

AZURE

DESIGN | ARCHITECTURE | ART



A CLEAN, GREEN
NEW ORLEANS
RENZO PIANO'S FINELY
TUNED MUSEUM
HIGHLIGHTS FROM
EUROLUCE, NEOCON
AND ICFF
BEST SHELVING AND
STORAGE OPTIONS

GREAT IDEAS

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KNOW ABOUT

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SHAPING THE
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EYE-POPPING
DETAILS THAT
MAKE A SPACE
BRILLIANT

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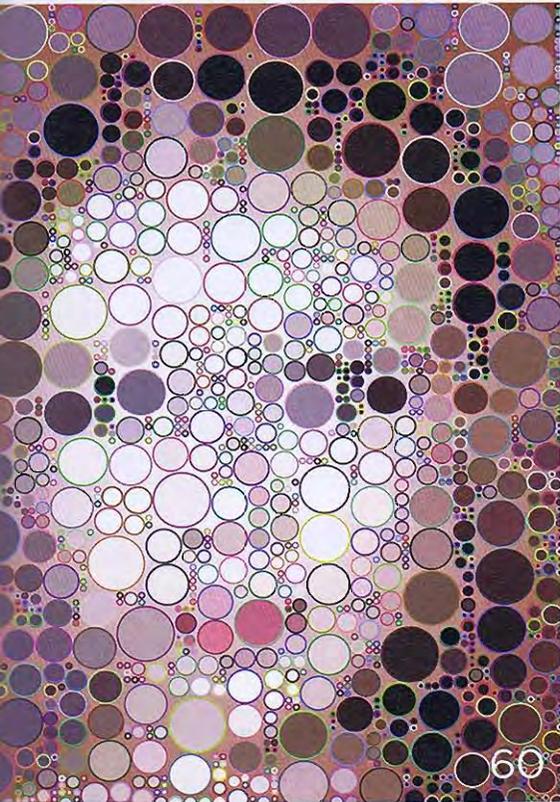
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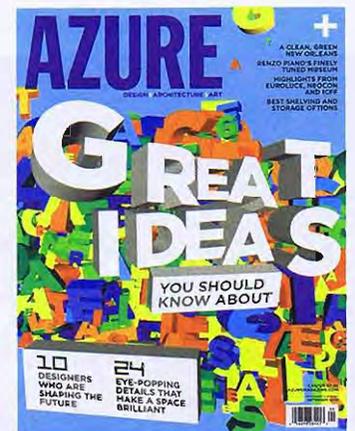
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COVER ART: MARIUS WATZ.
FOR MORE INFORMATION ON WATZ'S CREATIVE PROCESS, SEE "CONTRIBUTORS," PAGE 34.
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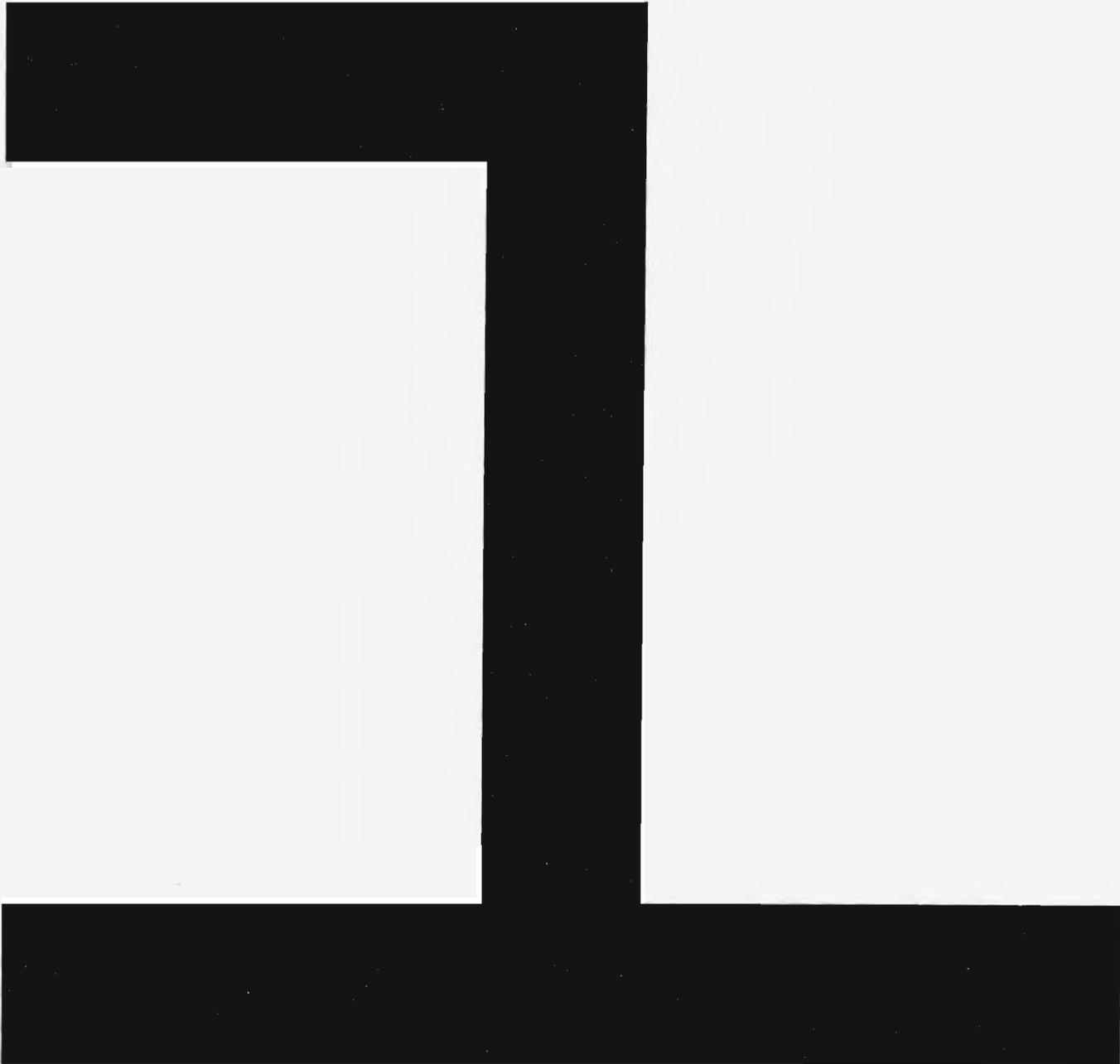
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TEN DESIGNERS

