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Watch video statements of prize winning project authors @lafargeholcim-awards.org
Fifth LafargeHolcim Awards

Regional and global LafargeHolcim Awards competitions for sustainable construction projects and visions 2017/2018
Global LafargeHolcim Awards jury 2018

From left: Marc Angéli, Switzerland; Xumei Bai, Australia; Rolf Soiron, Switzerland; Jens Diebold, Switzerland; Francis Kéré, Burkina Faso/Germany; Werner Sobek, Germany; Brinda Somaya, India; Alejandro Aravena, Chile (Head of the jury); Stuart Smith, United Kingdom.
Alchemy of creative, social, environmental, and economic aspects

New leadership for the LafargeHolcim Foundation

Five “target issues” for sustainable construction

Jury meeting

Finalist projects

Prize winning projects

Gold for Hydropuncture in Mexico City
Silver for Legacy Restored in Dandaji, Niger
Bronze for Grassroots Microgrid in Detroit, USA
Ideas prizes for projects in Argentina, Ghana, and the USA

Members of the juries

Location of the projects

Prize winning projects

Europe
North America
Latin America
Middle East Africa
Asia Pacific

Better Building Recognitions
Rolf Soiron, founding Chairman of the LafargeHolcim Foundation for Sustainable Construction in 2003, was also a member of the global Awards jury and retired after the 2018 meeting. Already in 2014, Rolf Soiron stepped down from the Board of Directors of Holcim, to which he had been a member for 20 years, eleven of which as Chairman. Under his leadership Holcim merged with Lafarge in 2015. From 2003 to 2010 Soiron also chaired the Board of Directors of Nobel Biocare; from 2005 to 2018 he was Chairman of the Board of Lonza. Rolf Soiron presided over Avenir Suisse from 2009 to 2014 and was a member of the committee of economiesuisse. He was President of the University of Basel for ten years and was a member of the ICRC and its Council for eight years until 2017. Rolf Soiron obtained his doctorate in history in Basel and graduated from Harvard with a degree in management development.
Alchemy of creative, social, environmental, and economic aspects

By Rolf Soiron

We are very pleased to be presenting the winners of the Lafarge-Holcim Awards in a book for the fifth time. All of the winning projects deserve your interest, regardless of their ranking.

When our Foundation was established in 2003, the writing was already on the wall that our generation will likely have to cope with serious liabilities of climate change and the waste of resources—an impact that will be more intensely felt by our children and grandchildren. Nevertheless, it was far from given that an entrepreneurial and solidly liberal business leader in the building materials industry would step up to establish a “sustainability” foundation and fund it with a ten-year budget with—notably—no strings attached! This subject was clearly no longer the exclusive domain of environmental groups. But the move had something ideistically alternative and utopian about it—it’s not exactly what industrialists typically do. It was no mere coincidence that this initiative was introduced by the former Holcim. Several factors came together to make it possible.

First of all, we were looking for convincing content for our new brand. The company had been in existence for nearly 100 years, but “Holcim” was still young at that time. Our new brand had just begun to integrate the many different identities of the former “Holderbank”. Now the new identity needed a recognizable profile, if possible one that also expressed the traditional sense of responsibility for society and the world in which we operate. The topic of “sustainability” offered itself perfectly here—it was also an issue that then CEO Markus Akermann had been advancing for quite some time.

Markus Akermann was not a dyed-in-the-wool environmentalist, but in the World Business Council for Sustainable Development (WBCSD), in which he had been working since its inception, he had become increasingly aware of the enormity of emissions from the construction and maintenance of the built environment. He saw that our industry sooner or later could lose its “license to operate” if it simply continued along with the status quo. He was supported in this view by anchor shareholder Thomas Schmidheiny, who until 2003 was also Chairman of the Board of Holcim. His brother Stephan Schmidheiny had been chief economic adviser to “The Earth Summit” hosted by the United Nations Conference on Environment & Development in Rio in 1992. He was largely responsible for initiating the founding of the WBCSD and had repeatedly spoken and written about a “change of course” being essential in order to avoid grave consequences. So it’s no wonder that the concept of “sustainability” struck a chord of resonance at Holcim more so than in many other places.

Incidentally, in the WBCSD Markus Akermann met Bruno Lafont, who was at that time the new CEO of Lafarge. Lafarge and Holcim were still arch rivals, and one typically doesn’t like to compliment competitors. But I remember Markus telling me after a WBCSD session how “the French” tackled the issue of sustainability in a completely different way—but, he added with admiration, they were also genuinely serious about it. Thus, it doesn’t surprise me that the commitment to this Foundation remained completely unquestioned when the one-time competitors merged in 2015.

The LafargeHolcim Foundation for Sustainable Construction is now 15 years old. Of course, that’s not really a long time. Yet, it shouldn’t be taken for granted that the Foundation has not only withstood today’s fast pace and the constant pressure of change that challenges companies and even entire industries but is today more vital than ever. And here again, several reasons come together.

“Change of course” to avoid grave consequences

As with all things, nothing happens without people. It takes the right people in the right place at the right time. That’s been precisely the case with the Foundation. First, there’s the office of the Foundation led by Edward Schwarz. During my professional career, I’ve met few teams whose enthusiasm, energy, and ability to deliver were more convincing and contagious than Edi and his crew. They’ve been supported through the years by an Academic Committee which was largely shaped by Hans-Rudolf Schalcher and since then has been successfully led by Marc Angélil, both professors at the Swiss Federal Institute of Technology (ETH Zurich). They have ensured academic quality and kept the discourse on track, which is no minor task for a subject that knows no boundaries. And then there are the members of the Foundation Board, many of whom have made others envious of us. They have come from a wide range of disciplines, and all of them contributed to the fact that “sustainability” has never been worn down into a cliché meaning little more than “long-lasting.”

Rather, the alchemy of creative, social, environmental, and economic aspects should always remain the focus: Only with this holistic approach can the challenges facing us be answered, acceptance be
The independence of the Foundation in how it handles, thinks about, and communicates its affairs has been an important factor of its success. The Foundation has enjoyed this freedom from its very first day and has used it ever since – and the sponsor has never questioned it, even when building materials were awarded that were far outside the established portfolio, when projects were awarded that involved competitors, or when “political-economic correctness” may have been challenged. Incidentally, this independence has also fueled growing mutual interest within the sponsor company itself. And also here, the Foundation has been understood and valued more and more as a dialectical necessity of pioneering approaches and innovation.

Winning the LafargeHolcim Awards has become a credential of success

Even the simple decision to use the existing corporate structures for administrative, logistical, and communications tasks has led to unexpected positive outcomes. It has strengthened the relation to reality and practice of the construction industry and contributed to the fact that the Foundation’s activities and debates have never gone astray toward idealistic or ideological dead ends. What’s more, this very practical collaboration among employees, customers, and suppliers has resulted in a gratifyingly high level of ownership regarding sustainability issues.

Today, I am pleased to note that the feu sacré of the responsible managers, the intellectual level of the initiatives, and the practical orientation, credibility, visibility, and reputation of the Foundation have grown beyond our wildest dreams of 2003. This applies particularly to the Awards. In this fifth cycle, we received over 3,600 valid project entries; in the first cycle there were 1,500. Winning a prize in the LafargeHolcim Awards has become a credential of success that’s respected not only by renowned architects, engineers, scientists, and planners but also by academic institutions and the media.

But apart from reputation: Whoever looks through this book will marvel once again at the mass of creative, forward-looking, convincing solutions that has come together also in this cycle. And note that it has been confirmed once again: A large number of the winning entries don’t remain in the planning phase. This is evidenced by the – virtual or real – trips to Medellín or Toronto, to Gando in Burkina Faso or Ambepussa in Sri Lanka, to Fez, and hopefully soon to Berlin. In all these places and very many more, global Award-winning ideas have become reality in recent years – and in more than one case, the Awards helped make it happen.

And what about the future? First, we note with respect and delight that the heads of the sponsoring company have reconfirmed their commitment. This will surely be reinforced by the positive feedback loop of “quality”, “visibility and resonance”, and “reputation” that the Foundation has set in motion and continues to feed with energy.

But it must also be noted that – unfortunately! – the issue hasn’t lost one bit of urgency. Despite all the debates and declarations in innumerable committees, institutions, and sectors, neither the world nor worldwide construction have really become more sustainable! In fact, nearly all the indicators still point in the wrong direction. And the phenomenon of acceleration, which seems to characterize the “Anthropocene” we have entered, could possibly make quite serious the consequences that will follow sooner or later from the lack of sustainability of our civilizations – and conceivably sooner than later. Perhaps the Foundation will now have to deal with three questions:

The issue hasn’t lost one bit of urgency

Firstly. To a large extent, the sustainability debate is still being conducted with the explicit or implicit objective of prevention: “Climate change should be prevented or limited!” Upon closer inspection, this also applies to many of the projects we have awarded. I raise the question whether we shouldn’t also focus on the aspect of how the sustainable handling of threats in construction, planning, and material projects will become more concrete in the event that climate change is unavoidable, as it appears to be. There have been Awards winners who have dealt with this, such as BIG, the Bjarke Ingels Group, with “Reclaiming the waterfront” in Manhattan in 2015. Importantly, however, opportunities will arise from changes – as audacious as it might seem to say in this context. But how sustainable and positive things can be derived in response to change is a question that deserves discussion. If the Foundation can manage to make such perspectives concrete in the competition and debates, it would realize additional relevance.

Secondly. The majority of projects submitted in the Awards competition deal with an individual building or a certain situation at a specific location. So far so good. But the sheer vastness of the sustainability deficit calls for solutions we can leverage. The existing “target issues,” which provide a structure for the assessment of the Awards entries, underscore this need under the tenet: “Progress – Innovation and Transferability: Breakthroughs and trend-setting discoveries must be transferable to a range of other applications.” Notwithstanding, I think a “systemic approach” of tackling the sustainability of the built environment deserves greater attention.

Make sustainability happen!

Thirdly. “Nothing is good unless you do it!” To this we could add that the real deficit is not the lack of solutions: The solutions are there; they are just not being implemented or sufficiently implemented. But this observation goes far beyond the construction industry, so the answers will need to include psychologists, political scientists, sociologists, and many others. Our efforts “to make sustainability happen!” could ultimately bear fruit we’ve never dared to dream of.

But 15 years ago we also hardly dared to dream that a fifth cycle would come to such a successful conclusion!

Rolf Soiron
New leadership for the LafargeHolcim Foundation

Taking over from Rolf Soiron, Roland Köhler has chaired the Board of the LafargeHolcim Foundation for Sustainable Construction since April 2018. Roland Köhler stepped down as a member of the Executive Committee of LafargeHolcim in February 2018 and continues to represent the Group as a non-executive director in local subsidiaries of the company.

Currently, the Board of the Foundation comprises the following members: Marilyne Andersen, Dean of the School of Architecture, Civil & Environmental Engineering, Swiss Federal Institute of Technology (EPFL Lausanne), Switzerland; Marc Angélil, Professor of Architecture & Design, Swiss Federal Institute of Technology (ETH Zurich), Switzerland; Alejandro Aravena, Partner Architect and Executive Director, Elemental, Chile; Maria Atkinson AM, Founding CEO of the Green Building Council of Australia, Australia; Jens Diebold, Head of Sustainable Development, LafargeHolcim, Switzerland; Harry Gugger, Professor of Architecture, Chair of Laboratory Basel, Swiss Federal Institute of Technology (EPFL Lausanne), Switzerland; Jan Jenisch, CEO of LafargeHolcim, Switzerland; Roland Köhler, Chairman of the Board, Noser Group, Switzerland; Enrique Norten, Principal and Founder of TEN Arquitectos, Mexico; Stuart Smith, Director at Arup, United Kingdom; and Brinda Somaya, Principal Architect and Managing Director, Somaya & Kalappa Consultants, India.

Whereas the Board is responsible for defining programs and managing the Foundation’s activities, the Academic Committee inspires the Foundation by framing architectural, scientific, cultural, and policy concerns. The team is led by Marc Angélil and includes Philippe Block, Harry Gugger, and Guillaume Habert, professors of architecture and engineering at the Swiss Federal Institute of Technology (ETH Zurich and EPFL Lausanne), and Dirk Hebel, professor of Sustainable Construction at the Karlsruhe Institute of Technology, Germany.
“Target issues” for sustainable construction: Criteria of the LafargeHolcim Awards
The LafargeHolcim Foundation for Sustainable Construction is committed to the underlying principles of sustainability, which assert that long-term development of the built environment requires a balanced interplay of responsible economic, ecological, and social agendas.

To achieve this objective, the LafargeHolcim Foundation and its associated universities have identified five “target issues” that aim to clarify principles for sustaining the human habitat for future generations. These “target issues” serve as criteria for projects submitted for the Awards and as a road map for other related activities of the LafargeHolcim Foundation.

The LafargeHolcim Foundation is an initiative of LafargeHolcim, the leading global building materials and solutions company. As urbanization increasingly impacts people and the planet, the Group provides innovative products and building solutions with a clear commitment to social and environmental sustainability.

Progress

**Innovation and transferability**
Projects must demonstrate innovative approaches to sustainable development, pushing the envelope of practice and exploring new disciplinary frontiers. Breakthroughs and trend-setting discoveries must be transferable to a range of other applications.

**People**

**Ethical standards and social inclusion**
Projects must adhere to the highest ethical standards and promote social inclusion at all stages of construction, from planning and building to use and servicing; to ensure an enduring positive impact on communities. Proposals must demonstrate how they enhance the collective realm.

**Place**

**Contextual and aesthetic impact**
Projects must convey a high standard of architectural quality as a prevalent form of cultural expression. With space, form and aesthetic impact of utmost significance, the material manifestation of the design must make a positive and lasting contribution to the physical, human and cultural environment.

Pertaining to stocks and flows of material and energy, should be an integral part of the design philosophy.

**Prosperity**

**Economic viability and compatibility**
Projects must be economically feasible and able to secure financing – whether from public, commercial, or concessional sources – while having a positive impact on society and the environment. Avoiding the wasteful consumption of material resources, an economy of means in construction is to be promoted.

**Planet**

**Resources and environmental performance**
Projects must exhibit a sensible use and management of natural resources throughout their entire life cycle. Long-term environmental concerns, especially
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<td><strong>Adaptable structure for a garbage collection company</strong>&lt;br&gt;Brussels, Belgium&lt;br&gt;Design for an adaptable garbage collection facility making a plea for the re-integration of logistics infrastructures in urban settings.</td>
<td><strong>Urban integration of an existing concrete mixing facility</strong>, Brussels, Belgium&lt;br&gt;Project for the integration of an existing concrete batching facility in an industrial neighborhood mixing industry, workspaces, and public functions.</td>
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<td><strong>Learning center</strong>&lt;br&gt;<strong>Bandung, Indonesia</strong>&lt;br&gt;Using simple construction, this micro library creatively promotes literacy and community across Indonesia.</td>
<td><strong>Adaptive reuse for refugee education</strong>&lt;br&gt;<strong>El Marj, Lebanon</strong>&lt;br&gt;Located in an informal settlement for Syrian refugees, the project creates a dignified school environment using a repurposed exhibition pavilion.</td>
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<td><strong>Modular midrise housing</strong>&lt;br&gt;Vancouver, Canada&lt;br&gt;This project envisions midrise, mixed-use housing through a modular panel system that can adapt to create a variety of unit layouts and architectural forms.</td>
<td><strong>Sanitation system in informal communities</strong>&lt;br&gt;Rio de Janeiro, Brazil&lt;br&gt;Project for blue-green infrastructure that treats wastewater while teaching water stewardship.</td>
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<td><strong>Elementary school and craft training center</strong>&lt;br&gt;Aït Benhaddou, Morocco&lt;br&gt;A learning complex that uses architecture, form, and space to claim artisanship and handiwork as living and modern traditions.</td>
<td><strong>Home for marginalized children</strong>&lt;br&gt;Thane, India&lt;br&gt;On a tight urban site, this project houses orphaned children in a building with a playful and generous vertical form.</td>
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The shaping of water

Publicly-accessible water retention and treatment complex, Mexico City, Mexico
Regarding water, Mexico City is struggling with a paradoxical situation: On one hand, there is a shortage of drinking water—and on the other, torrential downpours flood the streets every year. Parque Hídrico Quebradora is designed to usher in a new era of water management.
Mexico City is located in the Valley of Mexico, a high-altitude plateau at over 2,000 meters above sea level. It is surrounded on three sides by mountains, including the two volcanoes Popocatépetl and Iztaccíhuatl. In the middle of the plateau was once Lake Texcoco. On a small island in that lake, the Aztecs founded the city of Tenochtitlan in the early 14th century. The city was destroyed in the siege by Spanish conquistadors, and on its ruins the Spaniards built Mexico City. Today, the metropolis with around 20 million inhabitants is one of the largest in the world. Lake Texcoco was gradually drained as the population grew and it’s now completely dry – with grave consequences. Desert has taken hold, and endemic animal and plant species have died out. Groundwater has been continuously pumped for drinking water, which has caused the water table to drop significantly. Against this background, it seems almost bizarre that the city also has to cope with heavy rains that cause flash flooding of entire neighborhoods every year.

Manuel Perló Cohen is an internationally renowned full-time researcher at the Instituto de Investigaciones Sociales of the Universidad Nacional Autónoma de México (UNAM) in Mexico City. He holds a doctor's degree from the University of California (UC) in Berkeley. Perló Cohen has investigated the subject of water in several publications, including the question of whether water could one day become the cause of serious conflict in the Valley of Mexico. Loreta Castro Reguera studied architecture and urban design at UNAM, at the Accademia di architettura di Mendrisio (AAM) in Switzerland, and at the Harvard University Graduate School of Design in the USA. For several years she has been dividing her time between a professorship at the School of Architecture at UNAM and her position as design director at the architectural office Taller Capital. She too has dealt with issues of sustainable water management many times.

“Our project can only reduce the problem” Loreta Castro Reguera
Your professional partnership appears unusual at first glance. How did your collaboration come about?

Manuel Perló Cohen: It’s true, we belong to different generations and have different backgrounds. Loreta asked me for an interview at a time when I was working on a river recuperation project. She wanted to know how I approach such a project. So I explained to her the political and social uncertainties these types of projects entail. After our conversation, I realized that working together would be a great opportunity to combine our different fields of knowledge.

How did Parque Hídrico Quebradora emerge from this partnership?

Loreta Castro Reguera: We offered the project – a product of a previous research conducted by our team in the university – to the government officials of Iztapalapa. They were very interested, so they commissioned the university, which in turn commissioned us to execute it.

Manuel Perló Cohen: We were asked by the officials of Iztapalapa just to create something – without more specific guidance. So we sat down and thought about what the most suitable topic would be. The answer was water. But initially that did not appeal to the potential clients.

Why not?

Manuel Perló Cohen: In Mexico, water management issues are not the responsibility of local governments. They are discussed almost exclusively at the national level. But we argued that local governments should address urgent water issues themselves – especially when there are as many challenges as in Iztapalapa. But they can really do so only to a certain extent, and it’s precisely this leeway that we aim to exploit with our project.

With approximately two million residents, Iztapalapa is the most populous of Mexico City’s 16 boroughs. The name means “slates over waters”, an allusion to the location on the former south bank of Lake Texcoco. Although the lake is gone, water remains a defining theme for Iztapalapa. Water supply in the borough is deficient. Tap water is not always available and the quality is poor.

The aquifer that used to be the main source of water for the Mexican capital has been pumped nearly dry. Water from other basins is being channeled through the Cutzamala system at great expense, but the supply is enough for only one third of the population of the capital city. Making matters worse, the pipeline system is dilapidated, and around 40 percent of the water is lost. Tank trucks are being used in stopgap efforts, but the water they deliver is also of poor quality. Bottled drinking water has therefore become part of everyday life in the city. Some families use up to 20 percent of their income just to buy water.

Paradoxically, Mexico City and Iztapalapa are also struggling with too much water – in the form of heavy downpours. The city is located in the Basin of Mexico, one of the few closed or endhorreic basins in the world. This means...
Global LafargeHolcim Awards Gold 2018

the community in Iztapalapa how they felt about water management. A competition was held, with prize money provided by the local government. 256 proposals were submitted, from cisterns for rainwater collection to schools where children are taught responsible use of water. Around 50 of the suggestions made sense both technically and conceptually. But the legislative term ended, and none of the proposals were developed into projects.

At that juncture, Manuel Perló Cohen and Loreta Castro Reguera presented Hydro-urban Acupunctures to the new government officials. And the project was approved! The selected site is a four-hectare parcel of land called Quebradora, owned by the water agency and located in one of the most densely populated parts of Mexico City. Until not too long ago, it was used as a regulatory basin for floodwater management. More recently, the parcel was neglected and gradually became a mere patch of fenced-off wasteland. So the basic functionality of the proposed Parque Hídrico was already given – and Manuel Perló Cohen and Loreta Castro Reguera took advantage of this for their project.

It sounds like a tremendous problem you are tackling with your project.
Loreta Castro Reguera: We know that our project can only reduce the problem. But we are also convinced that there are ways and means to gradually change things. The answer is in the rain and in the introduction of an alternate, sustainable and decentralized water management system.

What do you mean by that?
Loreta Castro Reguera: It rains frequently and heavily in Mexico City, but the rainwater is not used. It either floods the streets or is channeled away unused via the sewer system. We’ve developed a concept to correct this called Hydro-urban Acupunctures. It took about four years before we could show it to anyone.

Why so long?
Manuel Perló Cohen: It has to do with what I call historical inertia. In Mexico City, water that’s in people’s way is simply removed. Lake Texcoco was drained by means of a tunnel through the mountains. And the water dumped on us by the eight to ten major storms a year is simply led off unused. Numerous projects for using this rainwater have been proposed over the past 60 years, but they have always been rejected. And the thing is, when rainwater is properly treated, you can even use it as drinking water!

