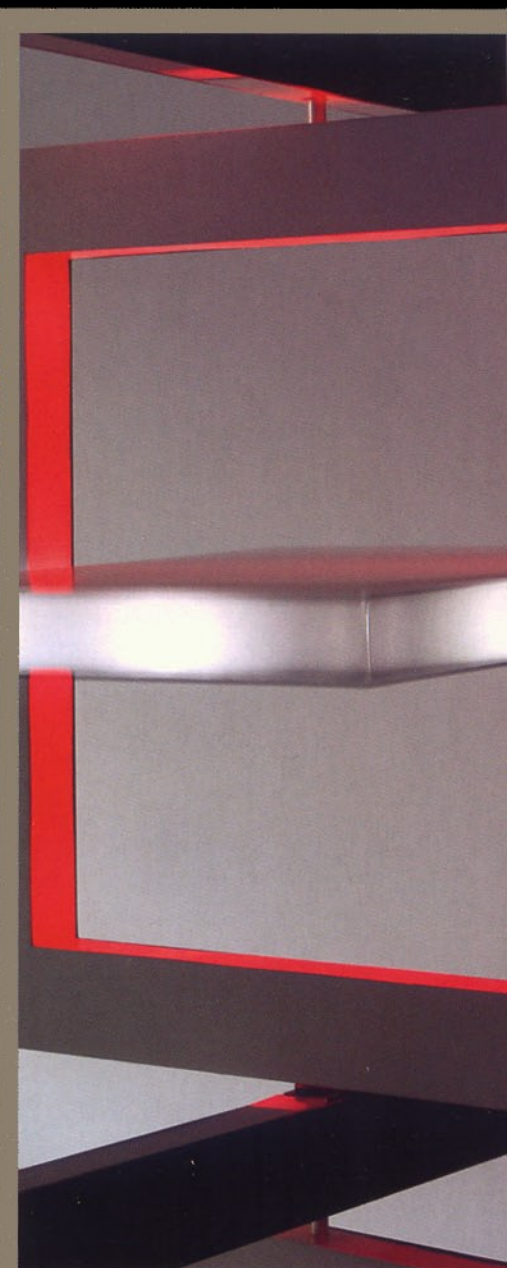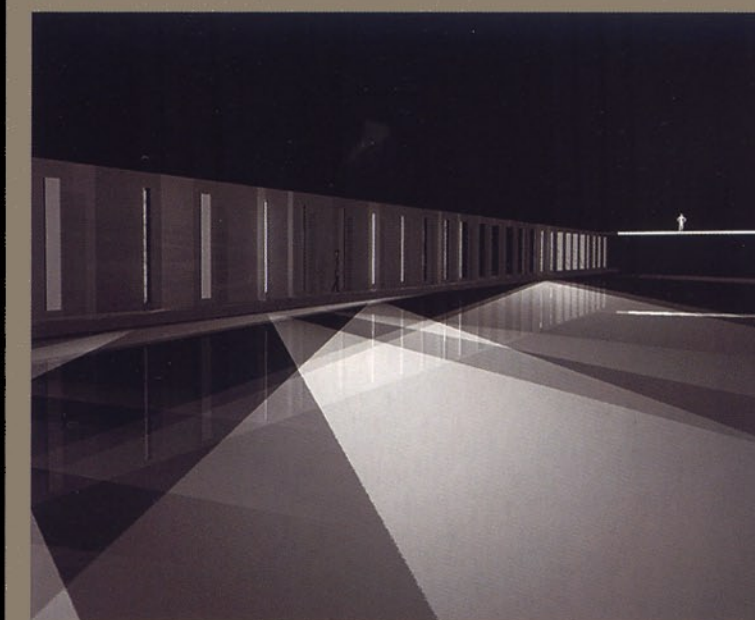
LAb[au]'s headquarters, a gallery named MediaRuimte, is just a hop, skip and a jump from Place Rogier and the Dexia Tower. Here they research projects, hold exhibitions, workshops and concerts and also explore different technologies, developing hardware and the software to drive it. "For us it is a place where people can focus on technology-related questions in art – we wanted to create a network where likeminded people could meet and exchange ideas," Abendroth explains. "We're recognised now as an institution by the local community – as a place for experimental and electronic architecture."