TEN GREAT IDEAS

In his bestselling book *The World Is Flat: A Brief History of the Twenty-first Century*, financial journalist Thomas L. Friedman lists his top 10 global "flatteners" – things that have and will make our world entirely different as the years unfold. Within the list are such buzzwords as "outsourcing," "insourcing" and "offshoring" – shorthand terms we now use to describe the way the world is changing in an increasingly global economy. One of these concepts, open sourcing, resonates especially loudly with us at *Azure* – as it does with Friedman, who calls it the greatest flattener of all. Referring to the vast amounts of information now sailing through the ether and accessible with little more than a few keyboard taps, open sourcing captures a particular moment in time as designers use new technology to fuel their work. In the spirit of Friedman's book, we've compiled our own top 10 list of designers who have found ways to unravel complex concepts and bring them into the physical world, to everyone's benefit. While these leaders are not all hooked on electronic information, the free flow of ideas has, in one manner or another, influenced and accelerated their creative processes. Their outstanding ideas are routed toward information sharing as much as to science, creative ingenuity, and that beautiful human habit of dreaming. CATHERINE OSBORNE

01

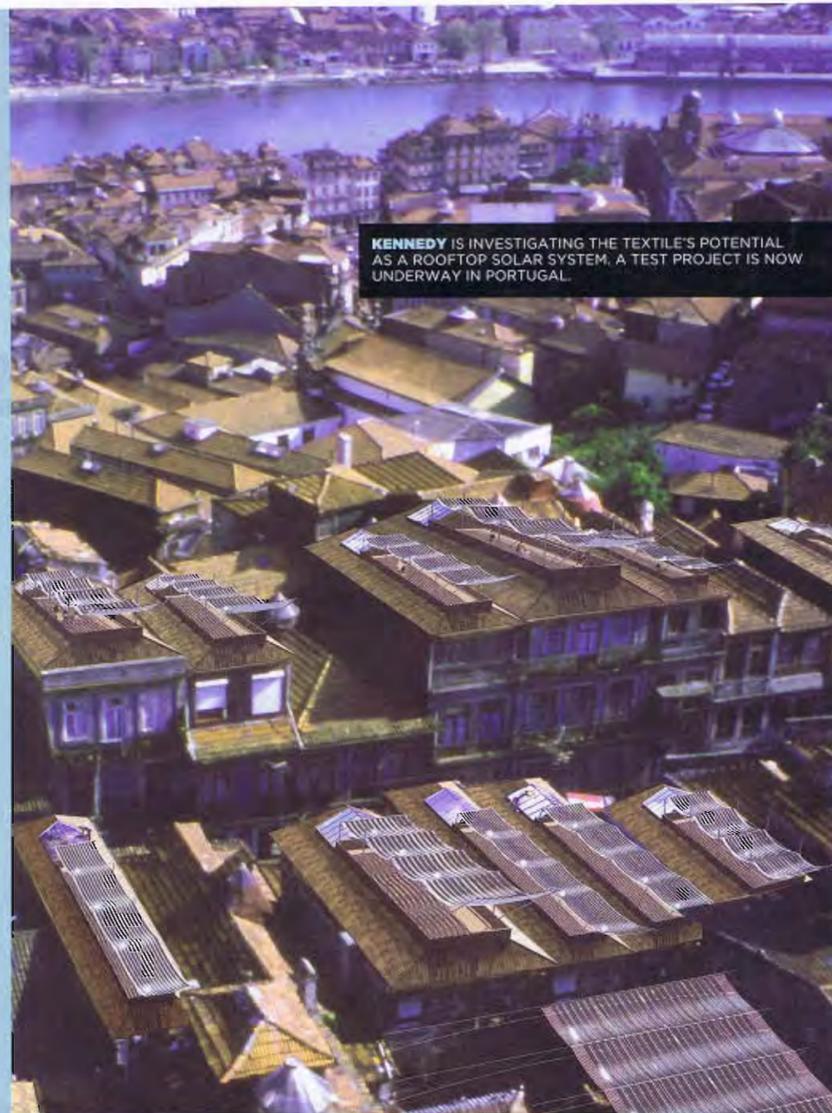


SHEILA KENNEDY
ARCHITECT,
PHOTOVOLTAICS
EXPERT

SOLAR ENERGY TECHNOLOGY



THE PORTABLE LIGHT IS MADE FROM A SOLAR-HARVESTING TEXTILE THAT TURNS SUNLIGHT INTO USEABLE ENERGY. BELOW: FOR SOFT HOUSE, A SOLAR-CELL CURTAIN STORES UP TO 16,000 WATTS OF ENERGY, ENOUGH TO ILLUMINATE THE 185-SQUARE METRE HOUSE.



KENNEDY IS INVESTIGATING THE TEXTILE'S POTENTIAL AS A ROOFTOP SOLAR SYSTEM. A TEST PROJECT IS NOW UNDERWAY IN PORTUGAL.