“Local governments should address urgent water issues themselves”
Manuel Perló Cohen

Following the loosely defined commission of 2012, Manuel Perló Cohen and Loreta Castro Reguera developed two further projects: the prototype for Hydro-urban Acupunctures and a project with a socially informed background. The latter was not about buildings, but about ideas and possibilities. They asked the community in Iztapalapa how they felt about water management. A competition was held, with prize money provided by the local government. 256 proposals were submitted, from cisterns for rainwater collection to schools where children are taught responsible use of water. Around 50 of the suggestions made sense both technically and conceptually. But the legislative term ended, and none of the proposals were developed into projects.

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The concept is very simple. Two roads serve as channels during storms, carrying the
runoff water to Quebradora. There the water seeps through a series of screens and filters into two previously existing infiltration basins in the northern part of the park. Most of the relatively clean water is then fed into the subsoil. In this scenario, the aquifer is not additionally polluted by sanitary sewage. A total of 68,000 m³ of runoff per year is treated with the system – a third more than the site could previously handle.

But the real sign of change for Mexico City is that some of the water is being reused. Loreta Castro Reguera: Yes, and not only rainwater. We extract around 86 cubic meters of wastewater from the sewer system every day and treat it in a wetland system integrated into the park. It doesn’t produce potable water but water that can be used for flushing toilets and watering plants. Because of this, the system is virtually self-sufficient in terms of water. If it rains, some of the rainwater will simply be integrated into this process. Manuel Perló Cohen: The public toilets in the park are also an innovation in the sense that there are hardly any others in Mexico. Our facility serves 28,000 local people who have toilets at home but don’t have water for flushing. A key point that helped gain community acceptance of our project is that we use very little municipal water – in fact, we provide water through the public toilets. In a poor, high-crime borough like Iztapalapa such aspects are crucial in order to counter people’s resistance to new things.

That’s why it’s usual to involve local communities in such projects. Are you doing this too? Loreta Castro Reguera: Of course, because the park is being used by the community as a recreational area, we invited all the locals to participate in workshops in order to find out about their wishes and needs. All in all, our 18 meetings were attended by about 500 people.
What came out of those meetings?
Loreta Castro Reguera: Many things that we have already implemented. For example, a place to dance, because many people wanted the possibility for dance lessons. There’s a playground for children, a basketball court and a volleyball court for teens and adults, an open-air theater, and a library with cafeteria – the only one for miles!

Parque Hídrico Quebradora is situated on a hillside, so the project consists of a series of terraced platforms with containment walls. Each terrace includes green areas and usable spaces. With this design concept, the project planners recall the pre-Hispanic origins of the borough. Iztapalapa was one of the most important places around Tenochtitlan, and important places, whether public or cultic, were often designed as terraced structures in ancient times. The retaining walls and most of the other elements in the park are built out of volcanic stone – a reference to the site itself, which is situated on volcanic rock.

The project cost is estimated at USD 11 million – who will pay that in such a poor neighborhood?
Manuel Perló Cohen: Interestingly enough, Iztapalapa has the largest budget of all the city’s boroughs – even if the amount available is quite insufficient. Dione Anguiano, the mayor, was able to access Federal Funding through the Infrastructure Fund called FAIS. Loreta Castro Reguera: But it’s true, so we had to come up with an idea for financing the maintenance. That’s why we formed a trust, involving the government, the community, and private donors. It’s up to us to generate the money for this trust. One revenue source is the fees for using the toilets. These are small amounts, but they do go toward maintenance.

Manuel Perló Cohen: The business plan anticipates that the trust will raise 60 percent of the required funds over the next five years and the rest will be generated by park revenues. After that, the ratio will flip: The park will generate 60 percent of the funds.

How will your idea continue on now?
Loreta Castro Reguera: Our project should mark the start of a new form of water management in Mexico City. We need a network of facilities like this one to sustainably master the present situation over the long term.
Manuel Perló Cohen: We may need a hundred similar projects in a hundred locations throughout the city. And the sites are there – we saw them ourselves when we were searching for the perfect location for Parque Hídrico Quebradora!

“The system is virtually self-sufficient in terms of water” Loreta Castro Reguera
Addressing an urgent issue at a scale with real impact

The project foregrounds an extremely important challenge for contemporary and future society, namely, the role of water as a resource in urban contexts. Further development of the project demonstrates a comprehensive understanding of the issues involved, from construction detailing to long-term maintenance after completion. This piece of infrastructure is given a parallel life as a highly layered civic space that functions on many scales, from neighborhood to territory. The jury also understands the provision of water resources in this context to be in reference to the geography of Mexico City before urbanization. The project reintroduces some “lost” elements, including open, visible pools and soft surfaces for reabsorption. The jury finds the sophisticated design addresses an urgent issue at a scale with real impact, offering a replicable model for projects for other neighborhoods and cities worldwide.
“Making the best of what’s available”

Religious and secular complex, Dandaji, Niger
In Dandaji, a village in Niger, two architects transformed an old mosque into an educational center with a library and workplaces. At the same time, a new and larger mosque was built. Both buildings aim to sustainably strengthen the community fabric and support the growth of the village.
Global LafargeHolcim Awards Silver 2018

Niger is one of the ten poorest nations in the world. About 74 percent of the men and 89 percent of women are illiterate. The vast majority of Niger’s population is Muslim; the religion has been adopted in the region as early as the 11th century. Islam has co-existed for over 1,000 years with the indigenous religions of the various ethnic groups, which is also reflected in the local architecture.

One such example is the traditional mosque that stands in Dandaji, a village with a population of 3,000 in southwest Niger. The mosque was used only for Friday prayers and was otherwise empty, and the absence of maintenance has gradually let it to fall into disrepair.

One of the two winners of the Global LafargeHolcim Awards Silver 2018 knows Dandaji and its buildings very well. That’s because the grandfather of the architect Mariam Kamara was at one time the village chief, and her father was born there. So it’s no surprise that the latest project by this energetic architect seeks to permanently change the face of this village – and, as she hopes, its economic situation as well. “We are converting the old Dandaji mosque into an educational center, but we will preserve the building as much as possible because its traditional architecture tells the story of this region,” she says. In parallel with the renovation of the old mosque and its transformation into an educational center and a library, the architects are building a new and larger mosque on the same site to provide more space for the fast growing village. The combination of the two buildings will help engage women more in everyday religious life, thus strengthening cohesion throughout the village.

Mariam Kamara was originally an IT engineer, but always wanted to be an architect. She went back to university mid-career and received her master’s degree in architecture. In 2015 she founded the architectural office Atelier Masomi in Niamey, Niger’s capital. The office now employs four people, developing innovative solutions in architecture and design while exploring new adaptations to local techniques. “These days I shuttle roughly every eight weeks between my home in Providence in the USA and Niamey,” tells Mariam Kamara. “Today you can collaborate very well with people remotely.”

For the ambitious project in Dandaji she collaborated with the architect Yasaman Esmaili. The Iranian currently lives in Seattle and works for Blokable, a startup dedicated to helping communities and nonprofit organizations meet the housing challenges facing cities today. Blokable produces and delivers occupancy-ready building blocks to create homes and communities. The two architects met in 2008 as they were collaborating on a project in the USA. “I was teammate with Mariam Kamara in a graduate studio at the University of Washington and since then we’ve been working together on several projects around the globe,” explains Yasaman Esmaili.

The two architects named their project in Dandaji “Hikma – a mind’s garden,” based on Bayt al-Hikma, the “House of Wisdom.” This academy was founded by Muslim scholars in Baghdad in 825 and in its day became one of the most important centers of knowledge. “Hikma” is the largest project that the two cause-driven architects have tackled together. The rehabilitation project and new build-
ing on a site of over 5,000 square meters will cost over USD 500,000. The renovation and new construction are being financed by the village council, the oldest families of the village, and some residents (and former ones) who have enjoyed successful careers and can afford to support the project.

Why were you commissioned with the project to build a library & learning center and a new mosque in Dandaji?
Yasaman Esmaili: This project came along while Mariam and I were working on another project together. The old mosque could not be used for much longer because the building was in a bad shape and also the village was in need of a bigger mosque. When I first heard about the project from Mariam, I got very excited because the old mosque was breathtakingly beautiful and the community were so involved in the decision-making process. When Mariam asked me to volunteer and collaborate with her on the project, of course I said yes – because it was the right setting for an amazing project and we have a very fruitful working relationship.

Mariam Kamara: Right at the beginning of the project we faced a key issue: The old, undersized mosque was a decrepit clay building, but it was built by Hadji Falké Barmou in the traditional Hausa style. This master mason, famous in the region, was awarded the prestigious Aga Khan Architectural Prize in 1986. So we decided together with the village council to preserve the structure and restore the building. During various intensive workshops with the residents, we tried to determine precisely what the building needed to become. The starting point was clear: The building had to be turned into an amenity for the entire village and be used daily so that proper maintenance can be ensured. The idea then came from the residents.

The old mosque is thus being transformed into a versatile educational center with a large library as well as various workplaces and learning stations. The facility is designed on the one hand for students in the village and on the other for adults, especially women. “The village’s four women’s groups have expressed the desire for workshop areas where they can meet and acquire new skills that would empower them economically,” says Mariam Kamara. She is enthusiastic about the diversified contributions of the locals who enriched the planning process. “This is fantastic – they have a plan and we only need to provide the space.” Dandaji is already a sort of educational hub in the region. It’s the only village in the area with a middle school, and a high school is in planning. The new library with a wide range of workplaces is expected to significantly advance the development of the village as an educational center. The children are often organized in study groups by their teachers in order to facilitate learning and preparation for exams. But most
homes are cramped and have no electricity. The rehabilitated mosque will give students an optimal learning environment.

“The pursuit of knowledge and wisdom has always been part of Islam” Mariam Kamara

How is the old mosque being rehabilitated so that the building will properly serve its new purpose?
Mariam Kamara: One of the most important interior interventions is the insertion of a new mezzanine level. We are using metal instead of wood, because wood is scarce in Niger. The mezzanine expands the usable space, and bookcases can be built between the loadbearing columns. The mezzanine also serves as a sort of space divider for the large hall, whose beautiful columns will be left exactly as they are. We are also using another type of room divider: a modular paneling system created by threading locally-woven ropes and fabrics through metal panels.

Yasaman Esmaili: For the renovation of the building structure we called in some of the masons who helped build the original mosque. Both parties benefited from this: We gained insight into traditional construction methods, and the masons learned a lot about additives that enhance adobe and erosion protection techniques. Together we restored the building while enhancing its earthen finish material and wall base for more durability and protection against water erosion. We used concrete, steel, and stone to make the structure as durable as possible.

Mariam Kamara: Of course it was also important to us that the traditional design concept be preserved but also that the original functions of the building are respected. For example, the old mihrab – the mosque’s traditional prayer niche facing Mecca – is intended as a space for religious studies. That’s also why we named our project “Hikma – a mind’s garden”: We don’t want to forcefully separate the secular from the religious but rather to architecturally emphasize that the pursuit of knowledge and wisdom has always been part of Islam. The project reintroduces these important values embedded in the religion itself.
But aren’t libraries outdated in this age of the Internet and e-books?

Mariam Kamara: In this context, the children only have access to textbooks and have often never had the opportunity to widen their horizons through other types of readings like literature and other genres. So a library is useful to help both the children and the adults relate to books and discover the outside world through them. The old mosque becomes a center for all the residents where they can learn new skills to go further in their lives.

For example, there will be a workshop place where women learn to make things like peanut butter or oil from their crops, as well as basic literacy and bookkeeping to keep record of their sales.

Yasaman Esmaili: Exactly – creating a new educational center not only creates new spaces that serve the community but also promotes positive thinking, better interaction between the users and growth. Our goal was to be resourceful and to make the best of what was available.

The new mosque will cohabitate alongside the comprehensive rehabilitation of the old mosque and its transformation into a center for education and culture. It will be much larger and provide more adequate space for community needs. “Here too, we invited the community and especially women to participate in the planning process,” says Yasaman Esmaili. “Until now, they have not used the mosque for daily prayer because in this region, mosques are mostly used by men for praying, but the proximity of the new mosque and the library will make the site very egalitarian.”

The new layout with two large rooms and an additional large courtyard for prayers and outdoor celebrations provides plenty of space for all the villagers.

The architecture of the new building visually interprets the traditional construction of the Hausa mosques and incorporates contemporary design as well, especially in the masonry walls. In addition to compressed earth bricks, materials such as concrete and steel are used. The use of concrete is limited to structural elements such as pillars and arched beams. Most of the building materials come from the local surroundings. The compressed earth bricks from the region have the additional advantage that they protect very well against heat.

Trees for shade will be planted throughout the site of the new mosque and the educational center. A sophisticated drip irrigation system supplied by an underground rainwater reservoir will ensure optimal irrigation while minimizing water consumption.

“Our overall project – from the library to the training center to the new mosque and garden – is intended to enhance the quality of life in Dandaji,” says Mariam Kamara. The complex as a whole should meet the residents’ needs for knowledge and education; while at the same time promoting cohesion and communal life. The two architects see in their project a network of knowledge, religion, and community that brings hope and fresh energy to Dandaji.
The village community of Dandaji showed great commitment and enthusiasm during the planning of the project. How does the future look?

Yasaman Esmaili: Including the future users of the project in the design process was very important for Mariam and me. For us, it’s not about our egos or about becoming famous architects. We both think that architecture should move away from big names and toward a collaborative approach. Our approach to design is always about people and about finding the best solutions for the community.

Mariam Kamara: Architects create space for people. We are happy we were able to involve the entire village population – from young children to adults to seniors. And because many people in the village knew exactly what they needed and wanted, it allowed us to design for the specific needs of the village. I am certain that the educational center and the new mosque will make a big difference in this village – because knowledge and community are the foundations for success.
The timeless, restrained design is greatly appreciated by the jury. The combination of all secular and religious activities in one complex is also praised; the jury sees it as providing civic space for both genders and promoting the education of women and their presence within the community. Furthermore, the project is understood as a strategy to promote local artisanship, traditional building techniques, and materials produced in situ. These aims situate the project within an understanding of architecture that moves away from high-tech solutions in sustainability, often including new explorations of time-honored materials and fabrication methods. Photographs of the construction process complement an impressive entry, evidence of the vision of the project’s authors made real.

Architecture that moves away from high-tech solutions in sustainability
“It’s never how you start; it’s how you finish!”

Community-driven neighborhood planning, Detroit, USA
Detroit has become a global symbol of the decline of a metropolis. But in one of the city’s most challenged neighborhoods, a large group of proactive residents is driving a positive development: They are building a net zero energy district with an innovative community solar system, a community center, the renovation of historic houses – and realizing a number of sustainable strategies.
taining administration and infrastructure – the condition of the roads is the most visible evidence that the city has seen better times. The crumbling urban fabric led even more people to turn their backs on Detroit, leaving deserted streets behind them.

Not all districts of the city were abandoned equally – and not all of them have the same problems today. For example, the crime rate in downtown Detroit is below average for a major US city. But up until several years ago, zip code district 48204 was considered the most dangerous district in the nation. In 2013, the chances of becoming the victim of a violent crime within a year were about one in seven. Will Bright, an eloquent advocate of Detroit, knows this neighborhood very well because he grew up here.

How was life here in former times?
Will Bright: In the late 1980s and early 1990s, life in this neighborhood was pleasant. The houses were in good shape, you saw beautiful cars, and everyone knew each other. The social and cultural life was vibrant – we even had the Blue Bird Inn, a nationally known jazz club where the likes of Miles Davis and Charlie Parker performed. But I don’t want you to think this is the worst neighborhood in Detroit, even though the
statistics may suggest otherwise. We’ve just lost our economic basis. When the automobile factories closed down, this neighborhood was hit especially hard.

About a third of the houses are now empty, which means two thirds are still lived in. How do the residents make a living?

Will Bright: They have jobs, but they aren’t well paid. Many people work in healthcare, some are in training programs. The level of education is really not that bad at all. So there are also positive aspects to leverage here. The people who’ve stayed like the neighborhood and want to take care of it, which is why many of the occupied houses are well maintained – and these houses are also beautiful, all from the pre-war period. These people don’t want to leave; they want to have a future together.

Today there are just two schools within a large radius, the pre-K to 8 Sampson Webber Leadership Academy (SWLA) and Collegiate Prep HS. About 97 percent of the students there are black. The school board has a video that shows plenty of dedicated teachers, but their capacities are limited. For instance, some classes have up to 50 students, so the teachers can’t allocate time for individual student attention. Quite a few volunteers are pitching in to help the school to operate more effectively. Will Bright is one of them, working as a gym teacher. He sees the lack of activities and occupation as one of the main reasons for the high crime rate. When young people don’t have good opportunities for meaningful activities, they tend to hang out on the streets where they will likely see some terrible things.

What triggered the award-winning pilot project on Seebaldt Street?

Will Bright: I no longer live in the district myself, but I still have a close connection with it and I’m here every day. Actually, the project was initiated following a crime: The daughter of a friend was dragged into a vacant house and raped. We got together and decided something had to be done. We wanted to make the neighborhood safer and stop the decline of the district. We founded It Starts at Home (IS@H) in 2013 and started by simply boarding up the vacant buildings so that no more crimes could be committed inside them. Drug trafficking also takes place in abandoned buildings. District Manager Rico Razo provided the boards for this initiative, and we did the work ourselves. As soon as we started, people came out of nearly every house to help us. When we finished there was a huge barbecue! You can say what you want about Detroit, but we know how to throw a party. We then started thinking about more sustainable measures. We came to the conclusion that a community center was needed, and Rico introduced us to Constance.

Architect Constance Bodurow is Founder and Director of studio[Ci] in Detroit and has taught architecture for 14 years, most recently as Professor of Architecture at Lawrence Technological University. studio[Ci] is a transdisciplinary design collaborative that creates sustainable communities through architectural and urban design interventions. Constance has been researching, analyzing, and creating design interventions which leverage Detroit’s high levels of vacancy as an asset. Vacancy is traditionally viewed as a liability, but is revalued as “generative infrastructure”. In 2013 she began a collaboration with SWLA to create a net zero energy project and lesson plans. She and her students worked closely with teachers, administrators and students to develop a set of sustainability strategies for the school. In 2014, Rico Razo connected Constance with Will and other founders of IS@H. The decision to involve studio[Ci] in the project for a community center was natural because the facility was to be set up in a vacant building on the school grounds.
How was the program for the community center defined?

Will Bright: Along with our whole team of volunteers, we visited all 11,000 households in the district and asked people what they wanted. We left questionnaires everywhere we went – and we got them all back, thousands of responses! The needs were very clear: People wanted 24-hour healthcare and daycare, recreation for youth, a General Education Degree program – the equivalent for those who drop out of school and don’t receive their high school diploma –, workforce-development and a general education program, computer classes, and a community kitchen. These concerns were all very substantial. You mustn’t forget that there is simply nothing left in the district, no restaurant, no public meeting place, no place for youth to spend time. The deficiencies are fundamental, and the people here are very aware of that.

Constance Bodurow: The next question was: How do you get all this into a building? And how can this be combined with the concept of sustainability? When I get involved in a project, I automatically consider energy and such factors, and our notions of sustainability were initially quite dissimilar. But then we gradually moved closer and closer, and in this way, we could develop a holistic approach for the community center.

The holistic approach of the project now goes far beyond the original planning. The community center can significantly contribute to a better future because it equips people for new jobs, for instance in the field of renewable energy. But upgrading the neighborhood requires more than that. The concept of the Seebaldt Pilot (TSP), which covers one city block, is therefore based on three additional pillars: The existing residents and new initiators buy houses and renovate them to pass them on to families, renewable energy is generated within the project area with studio[ci]’s unique Hybridized Net Zero Energy (HNZE) Canopies in order to minimize energy costs for the residents and even generate long-term revenue, and a new public realm is created for residents’ use.

A design framework for the entire neighborhood, addressing energy, water, waste, food, and mobility was created and a 6-megawatt micro grid projected. In 2017, the team received one of 35 “Solar in Your Community” challenge grants from the US Department of Energy to bring solar to low and moderate income (LMI) communities. Further recognitions have allowed them to move into implementation.

Who currently owns the houses you take over?

Will Bright: The block this project covers includes 34 houses. 11 of them are vacant. After a certain time, ownership of abandoned houses is transferred to the city, so we have become a Community Partner of The Detroit Land Bank Authority (DLBA) in order to buy them from the city. We can renovate the buildings very cheaply because many people who work for us support the project and charge low rates.

Is there much demand for these houses?

Constance Bodurow: Definitely. For instance, people who already live here but currently rent are interested in them. The neighborhood is very accessible to New Center and Downtown. By generating energy ourselves, we can markedly lower their cost of living. Gas and electricity bills are hard to pay for many families these days and can total as much as 350 dollars a month. Thanks to our project, this can be reduced by up to 60 percent.

“How do you get all this into a building?” Constance Bodurow
IS@H and studio[ci] are planning a hybridized net zero energy (HNZE) canopy that spans 22 m by 8 m. The HNZE micro-grid is a “three-legged stool” of solar, geothermal, and storage which will distribute energy from the photovoltaic panels to strengthen and stabilize the grid. The long-term vision is a fully functional, cooperatively owned micro-grid which will deliver both reduced energy and water costs and a revenue stream for community services, initiatives, and investments within an enhanced public realm. But the Seebaldt Pilot also includes many other sub-concepts, e.g. to produce fresh food, for water and waste management, and for mobility. It’s no exaggeration to say that here a neighborhood is being wholly reconceived based on largely intact relationships and an existing building stock. “This is a once-in-a-generation opportunity,” says Constance Bodurow. “We have the affordable land and vacant buildings, and a proactive local population looking for new ways to move forward – and that’s a lot to start with!”

Your optimism is contagious. But there certainly must be some unsolved problems — what are they?

Constance Bodurow: One of our challenges is the response time from our local utility, and we depend on their support. We have to convince people because we need to finance the 100kW system. We have to be able to buy land and houses, and it would be nice to be able to afford someone to manage the project professionally. Until now, everyone involved has been donating their great efforts without any compensation. And of course, the project itself is highly complex. That’s why we are doing this pilot project with just one block. We are testing our interventions; afterwards we can scale and replicate them.