The gallery has hosted several exhibitions since it opened in 2003. The EOD 02 (Electric Organ Discharge) project in 2006 saw them collaborate with artist Frederick De Wilde and set up what they call a new media installation consisting of four tanks containing blind fish that

ABOVE TOP LEFT: From EOD (Electronic Organ Discharge), LAb[au]'s collaboration with artist Frederick De Wilde . Four tanks contained fish that perceive their environment and communicate by giving off low-voltage electric signals. Antennas in each tank picked up the signals which were converted into sound and which also affected the lighting of the exhibition space.

ABOVE LEFT: Render of how canal-side installation, Binary Waves, will look when installed along the Saint-Denis in Paris

perceive their environment and communicate by discharging low-voltage electric signals. Antennas in each tank picked up the signals which were duly converted into sound. Lightbulbs placed under each aquarium pulsed according to the rhythm and intensity of the emitted sounds. The behaviour of the fish drove the sound and lighting of the exhibition space.

Another more recent installation, entitled Framework 5×5×5 ($f5^3$), took the form of a two by two metre square framework comprising a grid of 25 squares. Each of these squares comprises a central square and a square framework around it, both of which can swivel on a central axis – the outer frame on the vertical and the central square panel on the horizontal. Sensors in the framework pick up movement, such as someone walking past, and tiny motors in the piece make the component parts move and spin, thus revealing the lighting

on the edges of each moving part and the fact that one side of the piece is black and the other white. When the project is complete, there will be five of these frameworks which combine to become a ten-metre-long piece: a wall. "We want to work with motion-tracking so that as people walk past, their presence is translated by the wall in terms of light and movement," explains Abendroth.

The five by five grid enables basic type to be formed, so as well as a screen in an architectural sense, it can be a screen for displaying information or patterns, whether it's night or day.

Impressively LAb[au] not only designed this work, but they built it themselves in the basement of their gallery space – using no less than 1350 LEDS, 50 servo motors, 140 metres of aluminium and 1021 kilometres of cable. "We try to do everything in-house, so we are involved practically as well as theoretically in the way we

approach architecture and its relationship with new media and electronics," says Abendroth. "So from writing code to making circuit boards and building frameworks we do it all. The interface station for the Touch project, we made it physically ourselves just as we developed the multi-touch screen within it." Just four people working on various projects, and actually realising them in their studio, isn't it overwhelming? "For the moment it's good – we like doing it," affirms Abendroth. "I'm not sure it's always the best way, but it allows us to come to a very clear point from the first idea to the last element – to make an object as conceptual as the work that it facilitates."

In the pipeline (as well as ongoing projects with the Dexia Tower and the creation of the final four pieces of $f5^3$) is an installation called Binary Waves that will be sited on a stretch of canal in Paris and made up of a series of panels each of

ABOVE, TOP & BOTTOM:
Framework 5×5×5 is yet to be finished but LAb[au] has already exhibited the first of the five, two by two metre frameworks that will make up the complete project. Motion sensors in the framework translate movement around it (such as someone walking past) into movement in the piece – as its component parts rotate, spin and glow, revealing patterns created out of colour and light, based, says LAb[au], on "a binary language"

which can spin on its vertical axis and emit light from its edges. "Each time somebody passes, it will create an impulse, a wave of moving light, that will ripple back and forth along the 100 metre length of the installation," explains Abendroth, "gradually slowing and fading until someone else walks by and a new impulse is triggered."

Abendroth has something else he wants to demonstrate. He flicks a switch and moves his hand near a small glass tube sticking out of a circuit board. Strange sounds emerge from somewhere as he does so. He is experimenting with similar technology to that found in that most ancient of electrical instruments, the theramin. The plan is to use similar devices in an interactive project – on an architectural scale, naturally. n

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creativereview.co.uk/crblog/dexia-tower-and-the-light-fantastic