SUN-HARVESTING FABRIC, BOSTON

With a bone-crushing handshake, Sheila Kennedy, 49, welcomes me to the office she shares with partner Frano Violich. Their Boston firm, Kennedy & Violich Architecture, is behind Portable Light, a solar-harvesting textile that generates energy directly from the sun. When launched in 2003, the soft, flexible panels became a media sensation. Intended for use in developing countries where villages lack electrical power, the panels are sized so they can be incorporated into locally made products, such as hand-woven bags, or simply used as stand-alone light sources, capable of illuminating interiors or powering small electrical devices.

Portable Light has since been the jumping-off point for two more ambitious projects spearheaded by Kennedy – Soft House and Soft Cities – both of which apply photovoltaic technology, though on a much bigger scale. The technology is not fully developed, but Kennedy's ultimate aim is to generate enough sun power to energize a house, if not an entire city, using only textiles that incorporate thin strips of solar-charging plastic.

For Soft House, a pilot project currently under construction in Portugal, a solar-celled curtain hangs across two glazed walls and stores up to 16,000 watts of electricity daily. That's enough to light the 185-square-metre house and power such basic appliances as iPods and laptops. The curtain's energy supply is accessed via a central port, where it is downloaded to a large battery, similar to those used in hybrid vehicles, or through a series of lithium ion batteries hidden in the curtain's hem.

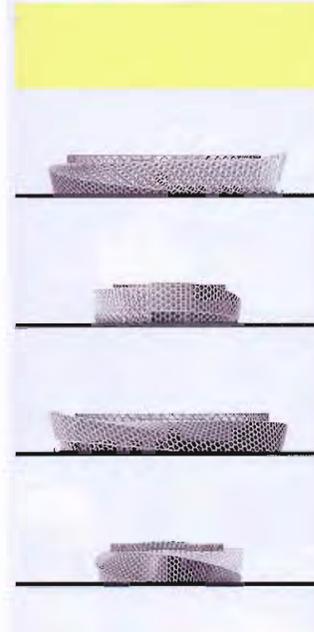
Kennedy and her team haven't stopped there. They are also hard at work investigating the textile's use as rooftop solar panelling, which could illuminate entire city blocks. Says Kennedy about the potential of photovoltaics: "People criticize hybrids; they say, why not go all electric? But you need to start somewhere." RACHEL PULFER

02

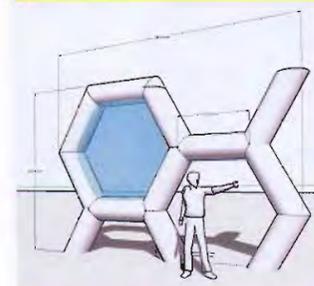


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ELHAYAWAN
AND JIM DODSON
ARCHITECTS

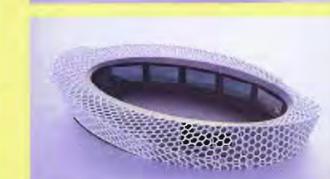
INFLATABLE ARCHITECTURE



THE EXTERIOR SKIN IS MADE OF WHITE TUBES OF PVC-COATED FABRIC WITH TRANSLUCENT CUSHIONS IN BETWEEN.



WHEN INFLATED, THE MASSIVE VENUE PROVIDES STANDING ROOM FOR UP TO 3,500 PEOPLE. ASSEMBLY TAKES TWO WEEKS, DISASSEMBLY JUST ONE.



THE DYNAMIC OVAL FORM IS 90 BY 60 METRES, AND 17 METRES TALL AT ITS HIGHEST POINT. INSIDE, THE SPACE INCLUDES TICKET BOOTHS, CLOAKROOMS, RESTROOMS, AND A BAR ON THE UPPER MEZZANINE.

MOBILE PERFORMANCE VENUE, NORWAY

At 3,900 square metres, the Mobile Performance Venue is expected to be the largest transportable performance space in the world. Designed by Various Architects of Norway, the inflatable structure is no bouncy toy. With a robust web of pumped-up hexagons wrapping a collapsible lightweight core of steel and aluminum, its surprisingly sturdy construction houses ticket booths, restrooms, cloakrooms, and a bar on the upper mezzanine.

The honeycomb-like hexagons are made from PVC-coated fabric tubes, which make the structure extremely rigid, says architect Jim Dodson, who founded Various Architects with Ibrahim ElHayawan last year. Water tank foundations keep the whole thing anchored to the ground. The partners, both 37, previously worked together at Snøhetta, and developed the Tubaloon, an inflatable bandshell for Norway's Kongsberg Jazz Festival. Arts Alliance initially approached Snøhetta with the job, but the firm's principals suggested they work with Dodson and ElHayawan instead – a "great parting gift," says Dodson, that led to Various Architects' first commission.

The Mobile Performance Venue, with standing room for 3,500 people, is significantly larger than Tubaloon, initially raising environmental concerns. "We weren't sure about the sustainability issues related to shipping this monster from one place to another," says Dodson. However, when deflated the final design shrinks to just four percent of its deployed size: "It's an extremely efficient structure, which helps limit the number of containers needed to move it."

Funding for the structure is still being finalized, with plans to begin touring it internationally by next year. In the meantime, Various Architects have become experts in the field of inflatables. "It's amazing the amount of interest this project has generated," says Dodson. "We get calls all the time." TIM MCKEOUGH



FILIFE BALESTRA
AND SARA
GÖRANSSON
ARCHITECTS

SUSTAINABLE PARTICIPATORY DESIGN



INSTEAD OF TEARING DOWN SLUMS AND REBUILDING THEM, FILIFE BALESTRA AND SARA GÖRANSSON PROPOSE GRADUALLY IMPROVING THEM WITH HOUSES THAT CAN BE BUILT BY LOCALS AND EXPANDED OVER TIME.