You are installing valuable infrastructure. How do you plan to protect it from vandalism?

Will Bright: There are many people who will protect our project. “Eyes on the street” and a
sense of ownership has proven to be our best protection. We hold regular meetings with the people and let them know what we are doing – and this includes people who could be criminals. And they support us too. They also want to see the neighborhood change for the better. Who doesn’t like living in a good environment?

Three years of work with no compensation and an uncertain long-term outcome – why are you doing this?
Constance Bodurow: When I met Will and his colleagues, I sensed that this neighborhood used to be like the one I grew up in. I’m a Detroiter too. My parents came to Detroit in the 1960s and were committed to equity and acting on the same seemingly intractable issues I am now addressing as a designer. If we want our community to survive, we need a paradigm shift. Designers play an important role in this process, and I want to do work that counts.

Will Bright: I don’t want to live anywhere else, and I want to help the city move forward. We won’t give up no matter how long it takes. My grandfather used to say, “It’s never how you start; it’s how you finish!” Even though things haven’t always been bright in Detroit, we will continue to fight. We are a very resilient city. Even today you can sense definite improvement compared to the situation we had just a few years ago. That makes me proud and motivates me to do even more. As matter of fact, the improvements are starting to show up in the statistics. In 2013, three of the most dangerous districts in the US were in Detroit, and by 2017 no district in Detroit remained among the first 10. The journey to a sustainable Detroit is still a long one, but the first milestones for America’s Comeback City have already been reached.

“I want to help the city move forward”  Will Bright
The jury is excited by the idea of a neighborhood reaching energy autonomy through micro-infrastructure. The buildup of this apparatus for energy production is seen as novel type of community generator, particularly in an area failed by inadequate yet costly municipal services. The negotiation needed to develop such a project and turn it into reality builds not just physical infrastructure but also sparks the conversations and common aims that produce community. The jury sees the initiative as a highly transferrable project model that is both timely and provocative, potentially addressing the needs of developing communities and developed areas where infrastructure is beginning to fail. The jury nonetheless criticized the shape of the roof, which seems to complicate the construction, while not conforming to optimal solar orientation nor efficient water collection. A more straightforward and less formal solution would have been more appropriate.
Lightweight membrane as an exciting new idea

The Global LafargeHolcim Awards jury appreciates the lightweight membrane roof cooled by water as an exciting new idea for the pervasive phenomenon of the big box warehouse. As the design is developed, a number of pragmatic concerns will need to be addressed before this can be considered a viable scheme: is the water sourcing sustainable, how is silt managed, what could a correlate be in regions with water scarcity?


Link between local industry and local craft

The clever cooling towers foster local production of a globally-prized commodity that could provide sustainable income for the community. The Global LafargeHolcim Awards jury praises the link made with the construction between local industry and local craft, and hopes that the economic model remains as sophisticated and community-focused as the architecture.

A team from Seoul, South Korea, won an Acknowledgement prize Middle East Africa. Page 214.

The role of renewable energy production

The Global LafargeHolcim Awards jury applauds the authors’ vision to rethink the role of renewable energy production at the large scale. In one figure, the authors address a global challenge, merging territorial planning, landscape design, and architecture into a comprehensive system. Further development would need to take into account biodiversity and the impact of construction on the ocean biome.

A team from the National University of Córdoba, Argentina, won Next Generation 1st prize Latin America. Page 196.
Squaring the circle

Zero Energy Development units on parking lots
London, United Kingdom
A spirited British architect is simply applying the knowledge he has acquired over decades of working on sustainable projects: He has a clever response to the housing shortage in Greater London that is at once affordable, sensible, environmentally friendly, attractive, and flexible. His concept might seem utopian at first glance.
The shortage of housing is a permanent condition in London, a common element of many cosmopolitan cities. But in recent years the situation has become particularly acute. Even people with well-paying jobs can hardly afford a place to live, whether buying or renting. The main cause of this housing stress is population growth, in combination with insufficient construction volume. From 1997 to 2016, the city grew by 1.7 million inhabitants, but in the same period, only 370,000 new apartments were built. The figures for the whole of England hardly look any better: Since 2005 the population has grown by 4.2 million people, but only 1.2 million new housing units have been built.

Speculation aggravates the situation. In the City of London, the central district, 21,000 apartments are currently vacant because they are being used solely as an investment, particularly for international buyers sequestering funds into residential properties. Their monetary calculations are understandable: In the record year of 2015, prices for residential properties in The City of London rose by ten percent, and they are expected to climb by another 15 percent by 2021.

The housing shortage now affects the whole region. “In southeast England, up to five million people live in substandard conditions,” says London architect Bill Dunster. “Nowadays, the average student sleeps on the sofa, 35-year-olds still live with their parents because they can’t afford to move out, and some families are converting their garage to house their grandparents. It’s been like Hong Kong here for a long time – but our government officials keep sweeping the problem under the carpet.”

Bill Dunster always speaks with passion and commitment. Whether it’s regarding climate change around the world or political change the United Kingdom, the architect born in 1960 in South London states his opinions with convincing clarity.”

“How can we make a product that will really help people?”

Bill Dunster
frankly and unmistakably. But his sharpness of mind contrasts pleasantly with the gentleness of his words: Bill is a totally calm discussion partner who listens very carefully. He is one of those decisive types of professionals who seek constructive solutions and bring lofty ideas down to the plane of reality through meticulous effort and solid teamwork.

One of those big ideas is the project that won Bill Dunster and his office ZEDfactory the LafargeHolcim Awards Bronze in Europe. It promises to make an important contribution to alleviating the housing shortage. The idea seems so obvious that you might not think it’s revolutionary at first glance. But that’s the case with many well-thought-out projects — in the end, they seem utterly natural. Put simply, Bill Dunster proposes to install residential structures above outdoor parking lots. The cars remain below as before, and floating above them are compact residential units, which the architect calls ZEDPods. At second glance, you begin to see just how big this idea really is — because Bill Dunster has succeeded in, as it were, squaring the circle.

How did you come up with the ZEDPod concept?
Bill Dunster: We designed a house prototype for the BRE Innovation Park. We wanted to show that you can build a high-quality, easily affordable house with little money, one with a photovoltaic system that produces more energy than the occupants need. ZED stands for zero (fossil) energy development. That house is really nice, but it requires a good bit of land — and our target audience is young people who can’t afford such land, and even more so now that mortgage regulations in Great Britain have been drastically tightened. So we thought: How can we make a product that will really help people? When we looked at aerial photos of the city in search of available space, we noticed that the only free large areas are parking lots — at shopping malls, hospitals, schools, and so forth. And so I got the idea to use the space above these parking lots. This space is currently accorded little value.

But the owners of the parking lots of course know how much latent value their land holds. They will certainly not give it up to build cheap little houses for young people...

That’s why we designed a house that will last for 75 years — and stands on stilts above the parking lots. You can simply move them somewhere else if the land use changes. This way, the gray energy in the housing units is not lost. So a ZEDPod is not a temporary house — it’s a permanent house that can temporarily stand in a certain place. This feature is more important than anything else, because it makes implementation of the concept feasible. We rent the air rights, not the land.

Is there enough suitable parking space for your plan? Probably not in the city...
In city zones 1 to 3, in the heart of London, there is really no space. But only a bit less central, zones 4 to 6 have surprisingly low density; there we find many parking lots we can use, for example at schools. Teachers can’t afford to live in London today because they don’t earn enough. Most of them live an hour outside the city and spend a lot of time and money commuting. We could house young teachers right above the school parking lot. Or hospital staff above the clinic parking lot. We will probably realize such projects first. There is room for around 200,000 ZEDPods throughout the United Kingdom.
Your concept sounds so logical that one wonders why ZEDPods weren’t implemented long ago.

How should I know? There have been similar concepts, but the quality of construction is usually too low. Often the cheapest materials like polyester-core cladding panels are used – they were used on London’s Grenfell Tower, where 79 people died in the catastrophic fire of June 2017. We have to build affordable housing that doesn’t endanger anyone. And we always try to solve all the problems at once.

ZEDfactory, Bill Dunster’s architecture office, has a lot of experience with sustainable projects. The office’s best-known project is the Beddington Zero Energy Development (BedZED) with 82 residential units, built in 2002. It boasts an impressive number of sustainable strategies: The power needs of the residents are covered by on-site photovoltaic systems, the apartments are energy and water efficient, low-impact materials were used in the construction, and there are special transport and waste concepts. Dunster has received numerous awards for the project. He was appointed to the Order of the British Empire “for Services to Sustainable Housing Design” by Her Majesty The Queen in 2010.

The wealth of knowledge that Bill Dunster has amassed through his decades of practice with sustainable projects comes together in the ZEDPod project. The shell of the compact housing units consists of a hot-dip galvanized structural frame with wooden infill panels and external insulation, an assembly that requires initial maintenance only after 20 years. The units are equipped with heat-recovery ventilation and aluminium-clad triple-glazed windows. The patented raft foundation is also noteworthy: It ensures the ZEDPod does not place a greater point load on the parking lot pavement than a vehicle does.

The program of the ZEDPod unit is reduced to the max: On the lower level of the unit is a balcony, a front door, and a living room with small kitchen and dining table. On the upper level is a bedroom with double bed, desk and bathroom. A number of ZEDPods can be reached via a single flight of stairs, so hardly any parking spaces are lost. The stair module also houses the battery, which stores the photovoltaic power and allows the complex to get by without power from the grid almost all year round. Although parking lots offer little in the way of infrastructure, the next power source is never far away. The units must also be hooked up to the municipal water and sewage systems.

The ZEDPod units are prefabricated, but not in a factory. Bill Dunster proposes a concept with pop-up assembly sheds that can produce very quickly and also provide local

“The problem is politics” Bill Dunster
employment. One ZEDPod would then be built in a day. And Bill Dunster has plenty more ideas about ZEDPods. For example, the energy produced by the ample photovoltaic system could also be used to recharge the batteries of electric vehicles.

What are the main challenges in realizing this project?
Prejudices. The middle-aged people in charge of making decisions these days don’t understand what we’re doing. They retort: “Are we supposed to force people to live in parking lots?” But, in fact, the air is better there surrounded by stationary cars where engines are turned off than facing a busy street. They simply place their opinions above those of younger people, who are our target group. Another prejudice we have to struggle with is the belief that a movable building can’t be of good quality.

I’m hoping that our LafargeHolcim Awards prize will help us to dispel this prejudice. Our design has been recognized by a top-notch international jury, and I can now say to the public officials: “Yes, our concept is cheap, but that’s not a disadvantage. How many of your expensive buildings have won an international award? Please take this project seriously. It doesn’t hurt anyone and it offers a solution.” But the biggest prejudice is about the size of the ZEDPod. They say that it’s just too small to allow decent quality of life.

How do you counter this prejudice?
We built a prototype to show that too small is simply not true. The unit is one parking space wide and two parking spaces long, on two floors, and that’s adequate space.

Would you want to live in such a house?
Oh yes, sure! If I would have to live on a sofa otherwise, that would be a huge improvement. We’ve now developed the system further so that multiple pods can be combined – for a family or a shared apartment. There are countless variations.

Where is this prototype?
Ecobuild, a trend show for the sustainable construction industry, takes place in London every year. We put up a prototype there. It wasn’t easy to find the right construction partners. Thanks to this demonstration-only model, we received funds to build a true prototype on the BRE site in Watford. You could live in this building. We just didn’t have enough money to hook up the plumbing system.
As with most projects, money is a key challenge. In the end, a unit mustn’t cost more than GBP 65,000, says Bill Dunster. At that cost, a monthly rent of 650 pounds is feasible, including maintenance and 2.5 kilowatts of electricity from the photovoltaic system. For that amount you can find a room at best, so ZEDPods would probably be rented within 30 seconds after they hit the market.

Who owns the ZEDPods?
The one who puts up the money. And investors should make a solid return on them – that’s okay, because they would be doing something good with their money.

Do you already have any interested investors?
We asked about 50 owners of parking lots, and some of them are interested. There are no more technical problems – those are all solved. The problem is politics. When you work for the local government and you are in charge of parking, you are paid to take zero risks. So when someone like me comes along, you just want that person to go away as far as possible. I am the nightmare of such people!

Is it frustrating for you to have such a great concept and not be able to move ahead any faster?
Of course! But we take small steps every year. This is an initiative arising from the bottom.

You’re not earning anything from the ZEDPods and are therefore not taken very seriously – why are you doing this?
Because I’m worried about the future. I see so many problems – and no solutions at a large scale. Climate change is accelerating, and doing nothing in this situation is practically criminal. This may be the last big thing I’m doing, our last attempt to solve a big problem – or at least reduce it!

“This may be the last big thing I’m doing”
Bill Dunster
Prototypes to test the viability of the scheme are particularly exciting

While the jury commends the further technical development of the project, new material proposing other potential applications for the module deviates from and weakens the ideas that the regional jury had found so compelling. The use of 1:1 prototypes to test the viability of the scheme is particularly exciting, especially when the knowledge gained is seemingly reflected in the detailed and considered construction drawings. However, the jury was highly critical of additional suggestions that propose new applications for the module. The idea to apply the units directly on the ground as low-density housing is puzzling. For the jury, the innovation of the project lays squarely in the notion of making use of already developed yet underused urban land and the design of the lightweight components and building systems able to accommodate this use.
“Why don’t you just build housing?”

Neighborhood center in Paraisópolis, São Paulo, Brazil
The situation in most informal settlements is out of control: The residents urgently need help to improve their living conditions – but complicated legal issues and diverse interests prevent people from realizing beneficial projects. Resolution and endurance is required, as the project PIPA in Paraisópolis shows.
The Organisation for Economic Co-operation and Development (OECD) defines informal settlements as “areas where groups of housing units have been constructed on land that the occupants have no legal claim to” or as “unplanned settlements and areas where housing is not in compliance with current planning and building regulations.” Informal settlements are therefore a symptom of urban development failure. They can be found in many major cities in developing countries, where the prospect of work and income has drawn multitudes from rural areas into the cities. The UN report “Habitat III” of 2015 estimates that in these countries around 70 million people move to urban areas each year. In Latin America, about a quarter of the urban population now lives in favelas – the term “favela” is derived from a robust shrub that grew on the hills where the informal settlements were built in the early 1900s in Rio.

Sol Camacho is an architect and urban designer. She received her Bachelor of Architecture at Mexico City’s Universidad Iberoamericana (IBERO) and graduated from the Harvard University Graduate School of Design with a Master of Urban Design. Her professional career includes work as an independent architect and various collaborative projects with well-known architects in Mexico, the USA, Brazil and France. She has worked at TEN Arquitectos in Mexico City, Skidmore Owings & Merril (SOM) in New York, the Architecture Studio in Paris, and other offices. Today, Sol Camacho runs her own architectural firm Raddar in São Paulo.

Jonathan Franklin holds a degree in industrial engineering also from IBERO and an MBA from the Kellogg School of Management at Northwestern University in Evanston, IL, USA. Franklin has worked as an analyst within Merrill Lynch’s financial institutions and mergers and acquisitions for Latin America in New York. After moving to Brazil, he became co-founder of Exxpon, a real estate development company in São Paulo. Sol Camacho and Jonathan Franklin are married and the parents of two children.

How did you two Mexicans end up in Brazil?

Sol Camacho: We’ve both lived in New York, Boston, and Chicago for many years. At that time, Jonathan worked in a private equity firm, and I worked at SOM. For architects, especially for urban designers like me, there was literally nothing to do back then: the real estate market was going through a downturn, there were no interesting projects for Jonathan. But Brazil was booming, and since I had been to São Paulo once before, six years ago Jonathan persuaded his partners to set up an office in Brazil. Two years later, we both set up our own companies in the city.

“Cities are my passion”

Sol Camacho
Countless upscale architecture is being built in São Paulo. Why did you choose the favela Paraisópolis as the location for your project, a community center with shops, educational facilities, and public spaces?

I was looking for a research subject in the field of urban design. I didn’t have a job, I had no projects—and so I was under no pressure. At the same time, Jonathan and Exxpon were looking for ways to make meaningful and sustainable investments in the city. Under these circumstances, you just about automatically end up at Paraisópolis. Alfredo Brillembourg and Hubert Klumpner had brought this favela to the attention of the architectural community with a civic infrastructure project that won the Global LafargeHolcim Awards Silver 2012.

Unlike most favelas in Brazil, Paraisópolis is not located on a mountainside or a riverbank. Rather, the second-largest favela of São Paulo with nearly 100,000 inhabitants was built on a piece of land that was actually intended for a new upper-middle-class neighborhood. However, in the 1950s, countless people settled informally on the already parcelled land. They were mainly construction workers and their families from northeastern Brazil in search of work. Thanks to state-run urbanization projects launched several years ago, which attempted to regulate conditions at least in parts of Paraisópolis, not only the poorest of the poor are living in the favela today. This is reflected among other things in the fact that major retailers such as the department store chain Casas Bahia have found their way into Paraisópolis.

How do you find a usable piece of land to develop in such a dense neighborhood? Since we absolutely wanted to bring retailers
into our community center project, Jonathan asked the resident retailers for help in finding a suitable piece of land. After a long process, in December 2013 we found a plot with proper title that had just a single house on it.

**And then you just claim that land – because you’re in an informal settlement?**

Of course not! Paraisópolis has existed for such a long time already and is by now quite consolidated. First come, first serve was only at the beginning. Now there’s a zoning law that grants the residents a certain degree of ownership of their land. The owner of this particular plot, an elderly woman, had title for the land for many years and the informal community had grown around her house. Next to it was a large, commercially used parking lot that we were also able to acquire. And finally, we managed to buy some adjacent houses from their owners. Nobody was evicted and nobody was corrupted.

In this way, a project site measuring 4,500 square meters was assembled. The initial financing of “Projeto Integral Paraisópolis Avança” (PIPA) was handled by Jonathan Franklin with Exxpon. The company’s investment committee includes Neil and Andrew G Bluhm, members of a renowned philanthropic family in Chicago. Jonathan Franklin managed to convince the board of the importance and sustainability of the project—the strategy being that ultimate returns can be even higher in the long term; however they are likely to be lower in the initial phase given the granting of use of space to the community.

Although PIPA needs buildings, the project is not primarily about construction. Rather, PIPA is intended as a meeting place in the broadest sense for the people of Paraisópolis. About half of the available space will eventually be used for commercial purposes such as shops and banks. A third of the area will be community space, with an educational center and the ballet school of Paraisópolis as the most important tenants. The remaining 15 percent is planned as public space, including usable green roofs and an amphitheater for 130 people. When fully operational, PIPA should provide a total of up to 900 jobs.

In terms of construction, much remains open, but the designers have already decided on a photovoltaic system for green energy, water treatment systems, and other elements of sustainability. The amphitheater, planned in timber, will be more difficult to realize because it requires additional funds...
and it will challenge the local building contractors, who have experience building only simple wood-frame structures. In any case, the architects will design the complex for intensive use and employ highly durable construction materials.

You found the site in December 2013 – shouldn’t the project be finished by now? The problem is that there are simply no regulations for social projects like this one – even more if you want to develop such a thing as a foreigner, you need to make sure you have a legally sound basis. If we had wanted to simply build a few shops or residential buildings, we would have been given the application forms to fill out and they would’ve been quickly approved – and that’s it. But with our cultural-commercial-social PIPA project, we get referred to all sorts of departments, and many times we’ve heard: Why don’t you just build housing? So that’s why we’re not yet where we really wanted to be with the project.

That must be frustrating. What motivates you to continue anyway? I’m an urban designer, cities are my passion. The vision to improve cities is the foundation of my profession. Paraisópolis offers incredible opportunities. Of course we know we can’t solve all the favela’s problems with PIPA – and we don’t aim to either. With this design, we want to take the city and the community a step further. My research clearly shows that people who are culturally involved in some way are for instance less likely to go off the rails.

PIPA is a project for the people of Paraisópolis. Did these people also have a say in it? We started by doing research to better understand the community. Then we met with the commercial union – because we can’t just bring competition into the neighborhood if we want PIPA to be accepted by everyone. Here we already noticed that there is a real need for a project like ours. We immediately got requests from shopkeepers who want to rent from us. Then we conducted a survey to find out what kind of shops and services people really want. And finally, we hold regular community meetings to which everyone can come and express their opinions and contribute suggestions. Of course we can’t meet everyone’s wishes, but we try to recognize the broader needs and requests, which we then reflect in our project.

The Paraisópolis Ballet represents a great cultural need for the people of Paraisópolis. The ballet school is an important activity and offers the children and adolescents of the favela the chance for a better future. In addition, the families of the children receive a certain amount of support. The school is currently in a dilapidated and entirely inadequate building. When Sol Camacho heard about this, she contacted the school’s director Monica Tarragó and offered to house the Ballet School in PIPA free of charge and to provide adequate temporary accommodation until the new space is ready. After the director made sure that there were no strings attached to this offer, she agreed. In this way, Sol Camacho hit two birds with one stone: On the one hand, she supported an important social institution of the favela, and on the other, she gained an anchor tenant that will help PIPA find further acceptance within the community. And that, in turn, could draw more attractive commercial uses to the complex.

What are you doing with the site while you are waiting for the permits and finalizing the legal framework for PIPA?

“There is a real need for a project like ours” Sol Camacho
PIPA has long been operating as a platform for the people, even if the groundbreaking ceremony has not yet taken place. Various events are already happening on the site, in particular the Moonlight Party. It’s not put on by us but by an external organizer once a month – it offers music, poetry, and lots more. This event has become very popular with locals. It works because we kept some of the acquired buildings intact. We use them for meeting space, as a residence for the caretaker, and also for events.

“Patient capital willing to finance the project”  
Sol Camacho

It sounds like anyone with a business or an idea could come and realize it in PIPA...