INCREMENTAL HOUSING STRATEGY, INDIA

To improve the living conditions of inner-city slums in Pune, India, architects Filipe Balestra, 27, and Sara Göransson, 32, came up with a less typical way of initiating their projects: ask the people what they want. "Upgrading a slum usually means tearing everything down and building housing blocks," says Göransson. "Our project aims to incrementally improve the slums in organic patterns," adds Balestra, who previously ran a participatory design and construction project in Rio de Janeiro's largest slum. "We keep it the same and just build better."

The Stockholm architects spent several months in Pune, 180 kilometres east of Mumbai, developing an incremental housing strategy in consultation with the community, and they say the vast majority of residents simply want to stay put. "We wanted to improve their living conditions and allow them to keep their neighbours and social networks," says Göransson.

Their strategy is incremental in two ways. First, new houses are introduced gradually within the urban fabric. These are simple structures made up of four

columns and walls, often with a trapezoidal footprint that fits existing conditions. Area residents are trained to monitor construction quality and, in some cases, to help build. Second, in addition to providing safer structures with modern facilities such as private toilets, the homes allow for future expansion. "When the family has enough revenue, they can easily and legally expand" by adding on floors, says Balestra. Some of the three-storey homes have open spaces at ground level to allow for a shop or a place to keep livestock; others have open spaces, to accommodate verandas or an extra bedroom.

The strategy is now being finalized for approval by the government of India, which has already announced a housing subsidy for slum dwellers. For Balestra, who previously worked for Rem Koolhaas's OMA, the appeal of undertaking such socially progressive projects is clear. "The poor really need architecture, but they cannot pay," he says. "We want to contribute." TIM MCKEOUGH

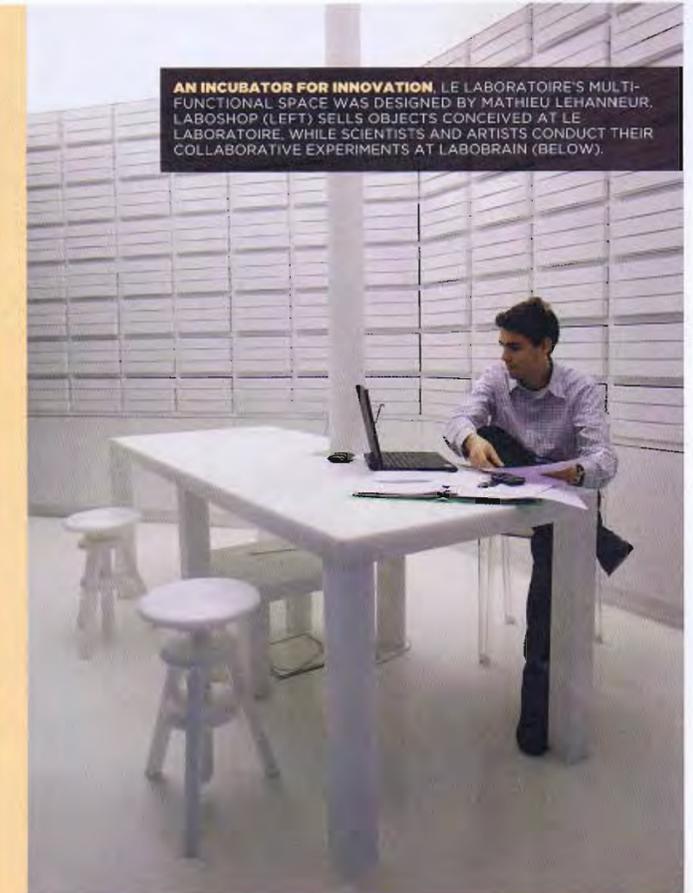


DAVID EDWARDS
BIOMEDICAL
ENGINEER, ARTIST

MIXING ART WITH SCIENCE



AN INCUBATOR FOR INNOVATION. LE LABORATOIRE'S MULTI-FUNCTIONAL SPACE WAS DESIGNED BY MATHIEU LEHANEUR. LABOSHOP (LEFT) SELLS OBJECTS CONCEIVED AT LE LABORATOIRE, WHILE SCIENTISTS AND ARTISTS CONDUCT THEIR COLLABORATIVE EXPERIMENTS AT LABOBRAIN (BELOW).



LE WHAF. A GASTRONOMIC SCENT MACHINE CREATED BY EDWARDS AND CULINARY DESIGNER MARC BRÉTILOT. MICRO-DROPLETS OF A LIQUID CAN BE POURED INTO A GLASS AND INHALED FOR TASTING.

LE LABORATOIRE, FRANCE

One moment, David Edwards is pacing around his office, spitting out data on how many seconds the average museum-goer spends looking at a painting. The next, he's slumped in a beanbag chair, eyes closed, loosely philosophizing about a "post-Google generation." Such palpable dualities make the Harvard scientist a perfect model for Le Laboratoire, the non-profit, Paris-based organization he founded two years ago to promote collaboration in a field he calls "artsience."

"Innovators like to work in environments where there are no rules," says the American-born Edwards, 48, holding court in LaboBrain, the nerve centre of Le Laboratoire's multi-purpose space. Frenchman Mathieu Lehanneur designed Edwards' office, exploiting Cartesian-intuitive divide. Severe rows of rigid drawers and shelves mark the orderly, left brain side of the room, while a free-flowing whiteboard and soft seating occupy the right brain side.

Le Laboratoire functions a bit like a dating agency: it matches prominent artists with top scientists, hoping their opposite problem-solving approaches will ignite

a spark of innovation. The "odd couples" meet within the context of a chosen theme that, if all goes well, leads to a freewheeling collaboration. Le Laboratoire then exhibits the outcomes to the public. This October, a show called Cloud of Flavors documents the collaboration between Edwards, who studies aerosols, and French culinary designer Marc Brétilot (the result is Le Whaf, a gastronomic scent machine driven by piezoelectric crystals).

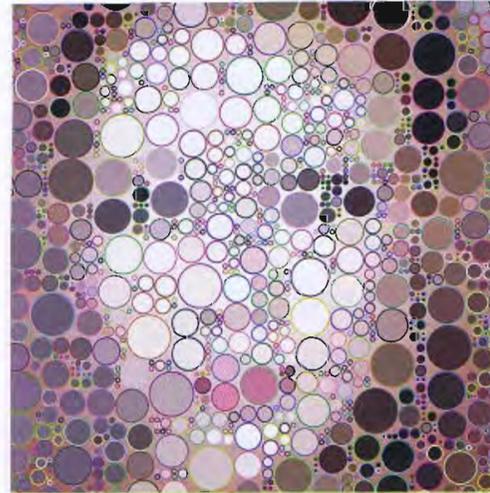
Some experiments yield more material outcomes, in the form of products that can be prototyped and sold at LaboShop, a storefront adjoining LaboBrain that functions as a test market for consumer viability. "We want the public to understand the creative process as a process, and not as a result," says Edwards. "Innovation is not the icon. It's about how you get there." Whether that's his left or right brain speaking, the reality is that there's plenty of room for both at Le Laboratoire. ANDREW BRAITHWAITE

05

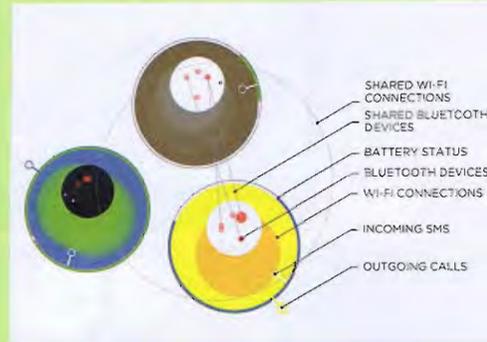


**BEN FRY AND
CASEY REAS**
COMPUTATIONAL
DESIGNERS

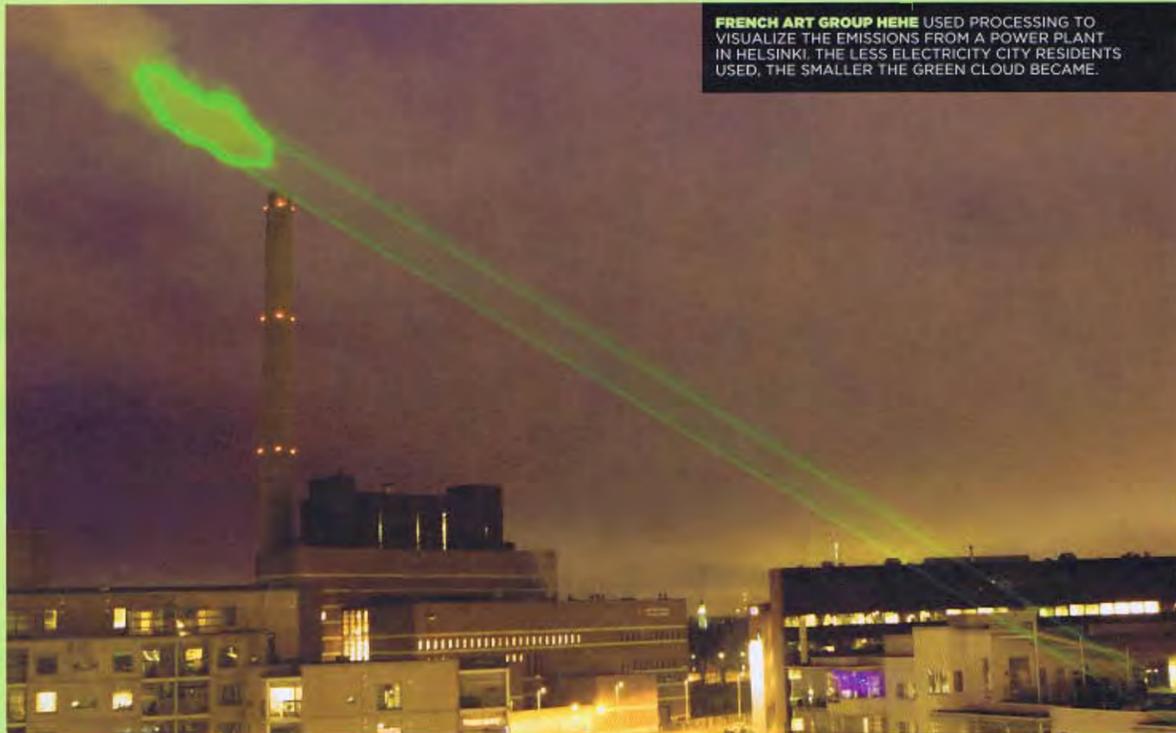
CREATIVE PROGRAMMING



ARTIST HOLGER LIPPMANN DESCRIBES WORKING WITH PROCESSING AS "IMPROVISATIONAL DANCING. IF YOU KNEW THE OUTCOME, IT WOULDN'T BE AS MUCH FUN." RIGHT: AEOLAB'S PEOPLEMOVER WAS CREATED FROM REAL-TIME DATA COLLECTED FROM NOKIA CELLPHONE USERS OVER SEVERAL MONTHS.



FRENCH ART GROUP HEHE USED PROCESSING TO VISUALIZE THE EMISSIONS FROM A POWER PLANT IN HELSINKI. THE LESS ELECTRICITY CITY RESIDENTS USED, THE SMALLER THE GREEN CLOUD BECAME.



PROCESSING LANGUAGE

Just eight years old yet hugely popular, the Processing computer language is specially geared toward creating visual art. Simple enough to be picked up in a matter of days, the open-source language is now being taught in design schools worldwide, and used for everything from rapid prototyping to scripting patterns for interactive installations.