Basically, that’s true. My architectural office Raddar is also located on the site, so there’s always a contact person there. The idea of setting an office there is to be able to do research beyond the PIPA project. We have engaged architecture faculties from São Paulo, as well as international universities to study the surroundings, we have created an unprecedented cartographic base that helps the medical teams to navigate better in the area, we have educated young local students in understanding the importance of mapping and urban design. We’ve created links with other institutions to facilitate access and therefore create projects and educational or cultural programs that benefit the community. This is important because the better known PIPA becomes, the more we get requests for stores, events, and training courses – and the more we guarantee that PIPA is an active hub in the community. Even now, when it’s all still based on temporary structures.

It all sounds so easy and fitting. Why aren’t there more projects like PIPA?

First, it’s really difficult to find suitable land, and that’s certainly no different in other favelas. We were very lucky. But there’s also resistance. You have to do a lot of persuading, which takes a lot of energy. Then there are those who believe that all the available land should be given over to the government – but the government has more pressing problems than to manage projects in a favela. In addition, Jonathan and I certainly have the advantage that we were able to unite architecture and investment right from the start and have patient capital willing to finance the project. And finally, there are the often complicated legal circumstances. By now we have finally come to know the right people in the right positions, establish a legal framework, and make some administrative headway. We are hoping that these key stakeholders will stay in office until PIPA is completed.
Incorporating all the functions of a neighborhood center

This project fulfills every point outlined in the “target issues” promoted by the Foundation, but the jury was left wondering what else it achieves, where its innovation lies, or what it does especially well. The jury appreciated the showing of the community in action, incorporating all the functions that would ultimately lead to the neighborhood center. The vision presented, however, made the jury question the need of a more monumental community center in the midst of Paraisópolis. Some concern was also raised that the execution of the project would potentially have a gentrifying influence on the neighborhood, uprooting the very citizens the design intends to serve.

The jury ultimately finds the temporary proposal that accomplishes community building with a simpler, less materially intense architecture more compelling. The incremental, lighter approach is more engaging to the jury and seems to better align with the authors’ idea of building community through building structures. The jury recommends that further development of the project nurture the qualities of the existing.

Initial project submission page 184.
Back to the future

BRAC University campus, Dhaka, Bangladesh
A large university campus is being created in Dhaka, using a low-tech approach that is bringing new modernity to the region. The site is polluted swampland that’s being transformed into a revitalized lake that will also serve the public as a recreational amenity.
Sixty years ago, Dhaka’s population was 500,000 inhabitants. Today, 18 million people live in the capital of Bangladesh. And the vigorous growth is continuing: The United Nations Department of Economic and Social Affairs predicts that 27 million people will live in Dhaka by 2030. But the city has almost no land left; in some areas the density exceeds 45,000 people per square kilometer – one of the highest rates in the world. The growth is not sustainable: 40 percent of the population lives in unhealthy conditions in ramshackle slums. 70 percent of the country’s sewage is dumped raw into lakes and rivers.

The poorest receive aid from organizations such as the Bangladesh Rural Advancement Committee (BRAC). The institution was founded in 1972 following the Bangladesh Liberation War and is now one of the world’s largest NGOs. Originally, BRAC worked to improve people’s living conditions, especially by providing microcredits, but today the NGO focuses on promoting self-empowerment of individuals in many ways, including the BRAC University in Dhaka, which was founded in 2001. The university is one of the best in the nation. Until now, the student body of over 6,000 has been taught in various rented buildings. Because a new government policy requires private universities to operate a campus, in 2012 BRAC began planning a central permanent campus in Dhaka.

The problem with a construction project of this size in Dhaka is that there is hardly any adequate site available in the densely populated city. BRAC’s best option was to acquire several contiguous plots of a swamp-land within the city district. To master the challenge of building a new campus on this site, the NGO turned to WOHA Architects. The Singapore-based architectural firm is renowned for designing sustainable high-density buildings, with references including the Oasia Hotel Downtown in Singapore and The Met in Bangkok. WOHA master-planned the new BRAC University campus in collaboration with the German engineering firm Transsolar and the Bangladesh-based architectural firm J.A. Architects.

**How did this international collaboration come about?**
**Richard Hassell (WOHA):** Our initial contact with BRAC University was in 2007, through a design competition. One of the professors was on the jury that judged our entry, and she found our approach interesting. This contact led us to giving some lectures at BRAC University, and one of the projects we presented was our Singapore School of the Arts, a naturally ventilated, low-energy, high-density building that would later serve...
as a model for BRAC University. The BRAC directors found our designs and ideas relevant, and so they commissioned us to design their campus.

So there was no design competition for this project?
Richard Hassell: No. In a way they decided not to select a building but an approach. Soon after this, the local architect Jalal Ahmad joined the team. He had already completed several projects for BRAC.

And how did the German company Transsolar get involved?
Wolfgang Kessling (Transsolar): We had previously worked together with WOHA, and they asked for our support again for this project. Transsolar always looks for ways to create comfortable spaces using little technology. You have to accept the given circumstances and take advantage of them. This is the basic approach we used for the BRAC University campus.

The architects answered the complex challenge with a spectacular 13-story university building that rises from the water. The drainage basin is to become a healthy, natural lake. To realize this, the architects enlisted the support of a hydrology consultant. The sludge will be dredged and indigenous flora planted. The endemic plant species and elimination of pollution will slowly but steadily create a natural ecosystem that will also provide habitat for animals. But this will also require the cooperation of the local residents. Only if they cease to dump their sewage and garbage into the lake can such an ecosystem be created. They must recognize the value of a clean lake in the neighborhood and consciously choose other methods of disposal. To help the neighbors change their frame of mind, the prize-winning designers developed a concept for waste management on

The design task was extremely challenging. The campus should accommodate some 10,000 students and provide social spaces for the students and the residents of the surrounding district as well. The swampland acquired by BRAC had been created when surrounding sites excavated the land to raise their adjoining sites – it’s not a natural swamp. It was then used for decades by the local population as a sewage dump and is heavily polluted. Because it lies at a low point within the local district, it serves as a collection basin and cannot be drained without increasing the risk of flooding in the neighborhood. The site also lacks a connection to the main road.

The architects developed a concept for waste management on the campus that the neighborhood can use. The inhabitants will be highly motivated to keep the lake clean – because it will serve them as a free recreational amenity. But the new lake and its natural surroundings will not be the only community space at their disposal. The entire lower part of the university building will be open to both students and the public, offering spaces for interaction, recreation, and informal study.
Why did you put such strong emphasis on social space in your plan?

Jalal Ahmad (J.A. Architects): In the extremely dense city there is hardly any public space that’s not given over to traffic or consumerism. It used to be different, but in the wake of rapid growth, these places have disappeared.

Richard Hassell: The students also need places to talk after the lectures, to study in peace, or to relax together. Recent studies show that such spaces are even more important for successful learning than classrooms and lecture halls. That’s why many of the major universities have expansive campuses. We are now bringing such an asset to the university students in this large and crowded Asian city.

The university will significantly enhance the rather poor neighborhood. How do you aim to prevent gentrification of the neighborhood and displacement of the current residents?

Jalal Ahmad: It’s true that we intend to moderately upgrade the neighborhood. We expect that the students will seek housing near the university and this will add new impetus to the neighborhood development.

Sim Choon Heok (WOHA): Gentrification is mainly a problem when poorer residents are displaced from their familiar surroundings. In this neighborhood in Dhaka, however, most of the land parcels are owned by their inhabitants, who stand to benefit from the appreciation.

Wolfgang Kessling: The appreciation of the site on which BRAC University is to be built should serve as an example. We want to show the residents how nice it is to have a clean lake in the neighborhood. We want to show them how useful a park is. Only when you use such areas and get used to them will you see exactly what advantages they bring.

In the spirit of an educational institution, the new BRAC University campus plays an exemplary role not only socially but also technologically. Even though large corpora-
air-conditioned rooms are far more uncomfortable than naturally ventilated ones because of the contrast in temperature. Studies confirm this.

Richard Hassell: Most people think modern ventilation systems mean high-tech mechanical ventilation and cooling systems. Our approach was to achieve better results without hi-tech. That’s why this building is in some ways very basic.

With its low-tech approach, the team aims to trigger a paradigm shift in architecture in Bangladesh. A sustainable construction project of this scale is a novelty in this country. The BRAC University campus illustrates what is possible. The facades of the new building are designed as vertical gardens. The green roof serves as habitat for bees and birds. The total green surface of the campus amounts to 127 percent of the site area. In stark contrast to the former situation, all bio-waste is composted and used as soil.

Despite the hot climate, the building is not mechanically air-conditioned. Instead, the architects rely almost exclusively on natural cooling with the help of porous and green facades, breezeways, shading, and indirect daylighting. Mechanical systems are used only for spaces where passive cooling would be insufficient to provide comfortable temperatures. The cooling modes used are always those that provide the greatest possible comfort with the least possible energy consumption, such as mechanical ventilation or dry misting. Only a few individual rooms are equipped with air conditioning. Precise calculation and thermal zoning allowed the designers to reduce the energy consumption of the building by 40 percent.

The BRAC University building will consume almost 60 percent less electricity than a comparable conventional building.

Considering the prevailing temperatures in Dhaka, won’t it be too hot in the rooms without air conditioning?

Wolfgang Kessling: In Asia there’s a widespread tendency to copy Western notions of comfort and to put in air conditioning systems. But the Asian climate is very different from the European one. When it’s very hot outside, like in Bangladesh for example, air-conditioned rooms are far more uncomfortable than naturally ventilated ones because of the contrast in temperature. Studies confirm this.

Richard Hassell: Most people think modern ventilation systems mean high-tech mechanical ventilation and cooling systems. Our approach was to achieve better results without hi-tech. That’s why this building is in some ways very basic.

With its low-tech approach, the team aims to trigger a paradigm shift in architecture in Bangladesh.
countries like Bangladesh. The new campus building is intended to serve as a model for a locally adapted and sustainable way of building that meets the highest standards of comfort – but also as an example for an enriching and environmentally responsible use of the city’s water bodies and for an appropriate enhancement of neighborhoods.

Your ideas lead to more affordable, energy efficient, and comfortable buildings. What will it take for more architects to follow suit?

Richard Hassell: Before electricity became cheap, these sorts of ideas were standard. The fall of electricity prices changed people’s understanding of good architecture to the point that energy and technology are the default solutions to any requirement. This is considered modern and contemporary. For our approach to become more widespread, what’s needed is a different kind of conceiving architectural form – more like how it used to be, where passive devices are the default and energy and technology only used when this can’t satisfy the needs.

Wolfgang Kessling: But it’s difficult to achieve such a change in mindset, even if our low-tech approach provides better comfort. Many architects design buildings not for the people who use them, but simply according to the prevailing notion of modern architecture. They stick to what’s currently considered modern. That’s why there’s a
Project appraisal by the Global LafargeHolcim Awards jury

Convincing passive cooling solutions

Though the jury applauds the idea of integrating water into the project, the jury’s criticism was twofold: first, the enclosure around the university, isolating the campus from the neighboring context and, second, the destruction of the existing watershed, seemingly only to be replaced with decorative water features. Both concerns were the result of significant design changes since the first phase of the Awards competition that reduce the area and depth of the water on site, add a perimeter fence, and increase the building mass, particularly at ground level. The passive cooling solutions remain convincing but ultimately this is of secondary importance, overshadowed by a design that does not achieve its stated aim of respecting urban water.

gap between the possible – more cost-effective, energy-efficient, and more comfortable buildings – and the more widespread, more expensive, less ecological, and more uncomfortable design forms.

Richard Hassell: But I’m optimistic: The more buildings like BRAC University we build today that deviate from the norm, the more architects will follow our example.

Initial project submission page 230.
“Plants are demanding clients”

Net zero greenhouse for Wellesley College
Wellesley, MA, USA
Greenhouses have a very long history of providing microclimates for plants dating back to the Romans. Nevertheless, they can be completely rethought – as evidenced by the very ambitious project for a net zero greenhouse on a college campus.
In one of his works, the Roman writer on agriculture Lucius Iunius Moderatus Columella recommended covering plants with panes of glass in winter – essentially reducing the exposure to cold and harsh conditions using a greenhouse. From the 16th century, the princely houses of Europe boasted of their orangeries, and soon thereafter the advent of imported pineapple plants gave a boost to the development of greenhouses. The first greenhouse with underfloor heating was built in Amsterdam in 1682; supplemental radiator pipes heated the air. Industrialization ultimately enabled the construction of vast structures of glass and iron, some of which can still be admired today, such as at Kew Gardens in London. Greenhouses have great tradition.

Sheila Kennedy tends to question tradition and likes to develop new solutions to old challenges. Her education has prepared her well for this. She holds a Bachelor of History, Philosophy and Literature, studied architecture at the Beaux Arts Ecole National Supérieure in Paris, and holds a Master of Architecture from the Graduate School of Design at Harvard University. In 1990 she co-founded the practice Kennedy & Violich Architecture with Frano Violich. Sheila Kennedy has worked as a consultant to the United States Department of Energy, the National Academy of Sciences’ Government-Industry Partnerships, and the Vision 2020 National Technology Roadmap. In 2014 she and Frano Violich won a LafargeHolcim Acknowledgment Prize North America for one of their residential projects in Boston.

This time you are dealing with a greenhouse – are they still important these days? Sheila Kennedy: We need greenhouses because they help us understand nature – not to find out how we can best use it for our purposes but to learn how we and everything we build can be part of nature. And we need that in order to survive in the future.

So that’s the purpose of the Global Flora project?
Yes, Global Flora is not only the name of the project but also the name of a unique collection of plants that will find their new home in the new greenhouse. We’ve completely rethought the concept of the greenhouse for this project. Normally, greenhouses are individual buildings, with a level floor, into which an immense amount of energy is pumped in order to achieve the desired climate. We’ve made the greenhouse a part of its surroundings and connected it with the natural forces of the environment. These are used to help create and maintain the desired climate for the plants.

The new structure will replace the outdated and closed Ferguson Greenhouses on the Wellesley campus. The greenhouses were named after Margaret Clay Ferguson (1863-1951), a leading botanist of her time.
Ferguson was a student and later a lecturer at Wellesley College, a renowned women’s college. In 1929 she became the first female president of the Botanical Society of America, and she is recognized for her research on mushrooms, pines, and petunias.

Realizing a project like Global Flora requires more than architectural expertise – it requires knowledge that architects typically don’t receive through their training. That’s why Kennedy & Violich worked with scientific specialists almost daily for four years: geologists, biologists, botanists, and the like. In this way, a broad pool of knowledge emerged – and this allowed the architects and the scientists to learn from each other.

**Great effort for a greenhouse...**

Global Flora is much more than a greenhouse. It is a set of greenhouse biomes that will house plants from very different climates, from hot and dry to humid. In addition, it is a place of leisure, a research site, a public educational facility and, of course, an asset to Wellesley College and the public. This is also reflected in the fact that the costs are being covered by generous donations to the college.

**What makes Global Flora architecturally different from a conventional greenhouse?**

Global Flora is, to the best of my knowledge, the first greenhouse to be designed in vertical sectors. This means that the various biomes are not housed within self-contained, separate units. Rather, all the biomes are under one roof. Although they are separated from each other in order to maintain the climatic zones, there are connections. They share resources such as moisture, and in a sense you can say that they help balance each other. Global Flora is all about synergy, the complete opposite of for instance Buckminster Fuller’s geodesic dome or the Eden Project in Cornwall, which are all about autonomy. The only exception to the synergy concept is the 147-year-old Durant Camellia tree. It has its own greenhouse because we couldn’t transplant it without damaging the roots.

The plants in the biomes range in size from smaller specimens in the arid zone to much larger plants in the humid climatic zone. The height of the building varies accordingly – not in steps, but with a sloping roof. The
whole building is curved and follows the course of the sun, a source of light and energy which is essential to the project.

Water management is decisive for the sustainability of any greenhouse. Plants use water efficiently but are sensitive in terms of quantities. Global Flora uses ten liters of water per square meter of floor area per day. This volume, which is considerable in terms of annual consumption, is mainly provided by rainwater. The water is collected from the roofs of the greenhouse and the Science Center, stored in cisterns, and filtered.

The amount is enough to cover the entire watering requirement. There’s even surplus that can be used for toilet flushing, outdoor irrigation, and maintenance.

Cooling and heating of the building also meet the highest standards of sustainability. The heating system relies on 14 geothermal wells. Cooling is passive and energy-neutral and is done by natural ventilation, solar-powered fans, and water elements integrated into the architecture. Passive heat pumps and air exchangers between the biomes help the various climate zones cover each other’s needs.

With these water and energy concepts, Global Flora is designed to meet the requirements of the Living Building Net Zero Challenge. Probably the world’s most stringent sustainability certificate, it was launched by the International Living Future Institute in 2006 and covers every aspect of sustainability – and not just once for initial certification; it requires annual renewal.

Was this extreme sustainability concept planned from the start or even required by the client?
No, it wasn’t part of the original project brief, and it wasn’t our initial intention. But after working with the scientists it became clear that we could achieve Living Building status with this project, so we decided that we wanted to fulfill these stringent criteria.

For what reason?
There are many certifications for sustainability. But typically they are not really rigorous and comprehensive. They require that something detrimental be made less detrimental. For example, instead of 10-liter toilet flushes,
And we studied how the energy flows within the greenhouse. Of course no pesticides will be used. We will have geckos to control pests – and pollinators for plant propagation. I think there will be a learning phase during which we can fine-tune things until every-5-liter flushes are used. But in the long run, that’s still not enough. True sustainability doesn’t mean consuming the least possible resources but no net resources at all. And that’s precisely the point of the Living Building Challenge.

What did you learn by working toward these goals?
That high-tech is not the only way to achieve success! We almost accidentally discovered very old strategies that we combined with modern materials. And this led to some fantastic results. For example, we used stone and large wall thicknesses to store and slowly release heat inside – something that has been done practically since the Stone Age. We combined this with state-of-the-art ETFE cladding, which can be opened in summer, minimizing the operational energy we need.

ETFE, ethylene-tetrafluoroethylene copolymer, is an extremely durable derivative of PTFE, better known as Teflon. ETFE foils are lightweight and boast high light and ultraviolet ray transmittance, making them an ideal material for greenhouses. Since ETFE is very robust and resistant to a variety of aggressive chemicals, it is a preferred material for use in large buildings, for example, the exterior skin of the Allianz Arena in Munich or the Beijing National Stadium, also known as the Bird’s Nest.

The Global Flora project works with nature and for nature, which entails some inherent risk factors …
That’s true, plants are demanding clients! And the scientists’ main concern was of course whether Global Flora would work as we expected – especially since we are doing something completely new and we have no empirical values to base things on. So, for example, we’ve created many energy models to predict how much energy is needed where.
thing is perfectly coordinated. However, as with any new approach, there’s always some remaining risk.

But you can plan to minimize that risk. Exactly, and that’s what we’ve tried to do with the participatory approach, which included botanists who know the plant collection inside out. For our better understanding we made physical and digital models of all the existing plants. For the better understanding of all the non-architects in the development process, we made physical models that made clear what we were talking about. In this way, everyone could contribute their thoughts on every topic. There’s no magic to participation. It only requires that everyone really wants to work together!

Global Flora is scheduled to open in spring 2019 – not only for the scientific community, but also for the public. The greenhouse will provide a learning platform because it produces “knowledge in real time” about the condition of the soil and the air, about plant root growth, and about relative humidity – and not only for visitors on the premises but for anyone interested around the globe, thanks to the internet.

Scientists around the world will surely welcome so much useful data provided by the bio-feedback sensor platform. It will allow biological processes to be tracked over long periods of time without requiring the constant presence of a researcher on site.

“Use design aesthetics to get the public on board” Sheila Kennedy
And what does sustainable construction gain from this project?
If we succeed in designing something in this extremely sustainable way in which nature grows and thrives, we can apply it to all other architectural tasks. At the same time – as we all realized during the design process – we must not forget how important the aesthetic aspect of such a project is. This has all too often been neglected in the history of sustainable construction. But if we really want to start a cultural paradigm shift toward a sustainable existence, we must deal with more than pragmatics. We need to use design aesthetics as a tool to get the public on board.

Project appraisal by the Global LafargeHolcim Awards jury

An ethereal machine for education

The jury appreciates the elegant resolution of the project and its thoughtful, detailed presentation. Through explorations in material and technology, the design creates an ethereal machine for education. Despite the mastery on display, the jury ultimately concludes that the uniqueness of the proposal has limited possibilities for wider application. The jury feels discomfort with the idea of giving a Global Award to a building type whose origins are deeply colonial and a project whose central aim is to maintain non-native environments. Further, technical members of the jury observed that the technology being applied, though novel in a North American context, had been previously applied in other parts of the world.
Pillars of sustainable development

Two projects in the Canal Zone of Brussels, Belgium
The Canal Zone in the Belgian capital Brussels is a district full of problems. A comprehensive master plan is helping to break vicious circles here – and finally exploit unused potential.
“A good mix is more important for sustainability than highly technical aspects” Kristiaan Borret

Like many other big cities, the Belgian capital owes its existence to its waterfront location. Brussels was founded in the tenth century on an island in the Zenne, and this island was the last point accessible by ships traveling upstream. The name of the city reflects the location, being composed of the Old Dutch words bruoc for marsh and sella for home or room – so “Brussels” means home in the marsh. Major medieval transport routes intersected here and traders and craftsmen began to populate the region. By the 13th century, Brussels had become a key manufacturing site, and the river provided the energy for the emerging textile and food industries.

But the course of the Zenne, which meandered wildly in places, was unfavorable for travel by ship, so the river was canalized early on. The Willebroeck Canal opened in 1561, connecting Brussels with the seaport Antwerp to the north and reducing the waterway distance between the cities from 90 to 30 kilometers. As industrialization accelerated rapidly in the 19th century, it was decided to extend the old Willebroeck Canal, under constant repair, southward as far as the Charleroi region, rich with coal deposits. The Charleroi Canal was opened in 1832. The two canal arms and the impressive port of Brussels allowed the city to become an industrial hub.