Like many great ideas, Processing evolved out of need. While studying at MIT's Media Lab, Ben Fry, 34, and Casey Reas, 36, wanted a simplified language to teach programming. Meanwhile, they were looking for software tools that would help them sketch out design ideas. "We realized there was a lot of intersection between these two goals," says Fry.

The simplicity that makes Processing a teaching implement also makes it a powerful creative tool. Using its facility for whipping up 3-D graphics, artists can test ideas before bringing them into the real world. And like many electronic media, it possesses unique strengths: it can interact with its audience, for

instance, and crunch staggering volumes of data. Processing, in fact, excels at producing generative art — art that's created on the fly from mathematical algorithms — and at rendering visualizations of data in real time.

In 2008, French artists Heiko Hansen and Helen Evans of HeHe used Processing to trace a power plant's emissions above Helsinki with bright green lasers. The language enabled them to illustrate the amount of electricity being used by the city moment by moment. When citizens were encouraged to use less energy, the illuminated cloud shrank in size.

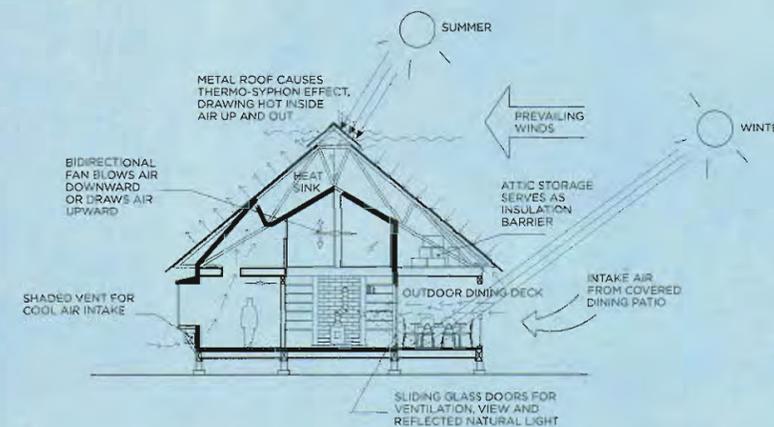
That's just the kind of project that brings software as an art form into its own. As Fry puts it, "Computation is used to make something accessible that wasn't before — a project that couldn't be realized in another medium." **IVOR TOSSELL**

06



**LUKAS
PETRASH**
DESIGNER

LOW-COST HOUSING



THE FOOTPRINT OF THE HOUSE IS JUST 45 SQUARE METRES, BUT PETRASH EXPANDED THAT MINIMAL LEGAL ALLOWANCE VIA A NUMBER OF ARCHITECTURAL AND PSYCHOLOGICAL DEVICES. TWO DECKS, FOR INSTANCE, ADD LIVING SPACE WHILE MAKING THE SMALL HOUSE FEEL AND APPEAR LARGER FROM THE STREET.

THE \$12,000 HOUSE, TEXAS

The summer after his fourth year at the University of Southern California, architecture student Lukas Petrash, then 22 years old, challenged himself to build an eco-friendly home and make it as affordable as possible. Inspired by a summer internship with a Texas builder dedicated to sustainable low-income housing, Petrash sketched out MCD House in just two weeks, then spent the remainder of his school breaks constructing it in Huntsville, Texas. The result is a one-storey abode with a usable attic, designed and constructed for an astonishingly low US\$12,000.

Constructed for an artist and single mother of two, the house follows a basic A-frame model, but draws on low-cost passive heating and cooling, including orienting the house so that a large existing tree shades the west facade. The efficient interior wastes no space. Petrash avoided hallways, so three sleeping areas, including the master bedroom, open onto a high-ceilinged, light-filled living room. The pitched roof — the bane of most architects — allows for clerestory

windows and an attic, which also functions as a heat sink. Two generous decks wrap around the house, more than doubling the total living area.

To keep costs down, Petrash used scrap lumber, including old trusses and cedar beams, plus random doors, windows and tiles collected from building sites around Huntsville and nearby Houston. The reuse model is a familiar one for Petrash, who graduated this past June with a master's degree from Harvard. "I grew up without a lot of money, so I made all my models in school using scraps from other students' projects," he explains. "It forced me to be more creative." Now 26, Petrash is working on eight prefab homes that will be constructed in Masserano, Italy, each costing approximately US\$25,000. "Shrink the budget and the footprint to the point where everyone laughs and says it's impossible," says this designer whose ambitions have no limits. "and you'll have my interest." **MIMI ZEIGLER**



MARK MILLER
ARCHITECT

**HEALTHY
LEARNING
ENVIRONMENTS**



THE CLASSROOMS IMPROVE WELLNESS AND STIMULATE LEARNING BY INCLUDING SUCH GREEN ELEMENTS AS NATURAL LIGHT AND NON-TOXIC INTERIOR FINISHES. THEY CAN ALSO BE DEPLOYED AND ASSEMBLED QUICKLY.

ECO-SMART CLASSROOMS, CALIFORNIA

The statistics are alarming: 36 percent of American school districts use portable classrooms, resulting in more than 385,000 trailers scattered across the country, many of which pose serious health risks due to inadequate ventilation, mould growth and off-gassing toxins. Figuring there had to be a better option, San Francisco architect Mark Miller, 47, founded Project Frog to manufacture a healthier alternative. "We realized the big problem for schools is finding the time and money needed to create permanent environments," says Miller, who notes that building a traditional school can take up to 10 years. When faced with an immediate need for space, school boards resort to trailers, and although they are usually intended as a stopgap many end up becoming permanent schoolyard fixtures.

Project Frog bypasses conventional construction processes by building prefabs that are flexible, adaptable and far healthier. Studies have shown that just having access to natural light can dramatically improve a child's learning abilities and

decrease sick days. Project Frog's schools include living roofs, natural ventilation, high-efficiency windows, natural light systems, and low-VOC carpets and paint – all geared toward creating a positive learning environment. "We're manipulating daylight and convection currents to push energy demands down," says Miller. "When looking at life cycle costs, we can create a building that will cost less over time."

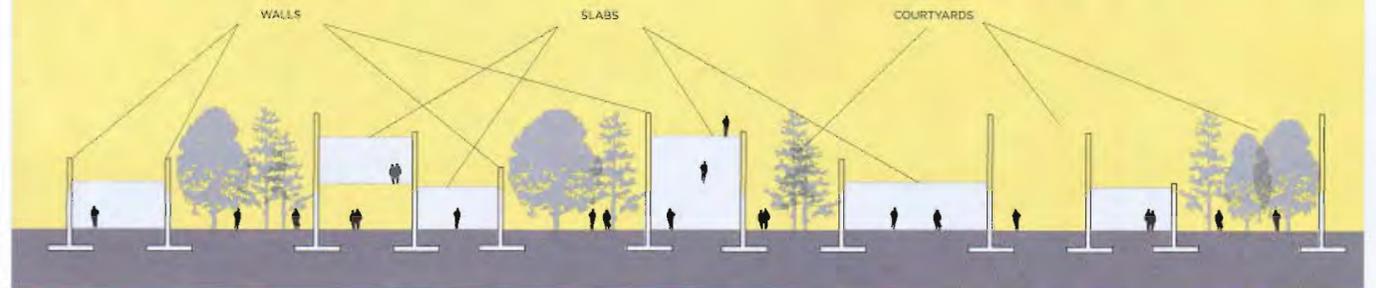
The company's enviro-awareness also takes into account pollution caused by transportation. By working with numerous fabrication facilities across the country, the structures can be manufactured and delivered regionally. Each project is assembled from pre-engineered, factory-made parts, which can be customized for different climates and site requirements. This fall, three new projects will be completed. "Forget the conventional definition of a building," says Miller. "We're delivering a powerful device." **TIM McKEOUGH**



ARTURO
ORTIZ STRUCK
ARCHITECT

**ENLIGHTENED
REFORM
INSTITUTION**

ADMINISTRATIVE OFFICES OVERLOOK A NUMBER OF GARDENS AND COURTYARDS. BELOW, THE SIGHT-LINES ARE STAGGERED TO MAXIMIZE LIGHT AND PROMOTE VISIBILITY THROUGHOUT THE FACILITY.



RAMMED EARTH WALLS ARE LOCALLY CONSTRUCTED AND PROVIDE THERMAL AIR CONTROL – ONE OF THE PROJECT'S SUSTAINABILITY FEATURES.

PUBLIC SECURITY COMPLEX, MEXICO

With the demands of security in mind, correctional facilities are a challenge to plan: all too often, bolted doors and impenetrable walls trump the ideals of style and comfort. But Mexican architect Arturo Ortiz Struck, 39, has moved the discussion ahead with a new model for a democratic jail that is surprisingly elegant: the Complejo de Gobierno y Seguridad Pública, a multi-use security facility, commissioned for the municipality of Irapuato, Guanajuato, three hours north-west of Mexico City.

An unusual transparency characterizes the 7,500-square-metre, two-storey structure, to be completed next year. A series of rammed earth walls, running parallel to one another, are subdivided into self-contained rooms and courtyards. Staggered buildings offer views of public spaces, and of each other. Ortiz Struck's goal was to create a "social, public surveillance system in which everyone can see what's happening in every office or space" – a particularly innovative idea for Mexico, where the legal system is known for corruption and violence.

As befits any jail, this one has few frills: The windows and doors are made of aluminum and glass, and the project's defining materials – rammed earth walls and concrete slabs that make up the floors and ceilings – are low budget, as are the passive heating systems and the use of natural light. Once completed, the complex will accommodate up to 800 people – including full-time government employees, inmates, and visitors, with holding cells, a police station and a range of administrative services.

Another of Ortiz Struck's counter-intuitive plans is to create environments that are as unobtrusive as possible, and that can be repurposed easily as time goes by. "As an architect, I try to create spaces that people can use in different ways," he says of the facility's simple interiors. "I like spaces that can be filled with meaning, and infrastructures that allow for any possibility, because being flexible is a way of showing respect, and of attending to otherness." **CAIA HAGEL**



NERI OXMAN
ARCHITECT,
RESEARCH
FELLOW, ARTIST

MATERIAL ECOLOGY



OXMAN'S OBJECTS ARE DEVELOPED USING COMPUTER ALGORITHMS, WHICH ARE THEN PRINTED OUT, LAYER BY LAYER, USING RAPID PROTOTYPING.

UNLIKE MOST STRUCTURAL FORMS THAT REQUIRE TRUSSES TO SUPPORT EXTERIOR SURFACES, OXMAN'S VASCULAR STRUCTURES, SUCH AS MONOCOQUE, ARE LOAD BEARING BELOW: THE BEAST, A PRAYING MANTIS-LIKE CHAIR, MADE OF RESIN DISTRIBUTED ACCORDING TO BODY LOAD.



LIVING SYNTHETIC CONSTRUCTIONS, BOSTON

It isn't just that the woman is part of the Computation Group at MIT's architecture department, or that she has recently won a slew of awards. What's most important about Neri Oxman, 33, is that she's currently pursuing her Ph.D. in a branch of design computation that is so cutting edge the exact name for it has yet to be thought up. Oxman likes the term "material ecology" – the idea that "artificial matter continuously informs our environment and therefore should be informed by it." But the best way to explain her complex ideas is to describe how she works.