The Belgian capital was hit particularly hard by the deindustrialization of Europe, which began in the 1970s. Brussels had to reinvent itself – and made a successful transformation from an industrial into a service center. Today, for example, the headquarters of the European Union and NATO are here. But there were also losers in this transformation. Tens of thousands of industrial jobs were lost, affecting mainly less-skilled workers who had poor chances of finding another job.

“A good mix is more important for sustainability than highly technical aspects” Kristiaan Borret
The formerly bustling canal district gradually declined, and those who could afford to move away did. Symptomatic for the change of a previously flourishing district into a post-industrial no-go area is Molenbeek. In recent years, Molenbeek has repeatedly been in the headlines as a hideout for terrorists.

The migrant riots of 1991 made it clear how dire the need for action had become. Ever since then, there have been numerous attempts to upgrade the run-down districts of Brussels and to break the vicious circle of infrastructure deterioration, unemployment, and crime. The most significant and to date most successful action plan is the Canal Master Plan, launched in 2012 by the government of the Brussels-Capital Region. It pursues multiple targets in the Canal Zone. First, economic activity should be preserved and better integrated into the urban context. Second, new housing of all types should be built in response to the strong population growth. Third, attractive public spaces along the canal should be built to enhance the district. And fourth, especially in this zone, Brussels should prove to be an open city with a diverse mix of citizens and uses. A good mix is considered an essential pillar of sustainable development.

These goals are being pursued through a number of individual projects being conducted jointly by the public and private sectors. The plan focuses on an area of 700 hectares, of which 300 hectares is in public hands. The government has put together a team that is driving the implementation of the plan with other government agencies, the private sector, and the business community. Head of the overall revitalization since 2014 is the city’s chief architect Kristiaan Borret. The architect-engineer, who also studied philosophy, was previously chief architect for the city of Antwerp. “Brussels urgently needs more living space,” he says. “We want to achieve urban renewal in the Canal Zone without displacing all of the local port and industrial activities. Industrial activity is as much a part of the city as new construction projects and public spaces with shops, bars, and restaurants.” He is convinced that a good mix of uses will lead to a more resilient city: “In my opinion, a good mix is more important for sustainability than highly technical aspects.”

Tom Sanders, Director of the Department of Territorial Strategy of the City of Brussels, agrees: “Our Canal Master Plan is a philosophy. It is the unification of all aspects of urban design and planning, social and public spaces, mobility, business, and the environment.”

Currently, the Canal Master Plan, which is a prime example of a holistic way of seeing everything in the urban context, is conceived with a planning scope of ten years. Kristiaan Borret: “This is a long-term project involving many parties, and that’s why we need a special kind of planning: We define clear principles – but we also give a great deal of flexibility. The goal is clear, but the way to achieve it must evolve.” It’s clear that decades of decline cannot be reversed in short order with a few good ideas. It takes meticulous, detailed work. The two projects in the Canal Zone that won the LafargeHolcim Awards Gold ex aequo Europe are a testament to the careful and far-sighted implementation of the Canal Master Plan. In this troubled urban context, there is now reason for optimism for the first time in a long while.

“Canal Master Plan is a philosophy”

Tom Sanders
As generic as possible

Adaptable structure for a garbage collection company

One focus of the Canal Master Plan for Brussels is infrastructure facilities and logistics processes. These should be neither hidden away nor expelled from the city, but integrated into the urban fabric. TETRA architecten demonstrates how this works with their design for a new garbage truck depot.

In order to handle all these tasks, Net Brussel not only needs a lot of personnel – over 600 people work in the cleaning department – but also a fleet of around 200 large vehicles. The company also needs a large number of medium and small vehicles of various sorts. These are cleaned, maintained, and refueled at several depots strategically located throughout the city.

Each of the nearly 1.2 million inhabitants of the Brussels-Capital region produces an average of 1 kg of waste per day. Net Brussel has been tasked with collecting, processing, and disposing of this waste since 1990. The Brussels-based company is also in charge of keeping the streets and sidewalks clean.

“The goal of the redevelopment plan is not just beautification”

Jan Terwecoren

“It’s important to us to design a resilient building”

Annekatrien Verdickt
The Brussels-based firm TETRA architecten was founded in 2012 by Annekatrien Verdickt, Jan Terwecoren, Lieven De Groote, and Ana Castillo. Annekatrien Verdickt studied architecture at the Sint-Lucas Brussels School of Arts, where she graduated with a master cum laude. Architect and engineer Jan Terwecoren received his master’s degree from Ghent University and subsequently worked in various offices as an architect and engineer before joining TETRA architecten.

Lieven De Groote studied architecture at La Sapienza Università di Roma and at Ghent University. He then worked as an architect for three years at S&Aa Soriano y Palacios arquitectos in Madrid, before returning to Belgium, where he worked for seven years for Coussée & Goris architecten. Ana Castillo studied architecture and urbanism at the La Sapienza Università di Roma and the Universidad Politécnica de Madrid and worked at different projects in Spain, Brazil and Belgium before joining TETRA architecten. TETRA architecten has previously been successful with their work in the field of waste handling – winning an Acknowledgment prize at the regional LafargeHolcim Awards Europe 2014 with their project “Construction materials recycling and logistics hub” in Brussels.

Your project is part of the redevelopment plan for the Brussels Canal Zone. Were you directly approached because of your experience in waste-management projects?

Lieven De Groote: No, it was a two-stage competition. The first phase of the competition was open to all interested architectural offices who were invited to submit their portfolio and present a motivation note for the project. Based on this, the city’s chief architect selected five teams to elaborate their projects in the second phase.

Why is the Brussels Canal Zone so important?

Jan Terwecoren: The canal is still part of the city’s infrastructure. It is also still in use as a transport route for goods, because it reduces truck traffic in the city – and it should remain like this. The central location in the city makes the canal and the Canal Zone important elements of the urban infrastructure. That’s why the goal of the redevelopment plan is not just beautification of the canal district but much more pragmatic aspects such as logistics, business, and residential infrastructure.
Logistics systems are essential for a functioning city. And these, according to the chief architect of Brussels, should not be outside the city but located as centrally as possible. That creates jobs, which in turn enhances the attractiveness of housing in the center.

These logistics systems include waste disposal. With their Award-winning project, TETRA architecten is realizing a large depot for Net Brussel – a center where vehicles and employees constantly swarm in and out.

Is the depot also a garbage collection center? Ana Castillo: No. The central waste collection center is on the other side of the canal. The depots are located at the center of their respective operating zones, because waste collection is carried out not only by large garbage trucks but also by hand trolleys and other smaller vehicles. That’s also why there’s no central large depot at the garbage collection center.

What are the specific elements of your project? Lieven De Groote: We are realizing a completely new building. The program mainly includes garbage truck parking, service bays, offices, locker rooms and showers, a canteen, and a gym.

“We wanted to make the building as generic as possible” Jan Terwecoren
Around 100 vehicles of all types and sizes will operate from this depot. In order to accommodate two-shift operation and use the available space as efficiently as possible, the architects decided to invert the conventional layout: Instead of designing a central building with green space around it, the new depot will be an elongated perimeter building surrounding an atrium park. This will be accessible to the public and thus serve as a link to the adjacent residential neighborhood. A ramp leads the garbage trucks to the roof of the office building, where the parking area is located. The heavy loads of the trucks are supported by a waffle-slab reinforced concrete roof deck.

A central aspect of the project is that the processes of collecting and handling the waste are not hidden away but readily visible to everyone: The garbage trucks park on the roof, and the cleaning and maintenance of the vehicles is done in open garages. In this way, a connection to the surrounding neighborhood and acceptance of the normally hidden logistics operations can be established. This should help interlink the canal, depot, and neighborhood with one another.

The focus of the Canal Master Plan lies not on defining a single desirable end state for the future of the Canal Zone; rather, it’s much more about uniform dynamic processes. What if this momentum were to make your USD 9-million project superfluous at some point?

Jan Terwecoren: Of course we have given quite a bit of thought about what function and position our building can have in this process. The building presently serves Net Brussel – but that won’t necessarily always be the case. That’s why we wanted to make the building as generic as possible, to enable all sorts of potential changes in the future. We call this the resilience of a building.

Architects always promise flexibility, but is it really delivered in practice?

Jan Terwecoren: Of course! Every city has
buildings that are 50 years old or more and are being used for purposes other than their original function. Their structure is so flexible that they don’t have to be demolished. With relatively simple architectural modifications, these buildings can be adapted to the changing urban situation and used further.

In order to illustrate the resilience and theoretical flexibility of their project, the architects developed a sort of scale showing various usage scenarios. It turned out that industrial uses such as gas stations or recycling centers, or even event facilities, are just as compatible with the current structures as residential-related uses such as restaurants, apartments, and daycare facilities. Between these extremes, say the architects, the current use is closer to the industrial end of the scale.

The architects integrated many elements into their project that contribute to the sus-
Project appraisal by the Global LafargeHolcim Awards jury

Public park in the midst of a facility dedicated to an industrial function

The jury appreciates the clear representation and marked development since the regional jury, which moved the project from a scheme to a design ready to be built. In doing so, the authors have emphasized the project’s function at the time of construction, losing the thread of a compelling narrative that claimed the adaptability of the framework over time. The jury would have appreciated additional detail showing how transformation from garbage collection to future needs could be achieved. This said, members of the jury greatly welcomed the idea of integrating a public park in the midst of a facility dedicated to an industrial function within the urban context.

Annekatrien Verdickt: Of course it’s important to us to design a resilient building. And of course we also always have the future in mind. But we must consider a new building not only in such terms. The most important thing is: It’s good today. That’s why we always ask ourselves how we can make each project with its very specific functions as sustainable as possible. We want it to be a valuable contribution to the development of the city – and we want the people who work or live there to feel comfortable using it.
That simply belongs here!

Urban integration of an existing concrete mixing facility

A concrete mixing plant in the heart of the city? That actually makes complete sense, because short transport routes are efficient and more sustainable. With their ambitious project in Brussels, a team of young architects has shown how to make an industrial facility suitable for its neighborhood – and how to secure added civic benefits as well.

The Brussels-Capital Region comprises 19 different municipalities. Almost all of them are growing. In 1990, 960,000 people lived in the region; today the population is around 1.2 million. The demand for new apartments and additional infrastructure is therefore high – and construction activity accordingly strong. The residents grudgingly put up with the many construction sites that impede traffic and generate significant noise and other impacts. In Brussels, as in any prospering city, it’s important that construction work be carried out as efficiently as possible.

One resource that contributes to this efficiency is the concrete plants of the Canal Zone. They are close to the center, so the concrete trucks shuttling between the plants and construction sites have relatively short travel distances. As the batching plants are located directly on the canal, the hundreds of thousands of tons of raw materials needed annually can easily be delivered by barge. But the location has disadvantages along with the advantages. Concrete plants create noise, traffic, and dust. Because more and more residential buildings are being erected in the immediate vicinity, more and more people are being annoyed by such an industrial presence. For instance, the multi-building residential complex Up-site is also located on the canal.

“Concrete should not be mixed too far away from the construction sites”
Ken De Cooman
is a 142-meter-high residential tower, the third highest skyscraper in Belgium, and the highest residential building in the country. One problem is that dust from the concrete plants settles on the balconies of the Up-site apartments – which leads to complaints.

The site of the concrete plant whose conversion project won a LafargeHolcim Awards Gold ex aequo Europe is owned by the Port of Brussels. In line with the Canal Master Plan, the port authority requested the plant operator to better adapt the general facility to its location – otherwise, the license to operate would be terminated. The operator’s planners called not only for measures to control noise, traffic, and dust but also for additional measures to benefit the city: Beyond its industrial function, the concrete plant should enrich urban life in some way. The operating company then conducted a two-stage idea competition in collaboration with the Brussels chief architect. In the first stage, architectural firms could submit a portfolio of their work, and four of them were selected to develop their proposal. The winning project was selected from these four proposals. It was by BC architects & studies, a firm founded in Brussels in 2012. The project team consists of the four partners Wes Degrefe, Ken De Cooman, Laurens Bekemans, and Nicolas Coeckelberghs as well as four other employees working in Brussels and Addis Ababa on projects in Belgium, France, Ethiopia, Burundi, Nigeria, and Morocco. The office was already well known to the LafargeHolcim Foundation. In 2014, in the fourth cycle of the LafargeHolcim Awards competition, the firm had won an Acknowledgment prize for its sustainable office building in Ethiopia.

Was there ever any discussion about relocating the concrete plant from its present location? After all, more and more people are moving into the neighborhood.
Ken De Cooman: No, it was clear from the beginning that the plant should remain where it is – provided the problems it is connected with can be solved. In order to keep travel distances short, concrete should not be mixed too far away from the construction sites. And don’t forget that large construction projects require a lot of concrete – and this is usually delivered by truck. Having the batching plant close to the construction sites is more sustainable than hauling concrete over long distances: this approach combined with extensive use of barges for the delivery of raw materials reduces the number of total truck movements in the area by many thousands each year.

Wes Degreef: But there are also other reasons for keeping industry in the city. It creates identity. Industry has always been at home on the canal. The concrete plant is part of a living heritage that has shaped this place and it simply belongs here. The plant tower is a genuine landmark for the neighborhood.

Laurens Bekemans: I also think that visibility is important. The residents of a city should be able to see how it works – because only then can they understand their environment.

But it will never be possible to make everything that contributes to the functioning of a city visible.

Laurens Bekemans: Of course you can’t keep industries in the city that are incompatible with modern urban life. A coal-fired powerplant for example has no place in a city. But in our case, it’s a ready-mix concrete plant that is ideally located. Nothing is burned here, and there are no dangerous emissions – the only drawbacks are the noise, traffic, and dust.

In a ready-mix plant like the ones in the Canal Zone, the various concrete constituents are transported via conveyor ramp into a tower-like structure, mixed with water, and then filled into trucks that pull up beneath the tower. The sand needed for making the concrete is stockpiled outdoors, and various operations are conducted in the open air. At this concrete plant in the Canal Zone, vehicular circulation is less than ideal because the trucks must use the public roads more than they should. When transferring from
the washing area to the filling station, they must exit the site, drive a short distance, and re-enter the site at another gate.

**How did you solve these multiple problems?**

Nicolas Coeckelberghs: We came up with a design with better circulation routes. The mixing tower is now at the center of a circular layout, and the trucks leave the site only when they are full.

Ken De Cooman: To get the noise and dust under control, we designed a large canopy. Of course other participants in the design competition also had similar ideas. You can’t absorb the noise, you have to cover it.

Wes Degreaf: The special thing about our proposal is that we’ve integrated a public function into our canopy. We didn’t just place a lid over the noise and dust, we covered the entire facility. The structure also houses the plant’s office tract, so the small office building on the site can now be demolished.

Laurens Bekemans: The spaces provided by the canopy are huge, and the offices need only part of it. The rest is available for public use.

**So this space is the requested additional amenity for the city?**

Nicolas Coeckelberghs: Exactly. We could have done something else, like beautify the tower, or many other things, but we decided to design a venue.
Are there other ready-mix plants in cities that have been given a similar treatment?

**Ken De Cooman:** We researched that, but found none. At most sites there are no similar needs related to emissions – and no reason to integrate additional public amenities.

A special challenge of this project was the client’s requirement to continue plant operation without interruption during the con-

The canopy doesn’t completely seal off the noisy parts of the plant. Will it reduce the noise emissions enough?

**Wes Degreé:** The construction is in fact quite open. To be on the safe side, we brought an acoustics engineer to the team who calculated all the key values based on site measurements. There will still be some noise, but nothing in comparison with today’s situation.

The space is 5 meters high with a floor area of 1,000 square meters. How it is to be used is not yet clear. The team of BC architects & studies has many ideas: You could set up a concert hall or an ice rink. The important thing is simply that the building be used publicly – and thus contribute to vibrant neighborhood life. There are few such meeting places today in this fast-growing district.
The jury was sorry to hear that the planning team decided not to submit further development of the project for the Global Awards. Respecting the wishes of the project team, the entry received no further consideration.

Construction phase. With the design proposed by BC architects & studies, this requirement can be met because the canopy doesn’t require extensive foundation work, and most of the construction work will take place high above the trucks. Another notable feature of their concept is the new walls around the sand stockpiles, which act as windbreaks and control airborne dust. They are made of recycled concrete and thus ideally symbolize the circular-flow economy that Brussels committed to just a few years ago.
“A micro-Bilbao effect!”

Learning center, Bandung, Indonesia
How do you get people to make use of books? By bringing the books to them. And by building libraries that attract people like a magnet. With its concept of micro libraries, the architects demonstrate how this is done – in Indonesia or anywhere else in the world.
“Diversity is a better way to build awareness” Daliana Suryawinata

Daliana Suryawinata and Florian Heinzelmann are probably just what you would picture as a modern cosmopolitan couple. They would likely feel at home anywhere in the world. Both studied architecture in their native countries: Daliana Suryawinata in Jakarta, Indonesia, and Florian Heinzelmann in Munich, Germany. They went on to receive their master’s degrees at the Berlage Institute in Rotterdam, the Netherlands, where they met and became a couple. In 2009 they founded the practice of SHAU – together with Tobias Hofmann – which has established offices in Bandung, Passau, and Rotterdam.

You work in the Netherlands, but have always maintained close ties with Indonesia.
Daliana Suryawinata: Yes, we joined the Indonesia Diaspora Network (IDN). It’s made up of dedicated people of many disciplines who live abroad and want to make a difference in their homeland. Our network grew mainly when I became a curator at the 4th International Architecture Biennale in Rotterdam in 2009.
Florian Heinzelmann: This network opened up new and unimagined opportunities for us. In 2012 the IDN met in Los Angeles, and we wanted to present our work there. By serendipity, we shared our taxi to the venue with the president of the Muslim charity organization Dompet Dhuafa – Pocket for the Poor. During the short ride we had time to introduce him to our idea. We used those five minutes – and we managed to gain Dompet Dhuafa as a sponsor.

And what was that idea?
Daliana Suryawinata: Our vision is to build small public neighborhood libraries all over Indonesia, creating an impactful network of micro libraries. They should be located where the people are, for example in parks or public squares.

Where did this idea come from?
Florian Heinzelmann: At SHAU, we don’t...
“We don’t wait for clients to commission us”

Florian Heinzelmann

wait for clients to commission us. We look around and see where the problems are – and then we look for solutions and opportunities to implement them.

Daliana Suryawinata: According to Price-waterhouseCoopers, Indonesia will be one of the seven largest economies in the world by
2030. But there’s a big education problem; millions of Indonesians are still illiterate. We have to address that problem. We noticed a big difference in how books are dealt with in the Netherlands and in Indonesia. In Rotterdam we took our little son to the library all the time. Children grow up with books there. In Indonesia, such a culture does not exist.

**Libraries win prizes in the LafargeHolcim Awards competition again and again. But the book is constantly losing importance in the digital age. Libraries are closing everywhere, and book sales have been shrinking dramatically for many years. Is it some sort of nostalgia that architects are constantly designing new libraries?**

**Florian Heinzelmann:** If you don’t do something about it, the trend will just grow even stronger! We are convinced that books will continue to play an important role and that they fulfill a need. This conviction is supported by our experience with the first micro libraries: Children come and read. They are too poor to have their own books, but if they have access to books, they read them.

**Daliana Suryawinata:** We don’t just want to bring books to the people with the micro libraries but also to create a place for interaction and educational opportunities.

**Florian Heinzelmann:** We have no illusions about the importance of books and media consumption. But we’ve developed a strategy: When we find a place that is frequented by people and suitable for it, we want to put a library there. We surround people with books! Maybe some kids will be playing soccer next to the library, and at some point the ball rolls between the stacks and the children have to go in and fetch it – that might be how they get in contact with books. We bring books to the people!

SHAU has defined an ambitious target: to create 100 micro libraries throughout Indonesia. Of course, this is just a number, but it shows that the network should be substantial – with the advantage that synergies can be exploited. The mayor of Jakarta once said he wanted 100 shopping malls in his city; 100 micro libraries would be a fitting cultural counterpart. The surprising thing is that SHAU wants to custom design each of the 100 micro libraries.

**Why don’t you just design a prototype that can be copied?**

**Daliana Suryawinata:** We think a micro library can trigger a micro-Bilbao effect – just as the Guggenheim Museum makes the city of Bilbao unique, so too should our micro libraries make their locations unique. Of course it would be easier to use the cookie-cutter method, but diversity is a better way to build awareness. People of a neighborhood like it when they get something that’s found nowhere else. That makes them proud.

**Florian Heinzelmann:** But when we think
about big numbers, the question naturally arises, how do we get to it: 100 micro libraries! It’s not easy to find good contractors who will build our designs with the quality we want. If we could prefabricate certain elements, we could eliminate the worry about always needing to find capable partners. So now there are two approaches: custom designing each project or using modules that can be assembled.

**If you could design 100 different micro libraries, your office would probably be fully booked indefinitely …**

Florian Heinzelmann: Yes, cool, right? That would be a dream job. But we could not live off the micro libraries. Although we’re not working pro bono, our expenses are far from being covered. And the individual projects always remain quite uncertain for a long time – especially with regard to financing.

87 percent of Indonesia’s over 260 million inhabitants are Muslim. The religion requires them to pay zakat – a tithe to the needy.

Charitable organizations and projects for the poor therefore find it somewhat easier to get funding in Indonesia than elsewhere. Nevertheless, it was not easy for SHAU to finance and realize their first micro library. That was also because no suitable place for the building could readily be found. The first project was finally realized in Bandung, in the provincial capital southeast of Jakarta, where Daliana Suryawinata and Florian Heinzelmann have been living with their nine-year-old son since 2015. The mayor of Bandung, Ridwan Kamil, is an architect himself, and he was roused by the enthusiasm of his colleagues. The library was thus built with the support of Dompet Dhuafa, the City of Bandung, and the Indonesian Diaspora Foundation.

The first library “Taman Bima” was built on a pre-existing stage in a public square. The building protects and shades the previously open-air stage. It consists of a structural steel frame, concrete floor and roof, and walls built of 2,000 recycled plastic ice-cream containers. The plastic containers were installed in such a way as to provide pleasant lighting and natural ventilation in the library. The micro library is well used. For instance, classes from a nearby school visit every day.

“We bring books to the people!”

Florian Heinzelmann
The “Taman Bima” library is funded by a Muslim charity organization. In Indonesia religion plays a big role. Does this influence the selection of books that are available?

Daliana Suryawinata: Indonesia is a religious country and you have to accept that when you work there. Of course many religious books are found in the libraries. But you can also find everything else that belongs in a library – right down to Harry Potter. Many books are donated by the Diaspora.

The success of this first micro library encouraged the participants to realize a second facility of this kind in Bandung – and to take advantage of the experience gained through the first project. “Taman Lansia” is a simple low-tech box made of concrete, whose permeable facades allow cross ventilation. “Taman Lansia” was much easier to erect than the micro library “Taman Bima,” which, although spectacular in appearance, taxed the skills of the local craftsmen to their limits. The Lansia library also has a public prayer room and public toilets as well as the possibility for the “librarian” to sell snacks and drinks. Since he or she is not employed by the city, the librarian is able to generate income.

More projects are already in the pipeline: the “hanging garden library,” a sort of large staircase made from planter boxes with a rooftop viewing platform, and the “Fibonacci micro library,” which SHAU submitted for the LafargeHolcim Awards competition and was winner of the Asia Pacific Silver Award. The “Fibonacci micro library” is undoubtedly the most powerful design in the series so far. It is a pavilion made of lightweight concrete, open on all sides, and is therefore very inviting. It doesn’t look like a library at all, but rather a structure of open and semi-open spaces that cannot be fathomed at first glance – a place where every visitor finds their retreat for reading.

“Vandalism is not a big problem”

Daliana Suryawinata

The four columns of the building consist of ribs arranged in a Fibonacci spiral. This corresponds roughly to the “spiral of the golden section” and displays an intrinsic beauty. The columns house the functions of the pavilion: the library, the toilets, the prayer room, and a small kiosk. Thanks to the green roof and a green carpet, the pavilion visually harmonizes with the park in which it stands. The clever design ensures that the “Fibonacci micro library,” will be at once a beacon for...
the park, a public furniture installation, and a practical building.

**Can the pavilion be closed and locked to protect it against vandalism?**

**Florian Heinzelmann:** Yes, the columns are designed so that the different functional areas can be locked, although the pavilion appears very open.

**Daliana Suryawinata:** Vandalism is not a big problem – because the supervisor will sleep in the library, in the prayer room. We also provided a kiosk so that this person could earn something by selling coffee or noodles.

**100 libraries – that’s quite ambitious. But why are you limiting yourselves to Indonesia?**

**Florian Heinzelmann:** We’re not! We’ve already received a request from Latin America. The concept of micro libraries can be implemented anywhere – and it should be implemented everywhere!

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**Very compelling network of libraries across the region**

Although the jury supports the idea of a network of libraries at a territorial scale, the individual libraries pursue architectural agendas that are not always aligned with what a library needs, including a lack of enclosure and moss ceilings. The map of a network of libraries across the region is very compelling but ultimately leaves the jury wondering what beyond the map actually constitutes the network. Though the play between “the specific” and “the generic” could have informed the project, the scheme’s design specificity seems to overwhelm generic considerations such as a common architectural elements, library logistics, or infrastructure systems – all simply not addressed by the proposed project and left invisible.
Temporary 2.0

Adaptive reuse for refugee education
El Marj, Lebanon
The energy and raw materials used to create a building are substantial, so finding ways to extend building life or reuse materials are becoming a critical element of the sustainability of design. The architects reused a pavilion from Expo15 in Milan as a school where no permanent structures are permitted. The intervention greatly improves the living conditions in a refugee settlement in Lebanon.
A protracted civil war has been raging in Syria since 2011. But calling it a “civil war” overlooks the significant cross-border impacts of the conflict within the region and beyond. To date, the conflict has claimed about half a million lives, and about 12 million Syrians have been forced to leave their homes. According to the UN, the refugee crisis caused by this war is the largest since the genocide in Rwanda in 1994.

A large number of Syrians have fled to Lebanon. There are good reasons for this: Nearly all of Lebanon’s borders are shared with Syria, so the two countries are geographically interconnected. Many Syrians have relatives in Lebanon, and they can communicate there in the same Arabic dialect; unlike in Turkey, another frequent destination of the refugees. Lebanon now has the world’s highest per capita number of refugees: 1.5 million refugees to 4 million inhabitants.

The call for refugees to return to their homeland is getting louder – but of course no one would voluntarily return with their family to a war zone. Because the authorities and the government don’t want the situation to escalate, the refugees in Lebanon are merely tolerated; new refugees no longer receive legal status. Nothing should give the impression that more Syrians are settling permanently in Lebanon. That’s why permanent buildings are no longer allowed in the innumerable refugee camps. Newly arriving refugees live in tents. They set them up on land they rent from private owners – for whom they also work in many cases, usually for low wages, for instance in the agricultural or construction industry.

People in the temporary camps of course strive to live a normal life too. And it’s not that Lebanon doesn’t support them. For example, the authorities want to see that the children and adolescents attend school. The older children are taught in public schools – in the afternoon, after the local students have gone home. Education is the key to their future. If today’s generation were to grow up without education, a future catastrophe in Lebanon and Syria would be inevitable. The many NGOs that organize schooling for the children in the camps must therefore follow state requirements.

One of the NGOs providing education in the refugee camps is Jusoor, founded by Syrian expatriates. It runs a school in the Jarahieh refugee tented settlement, which is located in the town of El Marj in the Bekaa Valley, Lebanon’s main agricultural region, and one with a fairly harsh climate. The settlement is home to around 300 families with well over 1,000 children. Here arose Jusoor’s contact with the NGO CatalyticAction, which is based in London and led by a team including the young architects Joana Dabaj and Riccardo Conti.
How was CatalyticAction formed?

Riccardo Conti: When I studied architecture, it became clear to me that people are the central focus. I don’t just want to design, but to improve people’s lives. I started by working in Kenya for an NGO, I then went to London to complete my studies at University College London. That’s where I met Joana, who was also doing her master’s studies there.

Joana Dabaj: I am Lebanese and my mother is Syrian, so I feel a strong connection with the situation of Syrian refugees in Lebanon. We started CatalyticAction with the aim to make a difference. Our first project was a children’s playground in Bar Elias, a small town in the Bekaa Valley of Lebanon. We financed this playground through a crowdfunding campaign.

Riccardo Conti: In our projects, we use our architectural and community engagement expertise. Our goal is not to leave our signature on the project; but rather, our concern is with space and people – ultimately a much larger framework. We believe that small changes can result in a big impact.

And what do you get out of it?

Joana Dabaj: My father recently asked me the same question! When we were in Lebanon for the Jarahieh school project, I didn’t have time to visit my family, even though they live in Lebanon, so my parents came to the school site to visit us. And they saw how happy our project made the people – and how demanding but rewarding our work is. We learn a lot every day, and the challenges make us grow.

Joana Dabaj and Riccardo Conti first visited the Jarahieh refugee settlement in December 2015. They saw the poor conditions of the tented school. The school consisted of two tents with barely enough space for the children. The tents were sweltering hot in summer and bitter cold in winter. Jusoor and CatalyticAction discussed the options for building a better school – with the restriction that no permanent building is allowed.

Fortunately for the initiators, the universal 2015 Milan Expo had just come to an end. For such major events – for example also the Olympic Games – many buildings are erected that have no purpose after the event. In recent years, there have been more and more attempts to stop this obvious waste of resources.

The master plan for Milan Expo required the exhibitors to remove their structures after the event. The NGO Save the Children Italy, one of the world’s largest independent children’s rights organization, did not want to simply demolish the open pavilion of their small expo village but to reuse it elsewhere. Together with the Milan-based architectural office “Argot ou La Maison Mobile”, AOUUM,
“Every design decision must reflect our goals as a charity”  Joana Dabaj

which had designed the expo village, Save the Children Italy began seeking opportunities. One of the founding partners of AOUMM, Luca Astorri, had been a consultant for CatalyticAction. Save the Children Italy had the pavilion and CatalyticAction had the project. Everyone was immediately taken with the idea, and Save the Children Italy not only donated the material but also paid for the shipment of containers.

The Milan Expo village of Save the Children had no enclosure walls, so only the wooden frames of the structures were shipped. Was that worth doing? The distance was 2,600 kilometers.

Joana Dabaj: Yes, the structure is very good quality wood, that is not found locally produced in Lebanon. The material shipped is worth around USD 250,000; the transport cost just USD 4,000.

But wouldn’t there have been another use for the structures in Italy? There are, for example, earthquake areas with major infrastructure problems.

Riccardo Conti: Needs are everywhere, and sooner or later one certainly could have found an application in Italy. Save the Children wanted a good, pragmatic, and fast solution that aligns with the NGO’s mission, and the project was an answer to that.

The open structure had to be adapted for its use as a school. The leading global engineering company Arup provided pro bono consultancy to CatalyticAction. The building layout was adapted and the building envelope and structure were designed. The school had to be insulated. CatalyticAction developed a sustainable and context specific solution for the insulation: a sandwich OSB
Riccardo Conti: Yes, from the local municipality of the community, and the army. It was not easy to bring the two shipping containers with the material to the settlement, but we received valuable support from Save the Children Italy. And the local municipality put no stones in our way; on the contrary, we were even allowed to connect the school’s toilets to the municipal sewer.

Joana Dabaj: We also had discussions with the community about how the school building could be used in the future. It could continue to serve as a school or could become a community center. Or we could possibly dismantle it and reuse the material elsewhere.

How are the camps organized?
Riccardo Conti: The government appoints a community leader from among the refugees. We have to work with the community leader. We spent a lot of time in the settlement, a total of four months straight, and then of course you realize who has the say informally and

Is wool a typical insulation material in the region?
Joana Dabaj: No, the wool from the local sheep farmers is not generally used as insulation; it is rather wasted or in very rare cases used for mattress or pillow filling. For us, every design decision must reflect our goals as a charity, the sheep wool insulation achieved: support the local economy, empowerment of women, transferring of knowhow, and ensuring sustainability. Natural sheep wool is a very good insulation material that is found in the Bekaa valley, they region where the project is located. It allowed us to integrate farmers and women into the construction process.

Where did the wool come from?
Joana Dabaj: Even though there are lots of sheep farmers in the area, it was difficult to collect the amount of wool needed. I literally went from farm to farm and bought a 100 kilos here, 200 there, and so forth.

The school is already in use. Has the wool proven as an insulation material?
Riccardo Conti: Very well. In summer, the insulation works wonderfully: Once the roofs were insulated, it became much cooler in the rooms.

Since September 2016, the school has been teaching around 350 children aged 4 to 14, in two shifts. Classes are formed not according to age but according to education level. The former Expo pavilion is used not only as a school but also for other purposes, such as psychosocial sessions and theater projects.

In administrative terms, how difficult is it to build a school in a refugee camp? Do you need many permits?
The local municipality put no stones in our way” Riccardo Conti
The need to rethink refugee settlements

The project undoubtedly addresses a crucial contemporary problem, namely, the need to rethink refugee settlements. Such a school brings agency and representation to the individuals housed in such camps, acknowledging that their presence is anything but temporary. The jury sees the project as an important first step toward long-term transformation into a neighborhood. The project also provokes thought on another pervasive phenomenon: the expo pavilion. Given the material waste of these temporary structures, the jury feels the project reveals the necessity of designing them for reuse. This, however, is also where the project loses its strength. In fact, it was not initially clear to the jury that the pavilion had been purpose-designed for reuse; but no information was given as to which parts of the pavilion were indeed reused. Documentation supporting how the design balanced the needs of its life as a pavilion and its life as school is also lacking. The transportation of the material thousands of kilometers, even for a noble purpose, also weakens the sustainability of the scheme. In short, the two noble causes of the project are seemingly at odds with one another.
“A leap in development is required”

Modular midrise housing
Vancouver, Canada
The mass-timber buildings “Platforms for life” allow residents to adapt their living space to their personal needs – time and time again. The deeply integrated ecosystem of design engineering, technology and precision manufacturing is also sustainable in every other way. This achievement was made possible by decades of research.
Canada is a land of forests. About 3.5 million square kilometers, or 38 percent of the country, is woodland. This puts Canada in third place worldwide; only Russia and Brazil have more. About 95 percent of Canadian forests are publicly owned and sustainably managed. The timber industry contributed some USD 23 billion to Canada’s economy in 2016, accounting for about 7 percent of the nation’s exports and providing over 210,000 jobs. Nearly half of the companies in the wood industry are engaged in the production of wood products and over a third are in the paper and paper products sector. The remaining roughly 20 percent is accounted for by forestry and timber transport.

Oliver Lang is principal and creative director of Lang Wilson Practice in Architecture Culture (LWPAC) and president of Intelligent City, both based in Vancouver, Canada. Born in Germany, he studied architecture at the Technical University in Berlin, Germany, and at the Escuela Superior de Arquitectura in Barcelona, Spain. Lang holds a Master of Science in Advanced Architectural Design from Columbia University and was a lecturer and professor at several colleges and universities for 15 years, including Princeton, Columbia, the Southern California Institute of Architecture and the University of British Columbia.

He founded LWPAC with the architect Cynthia Wilson in 1999. The firm creates highly integrated and generative mixed-use housing systems and cultural projects. Among its many accolades, in 2008 LWPAC received the Governor General’s Medal, Canada’s highest recognition for the design of a built project, and from 2014 to 2016 three Urban Design Awards of the City of Vancouver.

Canada has a strong timber industry – and therefore also a strong wood-frame construction market?

Oliver Lang: There is a very high level of knowledge about wood as a building material. And wood is of course much used in the construction industry. However, quality light frame is a common problem, and taller timber buildings are just emerging.

Why is that?

In the past, practically only buildings with between one and four stories were built of wood in Canada. This was prescribed by the National Building Code of Canada. A few years ago, the code was changed to allow the construction of wood-frame buildings up to six-stories high. But the thing is, buildings this high place different demands on wood as a building material and on the designers, and few people take this into account, so problems with stability and building physics are often preprogrammed.
In 2006, when Oliver Lang, Cynthia Wilson, and the LWPAC team attempted to build ROAR_one – an early predecessor to the project which has now received the LafargeHolcim Award Silver North America – they experienced that it can be hard to find contractors with know-how that goes beyond the construction of typical residential structures of a few stories. The result: LWPAC decided on tabula rasa, completely rethought all their approaches and construction methods, and took a great financial risk. The architectural firm made virtue out of necessity and started Intelligent City (IC), a design-technology-fabrication company able to provide everything from initial design concept to handover of a finished building.

One of their products was the housing project MONAD, built in Vancouver in 2011. A fully pre-fabricated engineered and mass-wood structure measuring approximately 1,200 square meters, it is the prototype of the “platforms for life” project. As a model building, it was conceived to show potential customers what the platforms for life concept is all about – flexibly applicable for any conceivable site and for building heights up to 16 stories. By 2020 builders in Canada can go higher than six stories if they use mass timber. LWPAC and IC can already deliver this through special regulation. Unlike the light-frame or stud construction used to build houses and low-rises, mass timber is made by bonding together thin layers of wood to create a material that is much stronger and more fire-resistant than lumber.

**So this MONAD design can be can copied at will?**
The typical one-size-fits-all concept is terrible! Our approach is a different one; we create adaptability and scalability for the P4L’ MONAD housing units from a shared platform. We are not only concerned with erecting the buildings but also with the building system itself. It has to be flexible enough so that you can easily build many different buildings. This includes developing the necessary software to make the entire process from design to robotically assisted fabrication an integral whole.

**Isn’t Building Information Modeling (BIM) such a system already in use?**
We go further than we could with BIM. We can simulate the behavior of buildings in different situations, simulate different building structures, and transfer all the findings directly into the production process.
You said the building must be flexible. But there are countless flexible buildings these days ...

We are not primarily building flexible houses, but flexible housing. That’s why we call our project platforms for life: We want to use all technical and architectural means to allow people to live the way they want to in their different stages of life. For example, they can buy a 200-square-meter apartment for two people, and later they can expand it so that their children can have their own small apartments when they are studying, and then maybe even divide the 200 square meters into two apartments, one of which can be rented out, and so forth. The life cycle of the inhabitants is reflected in their homes, as it were. Of course there are certain architectural limits. Flexibility doesn’t mean that everything is possible – but rather that as much as possible is feasible.

Do owners and investors really want that much flexibility?

Of course they do! The key is that you can build a portfolio of projects across multiple sites from the same platform, but serve a variety of needs. Also, long-term investors, especially more enlightened owners, pension funds or housing agencies, welcome this because the overall situation in the housing market can change significantly over the medium to long term. Today you might need a lot of small apartments; tomorrow or sometime down the road you might need larger family apartments. So it’s an obvious advantage to be able to adapt the existing building fabric quickly and easily instead of having to completely replace a building.

Oliver Lang and Cynthia Wilson live in a MONAD unit and know from their own experience that their company’s living concept works. But it took about 15 years of groundwork to get to this point. Only then did they take the basic system they had developed and start applying it concretely and rigorously.

The tree can serve as a model from nature: The farther away from the stem and from the roots, the greater the flexibility. Accordingly, most of the essential infrastructure of the building is located closer to the ground. In the apartments themselves, the location of the plumbing connections is the most difficult thing to change. Kitchens and bath-
The residents can adjust their solar screens as they please, enjoying both privacy and summertime cooling. Hot water and electricity are provided by solar thermal panels. The residents can also practice urban agriculture on their green roofs.

rooms are therefore strategically located but fixed in place due to the plumbing system. But how large or small these rooms should be is left up to each individual occupant. When buying a cluster, the owners receive a set of possible configurations of their particular cluster to get a basic idea of platforms for life possible. If the buyers request for support in adapting their home at a later time, the architects of LWPAC will gladly assist them, they have plans for variation already available.

Canada is a huge country. Why do you focus on urban residential structures with your platforms for life?

A recent study conducted in Vancouver shows that most people want to live in a network. Everything important, from movie theater to supermarket, should be accessible by foot or bicycle. Long car trips, which used to represent a moment of personal freedom, are today seen primarily as a stressful, costly and polluting necessity. However, living in North American cities has become unaffordable for many. That's why many people are forced to move to the suburbs or to the urban sprawl, to be near the city at least. So, to put it simply, people in North America either live in the city or in the urban sprawl. We are trying to combine the advantages of both residential environments in an affordable way. We can allow people to live precisely how and where they want – and in the process, we can support all manner of social networks.

For all the flexibility, the architects have never lost sight of sustainability or energy efficiency – even if in British Columbia a large part of the energy already comes from clean sources, namely hydroelectric power plants. Geothermal heating and cooling stands for cost-efficient climate solutions based on renewable energy sources. Natural cross ventilation reduces the need for mechanical HVAC equipment. The residents can adjust their solar screens as they please, enjoying both privacy and summertime cooling. Hot water and electricity are provided by solar thermal panels. The residents can also practice urban agriculture on their green roofs.
“We have substantial productivity gains”  
Oliver Lang

For a platform for life building to receive a Passive House Certificate it must consume no more than 15kWh/m², which necessitates extremely efficient insulation. 25-centimeter mineral-wool exterior insulation is used. Facades of highly insulating glazing ensure maximum daylighting and enhance the indoor living environment.

A key factor that allows platforms for life to be applied to taller buildings was the development of high-performance building envelopes. These consist of mass timber framing, mass timber panels, and preinstalled insulation. They are stable, rigid, and shrink less than conventional wood-frame assemblies. What’s more, in a fire the solid wood panels merely char without completely losing their structural stability.

All the above substantially lowers the required energy needs and operational carbon footprint. Through the sequestered carbon in the mass timber structural system, the building become carbon negative over the course of its life cycle, if the main energy source is primarily renewable.

The necessary research and development must certainly involve heavy costs. How do you finance that?
The majority comes from reinvesting our profits, becoming more entrepreneurial, shifting our office from a pure design practice to a design-technology group of companies. We have also invested substantial personal savings and sweat equity. Also, the Canadian government has some very strong innovation programs, through which we have been receiving financial support for many years. We reinvest cash prizes like the LafargeHolcim Awards directly into the platforms for life project.

Despite the high development costs, you want to realize buildings under the City of Vancouver’s Rental100 affordable housing program — how will that be possible?
The more projects we can realize, the more affordable they become. It’s a simple calculation: The processes are getting faster and more accurate, the construction crews are getting more experienced, through automation we have substantial productivity gains, the material is becoming cheaper because you can order larger quantities, and so on. So you spread the financial risk, as in all other industries, across a large number of products. And that makes each individual project cheaper. We also reduce the risk of the process by making it in itself predictable and quantifiable.

Why haven’t such methods been applied by the construction industry at a broad scale long ago?
Basically, we’re still building today using the same antiquated approaches, design principles, construction techniques, and concepts that we’ve been using for many decades. Every
building is a one-off, yet the outcomes seem to be incredibly similar. Other industries are far ahead of us in this regard. The construction industry needs to see that you can never arrive at the LED lamp if you only aim to optimize the light bulb. At some point a leap in development is required. But it’s hard to find the courage when construction projects involve the investment of millions and people’s jobs and careers are on the line. It is only now when a new space emerges in which the increasing demands of urban dwellers, municipalities and owners require this paradigm shift.

Maybe we should start looking at buildings like this: If you have to demolish a USD 40-million building after 40 years because it’s served its purpose, you actually operate with an annual loss of 1 million. But what if you don’t have to demolish the building but could extend its life cycle? Because it’s built for a different quality, livability, sustainability and longevity paradigm, by adapting it to the new requirements and conditions with moderate capital outlay. Will you not only have a far more desirable housing product all along, but also better economics and ecology? The point is that we are creating the leap towards a quality, performance driven long-term paradigm vs. the quantitative uniform short-term approach of today.