Oxman develops computer algorithms, which in turn determine her projects' forms. The shapes are then printed out using rapid prototyping, building up each structure, layer by layer. What's unusual about her work is how she generates her algorithms. Her initial inspiration came while she was researching the early Modernists, examining such classics as Le Corbusier's steel and leather chaise longue. Oxman explains, "Here's this elegant chaise that separates the metal forming its structure from the leather that is its support surface." One of her goals

is to create a piece of furniture generated from one material that integrates structure and function. Why is this exciting? Because if she proves this is possible, it represents enormous potential savings in material, energy and resources.

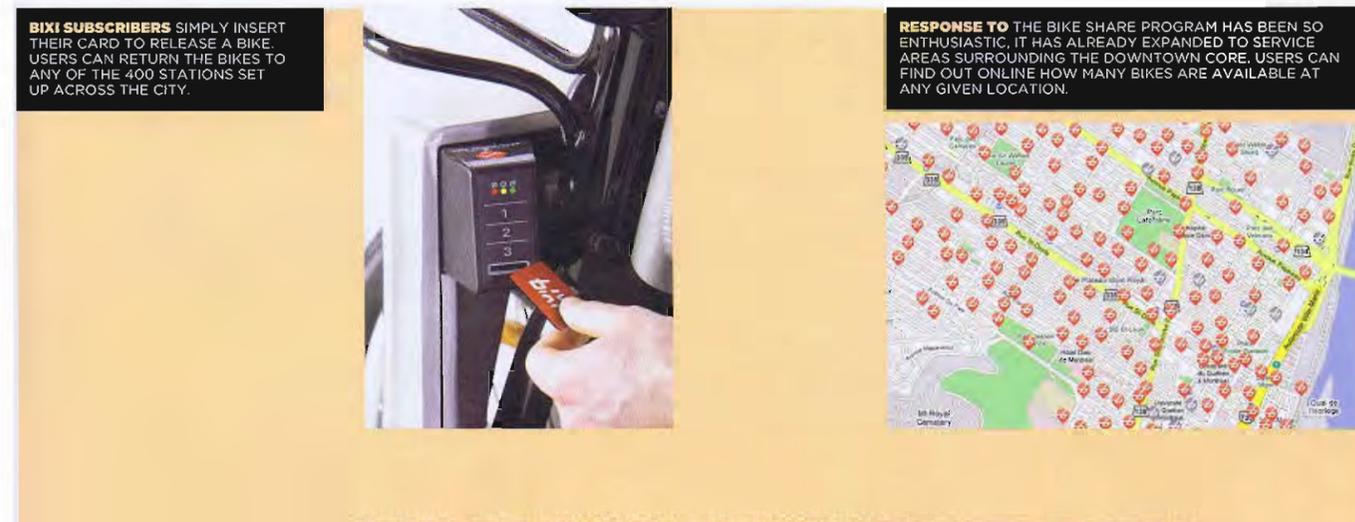
One of the results of her early research was Monocoque, a material that works like a honeycomb, within which structure and skin are fused together. In Cartesian Wax, her algorithm produces a waxlike membrane, similar to how leaves grow, with a thick, opaque stem supporting a thin, light-sensitive surface.

"I tend to be more interested in process than product," Oxman says. "Instead of designing a building and then determining the construction technologies, I thought, let's try it the other way around." Next up from this ground-breaking visionary: gloves designed to alleviate carpal tunnel syndrome. **RACHEL PULFER**



MICHEL DALLAIRE
INDUSTRIAL
DESIGNER

HUMAN- POWERED URBAN TRANSPORT



BIXI SUBSCRIBERS SIMPLY INSERT THEIR CARD TO RELEASE A BIKE. USERS CAN RETURN THE BIKES TO ANY OF THE 400 STATIONS SET UP ACROSS THE CITY.

RESPONSE TO THE BIKE SHARE PROGRAM HAS BEEN SO ENTHUSIASTIC, IT HAS ALREADY EXPANDED TO SERVICE AREAS SURROUNDING THE DOWNTOWN CORE. USERS CAN FIND OUT ONLINE HOW MANY BIKES ARE AVAILABLE AT ANY GIVEN LOCATION.



BIXI BIKE SHARE SYSTEM, MONTREAL

In the first seven weeks following the launch of their public bike system this past May, Montrealers cycled over a million kilometres on Bixis. Designer Michel Dallaire took his early cues for the Bixi bike share system from existing programs already in place in Paris and Barcelona. But the major difference between Montreal and its European counterparts is climate. Snow removal makes it necessary for the stations to be moved into storage at the end of fall. So Dallaire devised an off-grid system that is at once removable and immovable.

He based his modular solution on a three-metre-long, half-ton plate that simply rests on the ground. The units, which connect to form various configurations, each hold four bollards for parking bikes. The bollards are wired to a solar-powered pay station that they communicate with through wireless telephony.

Much of the year and a half Dallaire and his team spent designing Bixi was focused on a patented security cassette. Each contains an electromechanical locking system that, because it depends on solar power, needed to be extremely efficient.

The aluminum-framed bikes – sponsored by aluminum giant Rio Tinto Alcan – are embedded with RFID chips that track their return and repair history. Manufactured in Saguenay, Quebec, the bikes sport a classic, almost vintage style – a conscious decision as Dallaire aimed for an institutional rather than a commercial feel to engender a sense of value and, hopefully, reduce vandalism. He chose a step-through frame for gender neutrality, and made the frames black, except for the silver boomerang shape in the midsection. The boomerang is a deliberate allusion to the fact that the bikes are meant to come back to the dock.

The system has already expanded from an initial 300 stations to 400, with 5,000 bikes available. Dallaire says there's already been interest in the Bixi system from Boston, New York, Minneapolis, and even London, England, where the inner city's congestion charge could make bike sharing triple sweet. **NELDA RODGER**