Project appraisal by the Global LafargeHolcim Awards jury

Comprehensive response to Vancouver’s timber-first policy

The jury finds the project a comprehensive response to Vancouver’s timber-first policy. Combined with off-site manufacturing, construction would be fast and efficient. Yet, there are many similar projects worldwide and the jury wonders whether the project really addresses the specific challenges of midrise housing. Renderings show lofty spaces with panoramic views that would be difficult if not impossible to achieve within the deep, panelized, densely stacked units. Information on the ownership model and social agreement that would be necessary in this arrangement is missing. Beyond the constructive system, the specific spatial, social, and economic advantages and challenges of mid-rise construction still need to be articulated.

Initial project submission page 162.
Utopias can become reality

Sanitation system in informal communities
Rio de Janeiro, Brazil
Water management is a problem but not a top priority in many of Brazil’s major cities. Typically, there are more pressing problems to be solved, and budgets are notoriously limited. For these and other reasons, the authors are using a low-tech approach that can be implemented quickly and easily for their Água Carioca project.
With a population of around 6.5 million, Rio de Janeiro is the second largest city in Brazil after São Paulo. As in many metropolises in South America, urban development has failed to keep up with population growth. On the city’s mountainsides especially, informal settlements have arisen, and these are growing denser and more populous. In Rocinha alone, which is probably the largest favela in South America, an estimated 200,000 people live shoulder to shoulder under hazardous sanitary conditions. Most of the city’s wastewater – 18,000 liters per second – is flushed into Guanabara Bay as raw sewage.

Engineer Eva Pfannes studied at the Stuttgart State Academy for Art and Design and at the Bartlett School of Architecture in London. Born in Ingolstadt, Germany, she has worked in the offices of Maxwan in Rotterdam, Zaha Hadid in London, and Studio Makkink & Bey in Rotterdam. In 2003 she founded Ooze Architects with Sylvain Hartenberg in Rotterdam, the Netherlands. Sylvain Hartenberg, born in Paris, studied at the Institut national des sciences appliquées de Strasbourg and in London at the Bartlett School of Architecture. The architect worked in Paris for Architecture Studio and in London for Terry Farrell and Sheppard Robson. Eva Pfannes and Sylvain Hartenberg are not only business partners but a couple in private life.

You are both Europeans – why are you planning a project in Rio de Janeiro?

Eva Pfannes: We’ve often traveled privately to Brazil and especially to Rio. We’ve seen the problems that water and sewage cause for people in the poorer neighborhoods – something that most Europeans became aware of only through coverage of the Olympic Games. So we said to ourselves: With the groundwork we’ve already done in this field, we could make a difference here!

So you have previous experience with water management?

Eva Pfannes: We installed the art project “Between the Waters” for Emscher-kunst 2010, a major art event held under “RUHR.2010 – European Culture Capital.” There we created – together with co-author Marjetica Potrč – a water-treatment cycle between the heavily polluted Emscher River and the Rhine-Herne Canal in the Ruhr region of Germany.

“The system is visible and comprehensible to everyone” Eva Pfannes
“Show that it is possible to implement a basic solution” Sylvain Hartenberg

Sylvain Hartenberg: While working on that project, we got to know several relatively simple water purification techniques and thus laid the cornerstone for the Água Carioca project, for which we received the Lafarge-Holcim Bronze Award in Latin America.

A striking number of competition entries in Latin America were projects dealing with water. Why is water obviously such a big problem in the region?

Eva Pfannes: It has to do with the attitude that water is an infinite natural resource. That’s why there’s been a long-held belief that sewage doesn’t have to be treated but merely something to get rid of; and more fresh water will always be available. But in the fast-growing favelas, where responsibilities are often unclear, that is a problem.

Sylvain Hartenberg: But the fact of the matter is that South Americans actually have a very close relationship with water, and this is evident in their traditional beliefs. It’s the same paradox as in India, where the Ganges is at once sacred and heavily polluted.
Governments set priorities, and that’s no different in Rio de Janeiro. But because water quality doesn’t directly affect productivity, as do for example poor roads or power outages, other projects are often given priority. Making matters worse, the favelas of the megacity are at best only semi-institutionalized. Roles and responsibilities are not clearly defined so it’s always easy for officials to pass the buck. Thus, the first task of the project team was to visit all the key officials and start convincing them of their plans. In doing so, another hurdle for the realization of the project soon became evident. Although city administrators were interested in implementing a water-treatment project, it was quickly made clear that the city lacked the necessary funds.

**How did it happen that the funding finally came from the Netherlands?**

**Eva Pfannes:** The Netherlands supports innovative ideas. Through the government’s Creative Industries Fund NL, we secured the money we needed to develop our plans to this point. Our project operates in two key fields that the Netherlands especially promotes: water and innovation. 

**But it takes more than money and a conceptual plan to change things...**

**Sylvain Hartenberg:** That’s right, and we wanted to create a project that can be implemented at different scales and in different places. We had no commitments, as far as the location is concerned.

**Eva Pfannes:** We had countless talks, got to know many people, and learned what problems had to be overcome.

**Sylvain Hartenberg:** Over time, we started to understand the typologies of favelas – because those on mountainsides work quite differently than those in the valley. And large favelas have different problems than small ones.

**But how can it be possible to find long-term solutions for settlements that are growing so rapidly, uncontrollably, and inexorably?**

**Sylvain Hartenberg:** We need nothing less than a paradigm shift. In our case, we propose to decentralize sewage treatment. Because it’s obvious that the current centralized solutions are not working.

Currently, wastewater from Rio’s favelas is dumped into the ocean via a network of pipelines, open channels, and sometimes via makeshift ditches – a foul-smelling, environmentally detrimental, and unhealthy situation. Wastewater management in Rio de Janeiro is failing mainly due to two big problems: First, although there is a water treatment plant outside the city, it’s only operating at partial capacity. Because the sewer network is incomplete, only about ten percent of the wastewater is sent there and treated. And second, the infrastructure installed during the urbanization in the 1960s and 1970s fails to meet today’s requirements, and political and financial difficulties have prevented further improvement.

The approach of Água Carioca is persuasively simple: If the big solution fails, switch to many small solutions. For instance, groups of 10 to 15 houses share a constructed wetland. Each house has its own cistern and septic tank. Rainwater is collected in the cistern, and sewage is collected in the septic tank. It is pre-treated before being fed into the open, constructed wetland along with the rainwater. There, plants and microorganisms provide further purification of the water until it is clean enough to be reused for toilet flushing, washing, and irrigation. The full...
At the Sítio Roberto Burle Marx – named after the famous Brazilian landscape architect who lived from 1909 to 1994 – the prototype system provides sewage treatment. Color coding shows the paths of the water: Blue denotes collected rainwater, red sanitary sewage, and green the treated water or the constructed wetland. Botanical specialists of Sítio Roberto Burle Marx were consulted in order to decide on the optimal planting scheme.

A botanical garden is a different environment than a favela. Is Água Carioca so flexible that it can be used anywhere in Rio, and even beyond?

You decided to start small and built a prototype.
Eva Pfannes: We were allowed to build a prototype and put it into operation in the Sítio Roberto Burle Marx, a well-known botanical garden in Rio de Janeiro. We are now collecting measurements that will show us the development of the water quality. The whole setup is designed and described so that the system is visible and comprehensible to everyone. This is how we aim to sensitize visitors to this topic.

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As part of their project, the architects developed design proposals to show that the low-tech principle, which is comparable to that of natural swimming pools, works at both the smallest and the largest scales. At the smallest scale, a modified Água Carioca could provide wastewater treatment for a school – and serve as an example of sustainability there as well. At the midsize scale, based on a system for the favela Morro da Formiga with its approximately 4,500 inhabitants, it was shown that the constructed wetlands can provide public green spaces in addition to wastewater treatment. In the end, the principle of the project could even help relieve the heavily polluted Guanabara Bay, gateway to the city of millions.

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A botanical garden is a different environment than a favela. Is Água Carioca so flexible that it can be used anywhere in Rio, and even beyond?
Sylvain Hartenberg: Basically, yes, but the system must always be adapted to the specific conditions. In favelas on foothills, for example, the constructed wetlands are terraced, almost like rice paddy terraces. It was important to us from the start to show that it is possible to implement a basic solution in very different ways, depending on the local context.

Eva Pfannes: Herein lies a great challenge for Água Carioca: It has to be properly developed right from the start, and in such a way that it requires no additional maintenance. This is extremely important because maintenance always means money. As an example, we’ve developed the following financing model: The one who cleans out the septic tank may sell the sludge to generate income – because sludge contains valuable nutrients. Sludge as a business model – that would solve two problems at once. After all, it’s a basic premise of sustainability to consider waste as a resource that can serve a useful purpose.

How will Água Carioca go on in the future? Eva Pfannes: We were invited to the Biennale in São Paulo last year to develop the project Água Paulista, which builds on our experience with Água Carioca. Our prototype in Rio de Janeiro plays an important role in this, because in Brazil it’s important not only to have theoretical concepts to offer but also to be able to show something with concrete results.

Sylvain Hartenberg: Various water companies from Rio and other cities have already visited the prototype and shown great interest in our system. Nevertheless, you never know what can really be done in the end, because the financial and political situation is not exactly stable.

Eva Pfannes: In Rio we managed to establish a collaboration with the Museo do Amanhã.
Project appraisal by the Global LafargeHolcim Awards jury

Compelling weaving of green and social space

The project is beautifully presented; a compelling weaving of green and social space that underscores the value visionary design can have when showing alternative ways of living together. The playful, soft approach, though, does not move from vision to reality. Feasibility is not demonstrated, management and property acquisition are not clear, and the existing prototype is presented superficially as proof-of-concept rather than a serious analysis of the knowledge gathered. Moving forward, the jury trusts that the project addresses not just feasibility but the broader implications of such an approach: how could the project use infrastructure to legitimize property claims by the residents, to consolidate a neighborhood into formality and legality?

Initial project submission page 186.
Sometimes you just have to be silent

Elementary school and craft training center
Aït Benhaddou, Morocco
The architect designed a school for the village of Aït Benhaddou in Morocco that combines sustainable construction methods with tradition. Her design relies heavily on a local building material – earth.
“It’s important to find the best combination of materials”

Fatima-azzahra Bendahmane

Aït Benhaddou in central Morocco at the foot of the Atlas Mountains is world famous and has been a UNESCO World Heritage Site since 1987. Although few people know the name of this village, they have seen it, because it has served quite a few times as a setting for blockbuster productions like “Gladiator” and “Game of Thrones.” Built between the 12th and 16th centuries, the buildings of the picturesque village center are created from rammed earth and clay bricks. The village is one of the last settlements in Morocco still displaying this form of traditional earthen construction. The North African country has a long tradition of building with earth, and this can also be seen in the modern district of Aït Benhaddou. But here, many of the new buildings are designed after European models and are often poorly suited to the local conditions and climate.

There is a generation of young architects who are working with the old construction traditions today. This includes Fatima-azzahra Bendahmane. She studied in Rabat and received her Master of Architecture at the Polytechnic University in Barcelona. In 2015 she founded the architecture firm Ecoactiva in Casablanca, which specializes in passive design. This architectural design strategy takes advantage of ambient conditions such as solar radiation, cool night air, or strong differences in air pressure to provide comfortable interiors while minimizing energy consumption. With the construction of a sustainable school and adult training center in Aït Benhaddou, the architect is realizing a holistic vision of “healthy architecture” intended to benefit the region at every level.
Why is a new school and handcraft training center being built at Aït Benhaddou?

Fatima-azzahra Bendahmane: Rural exodus is a major problem in this region. Aït Benhaddou is threatened with becoming a ghost town. Back when the village was declared a UNESCO World Heritage Site, the Association of Aït Aïssa was created. This association is committed to the preservation of culture and the promotion of economic development, and it aims to enhance the development of Aït Benhaddou with various projects. The five oldest families of the village are members of the association, and they also own the land. With the construction of a sustainable school and training center, the association intends to improve the situation over the long term.

But why does the village need a new school?

There certainly must already be a school in Aït Benhaddou...

Yes, there is already a school in the area where we are building the new school and adult training center. But it’s too small and the plumbing system is outdated and decaying. The building that currently serves as the village school doesn’t meet the needs of the children and teachers whatsoever, and such a poor school facility can have dramatic consequences for a region. That’s why the new school will be a great asset for the villagers, not to say a necessity for the long-term existence of Aït Benhaddou. Incidentally, the old school building is so rudimentary and in such poor condition that it can be demolished relatively cheaply and quickly.

And whom will the training center serve?

Especially in rural areas, many young adults have never graduated from school. They have problems securing a good start into professional life, they are frustrated and have no regular income, and of course this is a major economic problem. With the training center...
we want to fight this trend – and at the same time make sure that traditional knowledge, especially in artisanal trades, is maintained. The training center will be open to anyone who wants to learn something. The program currently offered is still based on volunteer work. The center is intended to become a place of give and take, to strengthen community cohesion and to give villagers confidence in their abilities.

How did you get involved in this project?
It was clear to the Association of Aït Aissa that earthen construction should be used for the project – after all, Aït Benhaddou is famous for its magnificent earthen buildings. The president of the association looked for Moroccan architects familiar with traditional earthen architecture and found me. During my studies, I worked intensively with earthen construction, and I’ve also worked as an assistant on some relevant projects.

“Ideas proposed by architects often miss the mark”
Fatima-azzahra Bendahmane

Why does hardly anyone in Aït Benhaddou know about earthen buildings anymore?
Many people think concrete structures are much simpler and cheaper to maintain than earthen buildings. This has led to the disappearance of traditional earthen construction and our knowledge about it. But the disadvantages of the new building methods are obvious: In summer, the indoor climate of buildings built in the European fashion is virtually unbearable, unless they have an energy-intensive air conditioning system. Earthen walls, on the other hand, protect the interiors from heat during the day but store the warmth for the cool nights. That’s a great advantage in a North African country where it can be up to 30° C in summer and minus 4° C in winter. I think it’s important to find the best combination of materials in each case. For some purposes, concrete is more suitable than clay – but not when it comes to the most energy-efficient low-tech buildings in our region.

The project site measures 2,000 square meters, while the total usable area of the buildings will be 432 square meters. Part of the funding for the construction is being provided by the regional council of Draa-Tafilalet. It is dedicated to improving living conditions in Morocco, with a strong focus on education and sustainability. That’s why the foundation has been involved in the Eco-Schools Program of the Foundation for Environmental Education (FEE) since 2006. The program acknowledges schools that provide environmental education and address ecological issues as part of everyday school life. To supplement the government funding, around 40 percent of the cost must be covered through private fundraising. Because complete funding was not secured from the beginning, the architect decided to design the project as several individual buildings – so as not to risk an unfinished building should the funds run out.
Fatima-azzahra Bendahmane designed a complex comprising of six buildings that harmonize with their context thanks to their simple and traditional design. The positioning of the buildings on the site and in relation to each other is ideal. Natural air flow is harnessed for efficient cooling. The architect analyzed the micro-climate in detail, and her studies are potentially valuable for use in the design of other buildings throughout the region. Four of the six flat-roof buildings, which are about 3.4 meters high, are used for the elementary school, and the other two house the adult training center. In the new complex, Fatima-azzahra Bendahmane is also using local wool and wood in addition to earth. For the large canopies shading the facades and forecourts, robust fabrics made of organic wool will be woven by hand, the traditional way, and spanned onto specially made wooden frames. Key facades will receive similar fabric shading, applied vertically, giving the architecture vernacular character while ensuring excellent energy efficiency. The weaving and mounting of the wool fabrics will be done by local women and men working for fair
Fatima-azzahra Bendahmane

“Sustainable building is simply healthier”

You grew up in the city. How can you truly understand the needs of a rural village?
I’ve spent a lot of time in Aït Benhaddou and spoken extensively with the people. That’s actually what you do as an architect: You talk to people and try to understand what kind of building they need in their everyday lives. In any case, I’ve learned one thing: Sometimes you just have to be silent and listen. I’ve also become familiar with many of the region’s problems through my work with the Association of Ait Aissa.

What effect does proactive listening have on your project?
As one example, we’ve provided an outdoor area between the buildings with ideal conditions for growing vegetables. Such ideas proposed by architects often miss the mark because they aren’t anchored in people’s everyday lives. That’s why we’ve been intensively working together with the teachers on the use of these spaces – and we’ve worked out a plan on how vegetable growing can be integrated into everyday school life. This will allow the children to learn a lot, and the space will be used optimally and sustainably.

Will you remain in touch with your project?
Absolutely! Sustainable architecture also means getting involved with the region and its development for the longer term. That’s why I contributed, along with people from different disciplines, in the creation of another association called “We speak citizen.” The name expresses our holistic vision of sustainable building: that the long-term needs of the residents should always be the main focus. An association is the best way to bundle different resources and combine them most efficiently. The aim of this new association is to implement more projects similar to the school.

With the Association of Ait Aissa, you had a client with goals very similar to yours. How is it with other clients?
It’s still quite difficult to convince most clients to use sustainable construction methods. Their wishes are often influenced by fashion or preconceived notions. If you want to build sustainably, you first have to gain the full confidence of the client. But here we have good arguments, because sustainable construction pays off from an economic point of view. The intention is to use and promote local know-how – and at the same time, to provide a model that can be easily adapted and used in other projects in the region.
The jury sees this project as part of a global trend of architecture that is revisiting and updating traditional handicraft. The Foundation’s “target issues” are all addressed and made clear through a well-structured visual presentation. However, the project suffers in comparison to other schemes with similar objectives, such as the project “Legacy Restored” (page 20). The boards, for example, did not address concerns from the regional jury that the design requires changes to be compatible with rammed earth construction. Moreover, the jury feels that using the construction of the building to train in handicraft would be better achieved if the design was thought of as incremental or even perpetual.
Inspiringly open

Home for marginalized children
Thane, India
In the middle of a informal settlement near Mumbai there is a children’s home. Its residents have to cope with all the typical local problems, including the harsh climate, dilapidated buildings, and cramped space. The architects impressively address these and various other challenges with the clever and playful design of their new building.
“Architecture has a capacity to inspire a positive social change”

Avneesh Tiwari

Mumbai, in western India, is one of the world’s largest metropolitan areas. Its approximately 18 million inhabitants endure harsh climatic conditions. Some days are burning hot and up to 40°C, and on other days, the monsoon floods entire neighborhoods. Inhabitants of the slums suffer the most under these conditions. Their dwellings are most often poorly built, and there is hardly any place for an enclave of green within the vast urban heat island.

In the middle of a slum in Thane, a city to the north of Mumbai, the Indian NGO Community Outreach Program (CORP) operates the Thane Home for Children. It provides a new home for the children of commercial sex workers. Sex workers are severely stigmatized in Indian society, and their children are often abandoned. At CORP’s home, they are cared for until the age of 16. When the Thane Home for Children was opened in 2007, ten boys and girls moved in. Today, 30 girls live there, in a two-story building measuring just ten by six meters. Despite the very cramped space, the orphanage is a success story. The girls are taught the value of an education, and many of them go on to receive higher education and become self-sufficient and successful young adults.

The home has always provided the most important things the children need: affection, security, warm meals, and a roof over their heads. But the condition of the building in the middle of the informal settlement is precarious. The ground floor is subject to repeated flooding, the rooms with small windows are claustrophobic, and because ventilation was not planned, heat builds up within the building, causing extremely high temperatures especially beneath the roof. The capacity of the building was exceeded long ago, and there’s not even enough space for proper beds – the children just sleep on mattresses. But all this is about to change, thanks to the efforts of the Mumbai-based architects Avneesh Tiwari and Neha Rane. They both studied at the Sir JJ College of Architecture in Mumbai, and in 2013 they founded the office atArchitecture.

How did atArchitecture become involved in the project for this home?

Avneesh Tiwari: We believe that architecture can play a significant role in improving the quality of life in our communities and has a capacity to inspire a positive social change. It’s always been important to us to give something back to the community in which we live. When we saw that we had the capacity, we wrote to different charitable organizations and asked if we could help them with a construction project. CORP responded instantly.

Neha Rane: At that point in time, the CORP management had been thinking hard about how to improve the Home for Children building. Our inquiry came to them almost like an omen. We met with them very soon thereafter.

What requirements did CORP define for the facility?

Avneesh Tiwari: The most important thing, of course, was that the project should provide enough space to suitably accommodate 30 children and the attendants. It was also important to improve the plumbing facilities. At the moment, all the residents share one toilet-cum-bathroom. The goal was to provide seven toilet rooms and bathrooms. We did that!
“Find out the wishes and ideas of the children”
Neha Rane
What was your design approach for the project? Were you able to reuse any parts of the existing building?

Avneesh Tiwari: We started by inspecting and measuring the whole building – of course, there are no existing plans for such a building. We soon realized that we needed to completely replace the building. It didn’t make sense to reuse anything. In order to protect the ground floor from flooding, we would have to elevate it, which would have led to the loss of the floor above.

Neha Rane: The next step we took was to find out the wishes and ideas of the children. We spent a lot of time with them. After all, it’s their home, so their opinions count.

The new design incorporates many of the children’s wishes, and the proposed new building is truly a home for children. The two recreational areas become places of interaction, like the veranda of a house where the kids can play, sit, read, do whatever they like. The facade interacts with the slum and so becomes a part of its overall fabric. The recreational areas span the two upper floors and are located along the narrow sides of the building. In these two narrow strips, into which stairs are also integrated, equipment is installed for recreation including a small swing, a jungle gym, and a slide. Architecture made the most of the extremely restricted physical conditions – including the abutting wall of the adjacent building – also in other ways. The cantilevered upper stories provide greater floor space than the ground floor. The service area with bathroom and kitchen is situated along the wall abutting the neighboring building, so the brighter parts of the building are reserved for the living spaces. Also located along the long back wall, and next to the service area, will be a small courtyard. It extends nearly the entire length of the building and can accommodate a tree. All three floors open onto this courtyard, which provides natural light and allows good air circulation.

So that the residents won’t feel cramped in this dense environment, and so that more comfortable indoor temperatures can be achieved, the architects avoided a hard barrier between indoors and out. The recreational bands on the narrow sides are separated from the neighborhood only by a safety mesh. These form a buffer zone between the children’s living spaces and the neighborhood, and they are visible from the outside. The architects call this an “interactive facade.” Wall elements and the stairs within the recreational bands separate the actual interior from the interactive facade but do not enclose it completely. The building is semi-open, naturally ventilated, and naturally illuminated. The buffering recreational bands protect the privacy of the residents and also shade the living space from the harsh south-east and south-west sun.

Does this design ensure the safety of the children?

Avneesh Tiwari: The mesh elements are there for security. There is no way to enter or exit the building except through the door. But we are not concerned that security measures will be needed at all. The sense of community in the district is quite pronounced, much stronger than in apartment complexes housing anonymous tenants.

Neha Rane: Yes, it’s a recognized part of the neighborhood. And the children are no

“We rather hope that the locals will be inspired by us”

Avneesh Tiwari
The building is not particularly expensive or technically complex, but simple and efficient. Some of the features are very easy to copy, for example the use of terra-cotta. Next to concrete, terra-cotta is the most important building material the architects are using. The material is used on both long facades: hollow terra-cotta blocks define the edge of the courtyard along the neighbor’s wall and provide shelving as well. The long front facade also consists of linked terra-cotta elements above the ground floor. They are rotatable, which allows the wall to be completely closed or nearly completely open, as a mechanism for regulating the indoor temperature and sunlight. Most importantly, however, the individual elements are designed in such a way that nursery can be planted in them. And because the planted surfaces are rotatable, they can be turned to follow the sun and allow the maintenance of the plants from inside the building. The plan is to sell the nursery plants as a source of income for the community.

How did you get the idea to use terra-cotta as a construction material for this building?
Neha Rane: The material is commonly used in the district. It is used for water tanks, vases, and bowls because it keeps the contents cooler for longer. They are considered independent people, especially when they are separated from their mothers, as in our case. What’s more, the community benefits from the home – even today, many locals are using the building. Meetings for seniors and women’s development training sessions are held there. Children living outside of the home are also cared for here. We want to maintain these activities in the new building. While the two upper stories are reserved exclusively for the children and attendants, the ground floor is open to the public, for events and as a meeting place. In its support a Stepped-Pavilion is designed by merging the staircase and courtyard responding to the need of extra and efficient space for community gatherings. Such places are rare in slums.

Your new building, with its modern architecture, will stand out in this context. Won’t that cause envy?
Avneesh Tiwari: We don’t think so. Because the institution is so widely accepted, we rather hope that the locals will be inspired by us.
cool. Although everyone knows that, practically nobody uses terra-cotta as a building material.

**Avneesh Tiwari:** We are making good use of the properties of the material. Terra-cotta is suitable for creating walls with cavities. We are using these for storage space and as planters-cum-louvers. We are also using terra-cotta because we can employ local workers in the production. There is a small terra-cotta factory nearby, and it will produce the elements for us. In this way, we can support modern local craftsmanship.

The architects are meeting the challenging requirements of the clients with innovative and practical solutions. And they have also managed to satisfy aesthetic demands. The mix of two key building materials produces attractive architecture, the open facades make for bright rooms, and the courtyard with a tree gives everything an impression of spaciousness. The design is significantly influenced by the golden section. The articulation of the building along its longitudinal axis into the living and service areas including the courtyard corresponds to the ratio of 1.6 to 1. The golden mean is also clearly displayed on the outside, as the pitch of the gable roof is also based on this aesthetic ratio. The roof of the courtyard side is lowered in order to allow sufficient light and ventilation at all the levels.

**Couldn’t you have provided more space simply by designing a block as high as possible?**

**Avneesh Tiwari:** Not really. The maximum floor height permitted is only 6.6 meters, hence we planned the covered terrace above that level with a sloping roof, which shelters the children’s living space underneath from direct sun. Within this constraint the primary requirement was the wellbeing of the residents. And for this, natural light is essential, and it must reach the ground floor. Natural light has a great influence and a therapeutic effect on people. The same applies to the green area. Our design is not just beautiful, it also has practical benefits.

**Neha Rane:** Using the golden ratio for the layout proved practical; it wasn’t just an aesthetic exercise. When we started designing, we considered various ways of articulating the space. The most practical solution
to accommodate all the needs was nearly identical to the current one. By coincidence, the ratio of the areas we had was very close to the golden section. We then made some minor adjustments to get the exact proportions.

Avneesh Tiwari: In the end, every detail of the building serves to provide the children and attendants with the best possible accommodation. And more space doesn’t necessarily always mean better accommodation. We sought to strike a balance.

Does your design appeal to the children? Avneesh Tiwari: Oh yes! This is how the project was evolved – we wanted to give the children the freedom to act their age, to give them their childhood back. The space will be transformed by the users. For instance, the elevation we designed will be completely different when it’s up. They’ve now been moved into a temporary accommodation and can’t wait to move into their new home. The construction of the new building is underway and they can look forward to seeing an enormous improvement!

Combination of passive building technologies with a social agenda

Despite a number of individually nice ideas, the jury finds that the design is not convincing as a whole. The combination of passive building technologies with a social agenda is still embedded in the project. Nevertheless, the translation from schematic design into a more developed proposal lost the playfulness of a house for kids and became too pristine. The jury commends the terra-cotta facade prototypes but felt that more innovation could have been useful in the structure (lighter slabs, the use of traditional construction techniques, wall assemblies, etc.) and not just in elements added onto the structural framework.
Jury meetings and ceremonies 2017

Europe

Jury meeting
Lausanne, Switzerland: June 2/3
Swiss Federal Institute of Technology (EPFL Lausanne)

Awards ceremony
Marseille, France: September 28/29
MuCem

North America

Jury meeting
Vancouver, Canada: June 23/24
University of British Columbia (UBC)

Awards ceremony
Chicago, USA: October 12/13
Venue Six10

Latin America

Jury meeting
São Paulo, Brazil: June 9/10
University of São Paulo (USP)

Awards ceremony
San José, Costa Rica: October 5/6
Club Unión

Middle East Africa

Jury meeting
Cairo, Egypt: May 19/20
American University in Cairo (AUC)

Awards ceremony
Nairobi, Kenya: September 7/8
Kenya National Theatre

Asia Pacific

Jury meeting
Melbourne, Australia: June 30, July 1
University of Melbourne

Awards ceremony
Kuala Lumpur, Malaysia: November 23/24
Grand Hyatt
LafargeHolcim Awards jury members

1. Marc Angélil, Switzerland
2. Sandra Bartoli, Germany
3. Anne Lacaton, France
4. Matthias Schuler, Germany
5. Yvette Vašourková, Czech Republic
6. Jane Wenick, United Kingdom
7. François de Larrard, France
8. Karen Scrivener, Switzerland
9. Harry Gugger, Switzerland, Head of Jury

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LafargeHolcim Awards jury members

1. Dominique Corvez, USA
2. Kevin Daley, USA
3. Paul Fast, Canada
4. Ray Cole, Canada, Head of jury
5. Harry Gugger, Switzerland
6. Jeanne Gang, USA
7. Marc Angélil, Switzerland
8. Forrest Meggers, USA
9. Jennifer Wolch, USA

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LafargeHolcim Awards jury members

1. Angelo Bucci, Brazil, Head of jury
2. Vanessa Gomes da Silva, Brazil
3. Carlos Espina, Argentina
4. Philippe Block, Switzerland
5. Pietro Stagno, Costa Rica
6. Emilio de la Cerda, Chile
7. Marc Angélil, Switzerland
8. Tatiana Bilbao, Mexico
9. Fernando Diez, Argentina

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LafargeHolcim Awards jury members

1. Marc Angélil, Switzerland
2. Joe Osae-Addo, Ghana
3. Meisa Batayneh Maani, Jordan
4. Nagwa Sherif, Egypt, Head of jury
5. Mohsen Ech, Lebanon/France
6. Howayda Al-Harithy, Lebanon
7. Fasil Giorghis, Ethiopia
8. Kunlé Adeyemi, Nigeria
9. Chrisna du Plessis, South Africa

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LafargeHolcim Awards jury members

1. Jay Sanjayan, Australia
2. Doreen Heng Liu, China
3. Nirmal Kishnani, Singapore
4. Guillaume Habert, Switzerland
5. Emmanuel Garcia, France
6. Donald Bates, Australia, Head of jury
7. Marc Angélil, Switzerland
8. Rahul Srivastava, India
9. J. Meejin Yoon, USA
LafargeHolcim Awards regional winning projects 2017
Logistics Framework
Adaptable structure for a garbage collection company

Brussels, Belgium
As declared by the architects, the project — located along the Willebroek Canal in a fast-growing district of Brussels — has to satisfy the particular current needs of a waste collection company, while simultaneously being able to adapt to changing future circumstances. Addressing this double agenda, the project proposes a carefully designed framework that is both specific and general. Whereas its specificity pertains to the building’s integration in the urban fabric (establishing a green corridor between a residential neighborhood, a small park, a new courtyard, and a canal), its structure is functionally indeterminate, allowing the building to transform in time according to future needs. Its present function as a logistics hub for a garbage company stages its daily activities in the midst of a vibrant neighborhood, foregrounding the co-dependence among seemingly incompatible functions in the city.

The design’s adaptable framework as well as its minimal deployment of architectural and technical means was considered a remarkable contribution to sustainable construction by the LafargeHolcim Awards jury Europe. The proposed scheme’s twofold approach to the task at hand — offering a careful urban integration of the facility as well as providing a non-specific structure that can accommodate future needs — was greatly appreciated as the discussions unfolded. Particularly valued was the design’s underlying premise to re-integrate logistics infrastructures in the inner city (such as those needed for garbage collection), rather than displacing them to peripheral locations and keeping them out of sight, so to speak. Bringing infrastructure to the fore, the design merges economic and aesthetic considerations, offering a form of resilient architecture that turns limitations into a quality.

Global Awards finalist 2018 update page 74.
Mix-City

Urban integration of an existing concrete mixing facility

Brussels, Belgium
In addition to the project’s overall strategy, the LafargeHolcim Awards jury Europe appreciated the range of architectural moves, which give credence to the ambition to combine what at first sight might have seemed improbable, namely, the literal co-habitation of otherwise incompatible functions. The jury acknowledged in particular three specific measures: first, the introduction of a wall made of interlocking precast blocks produced from recycled concrete to encapsulate the facility from its surroundings; second, the introduction of a canopy with public functions suspended over the work area to control sound and dust from the mixing process; and third, the establishment of an urban public connection from the city to the existing canal just below the canopy’s cantilever. The jury applauded the author’s ability to transform an inauspicious industrial facility into a promising piece of architecture.
Air Rights

Zero Energy Development units on parking lots

London, United Kingdom
To partially reduce London’s housing shortage, the project proposes a straightforward and resourceful solution, namely, to construct living units on elevated platforms over public parking spaces all over the city. Intended for young people and municipal workers (firefighters, nurses, police personnel, etc.), the units are economically affordable, insofar as land costs are replaced by the leasing of air rights. The building units are entirely based on prefabricated elements that can easily be assembled on site, thus further reducing construction costs. Adhering to the principle of minimizing emissions in the building sector in general, the project avoids the use of fossil energy for both the manufacturing process as well as for operations and maintenance — contributing, in effect, to a low-carbon architecture.

Translating a vision into reality

Praising the idea of building above existing parking spaces, the LafargeHolcim Awards jury Europe fully endorsed the author’s vision of an architecture that is socially responsible, ecologically sound, and economically affordable. Considering in addition that the project is both innovative and transferable, proof is undoubtedly offered that the design indeed meets the “target issues” set forth by the LafargeHolcim Foundation — at least for the most part, as noted by the jury during the deliberation process. The scheme’s qualities and benefits notwithstanding, some jury members nonetheless raised the question as to whether aesthetic considerations were consciously addressed or whether architectural expression was simply considered a result of technical and material exigencies. Criticism aside, the design intelligently manages to translate a vision into reality, one that could undoubtedly benefit from the project’s foresightedness.
Back-Alley Front Stage
First independent theater
Bucharest, Romania
Within a historic quarter of Bucharest, this project transforms a dilapidated plot into the first independent theater in the city since 1946. It will house a theater company that has been operating without a dedicated space since 1999, anchoring a cultural institute into the city fabric it wishes to engage. An initial design proposal envisions placing the 150-seat theater below ground and maintaining the facades of the existing buildings on the plot within a slim volume.

Project authors Tiberiu Mercurian and Chris Simion-Mercurian, Asociata Culturala Grivita S3; and Codrin Tritescu, Architect Office Codrin Tritescu; all from Bucharest, Romania.

Not pictured: Petre Frangulea and Alexandra Ardeleanu, Architect Office Codrin Tritescu; and Adina Mastalier, Asociatia Culturala Grivita S3; all from Bucharest, Romania.

The cultural component of sustainability

The LafargeHolcim Awards jury Europe was moved not by the project’s engagement with architecture or materials but by its strong statement on the cultural component of sustainability. The project’s use as an independent theater – a cultural program that also acts as a stage for democracy – was only strengthened by the community support shown through collective funding. From this firm social basis, the jury noted that the project was not yet architecturally convincing and that it is the hope that the support of the award can contribute to motivation to find an architectural solution as enlightened as the program.
Bio-Palimpsest
An ecological approach to archaeological sites Pontevedra, Spain
This project addresses archaeological sites as whole environments far beyond the excavated artifact. A series of fortified Galician settlements in Pontevedra are being redesigned for visitor access. The project proposes the reinstatement of the vegetation from Roman times when the ruins were inhabited. Cruciform posts are set on the same grid used for excavation, the archaeological method. The same posts provide audio tracks telling histories, give written information, and contain lighting. A series of paths leads the visitor through the landscape and between the poles from site to site. These layers of intervention—landscape, grid, and path—produce a rich context for archaeological contemplation.

Re-embedding ruins with their context

Creating a simulacrum of the Galician-Roman landscape around the artifacts, the project immerses the visitor in another world. The LafargeHolcim Awards jury Europe was fascinated by the evocative drawings that clearly articulate the design intention. Instead of focusing on the ruins as objects separated from their context, the project re-embeds them within a whole environment. It creates complexity from simple, easily-achievable means.
Radical Archaeology
Roman settlement excavation center Augusta Raurica

Augst, Switzerland
Part workspace, part archive, part exhibition, the archaeological excavation center presents the first headquarters for a significant yet financially challenged cultural institution safeguarding the largest Roman site in Switzerland. Offices, restoration labs, workshops, and storage, previously dispersed in various buildings, are united within a robust and economical spatial system that emphasizes visual transparency and a common identity. Equally pragmatic as it is expressive, the lightweight steel structure balanced on top of ancient ruins provides a continuous and flexible field condition that anticipates future change and growth. Low-tech solutions are favored over high-tech construction.

Sustainability through adaptability

The building hovers in the landscape, an abstract archaic form that is as familiar as it is foreign. A handsome, flexible structure succeeds — through a few clever tweaks — to appropriately house many uses. Doing so brings together disparate parts of the archaeological process, fostering coordination and collegiality. The LafargeHolcim Awards jury Europe was impressed by the structural system that allows the building to adapt to new functions as the center’s needs change — sustainability through adaptability.
Stacking Sports

Neighborhood recreation center  Bordeaux, France
A wide array of sporting facilities is brought under one roof within this project in Bordeaux. The structure is an architecture of reduction to minimal means. Only restaurants and shops on the lower levels are enclosed within a facade. The rest of the reinforced concrete structure is mediated by just a braided mesh enclosure that acts as a shading device, windbreak, and ball-catcher without the need for large mechanical systems. This reduction is not only aesthetic. By minimizing heating and cooling costs, the architecture contributes to the project’s aim of providing low-cost access to sports for all.

**Acting as a social condenser**

By combining programs that are usually dispersed and that cater to different user groups, the project acts as a social condenser. This aggregation of activities into one form creates a new and exciting typology – one that could be inserted into any city in need of sporting facilities. The LafargeHolcim Awards jury Europe commended the project’s contribution to providing access to sport through purposeful minimalism. The open air approach is thoughtfully mediated by an innovative enclosing mesh that adheres to fire regulations without sealing the building. By carefully including only the bare necessities of architectural infrastructure the project succeeds in providing a generous space of encounter.
Ecommunity
Converting a factory into housing  
Lodz, Poland
The author proposes to covert an abandoned factory building into a multifamily housing ensemble in an industrial neighborhood of the city of Lodz. A new wooden structure is inserted within the existing steel frame, establishing a careful balance between the old and the new. The individual housing units are distributed to create an alternating sequence of outdoor courtyards and indoor living spaces, with trees irregularly dispersed throughout the building complex. Spatial qualities unfold from the juxtaposition of the existing large-scale factory structure and the small-scale framework of the new housing units. A range of measures are additionally introduced to increase the building’s ecological performance, while foregrounding community-building via participatory processes, ultimately giving credence to the author’s vision of an “ecommunity” architecture.

Collective communal spirit as lived reality

The LafargeHolcim Awards jury Europe greatly appreciated the design’s vision to address both the physical and social fallout of the post-1989, post-communist de-industrialization of Poland and particularly welcomed the idea to transform rather than demolish existing factory buildings – very much in the spirit of the by now well-known maxim, attributed to Frédéric Druot, Anne Lacaton, and Jean-Philippe Vassal, “never demolish, never remove or replace, always add, transform, and reuse!” In this regard, the project was read as a manifesto promoting a discourse on the need to address the existing building stock of cities as a resource in its own right. While the jury argued that greater attention could be given to the question of renewable energy production and storage, members of the jury nonetheless applauded the project’s social agenda to rediscover some of the positive tenets of Poland’s socialist past and its collective communal spirit as lived reality.
Modern Sanctuary
Monastery conversion for a behavioral addictions rehabilitation facility

Otyn, Poland
Located in the ruins of an old monastery in the town of Otyń, the project for a center for behavioral addictions rehabilitation offers a valuable solution of how to address the desolate conditions of historical monuments that require care themselves. A timber structure encases the existing building in order to protect it from further degradation. Additionally, walls made of wood are inserted within the sequence of existing spaces to accommodate new functions where needed. Renewable resources are used by means of geothermal boreholes, heat pumps, and solar panels on the roof to heat the building in the winter.

The tectonic quality of the filigree construction stands in dialectical tension with the heavy masonry of the monastery building, resulting in a playful combination of the old and the new.

Aesthetic value for people in times of need

The LafargeHolcim Awards jury Europe appreciated the project's parallel agendas to create spaces for people requiring care, while caring for buildings requiring support and maintenance themselves. Whereas the metaphor at first appeared too obvious, the jury nonetheless applauded the author's carefulness in avoiding line for line correspondences between the rehabilitation of the building and its use as a rehabilitation center. At the core of the discussion was not only the question of how to best restore historical buildings, but moreover the deployment of architecture in its aesthetic value for people in times of need. The jury noted that a "modern sanctuary" is being created, namely, a place of tranquility, repose, beauty, and poetry.
Liquid Era

New spatial concepts for the city of the future

Kazan, Russia
The project for a possible future of the city opens with a provocative question. “How could we, architects, be so confident that sustainability in the future will still lie in the field of bricks and mortar?” Learning from nature’s regulating processes, the author explores a set of fluid morphologies to derive an understanding of architecture in sync with the environment. Architecture, according to the project’s designer, can digitally reproduce the mechanisms at work in nature to produce architectural structures that can sustain themselves, while in symbiosis with nature. These forms and spaces (made of “digital multi-materials, nano-composites, natural vegetation, and holographic lasers”), are subsequently tested in a real context – in the city of Kazan. Here, the new structures are superimposing onto the heterogeneous city fabric to create a hybrid amalgam of entropic quality.

Architecture beyond convention

The LafargeHolcim Awards jury Europe enthusiastically endorsed the design’s bold visionary stance. The exploration – a research project in its own right – offers a discourse on possible forms of relationship between the built and the natural environment, offering strategies for perceiving architecture as a form of action in symbiotic relation with nature. While the project might benefit from some careful editing, the jury nonetheless commended the notion of design as a research platform to explore and discover yet uncharted terrain. The investigation furthermore calls for potentially new understandings of materials in construction, combining natural and digitally fabricated elements, while pushing the envelope of the discipline of architecture beyond established convention.
Slow Burn
Fire cistern and forest shelter  
Collobrières, France
Entitled “firebreak”, the project proposes a structure that can be put to use when combatting forest fires in the region of Collobrières. Part water tank to extinguish fires and part shelter for hikers, the structure is additionally conceived as a monument to the Algerian volunteers who supported the French army during the Algerian War and were thereafter repatriated to serve as firemen in France. More than just a small intervention, the structure has a territorial dimension insofar as it is imbedded in an elaborate water collection system of ditches that mark the landscape.

Poetic artifact in a natural setting

Though highly impressed by the young architect’s ability to translate a complex set of ideas into a pristine architectural artifact, the LafargeHolcim Awards jury Europe argued that the project would gain credibility if considered part of a broader “firebreak” infrastructure along anticipated firefighting lines – rather than being treated as a singular and exceptional object. This said, the jury more than appreciated the structure’s construction and its representation by means of beautiful drawings. Something as mundane as a tank is here transformed into a poetic artifact in a natural setting, a “machine à émouvoir” that touches the senses, while performing an indispensable function – a “techno-aesthetic” object, so to speak.
Grassroots Microgrid
Community-driven neighborhood planning
Detroit, USA
The design proposal for a neighborhood in Detroit repositions infrastructure as a civic project, under the name of The Seebaldt Pilot. Building on long-term community engagement, the large group of collaborators proposes a pilot project for local energy and food production, water and waste management, and community empowerment. Solar photovoltaic canopies, rainwater collection, geothermal wells, and community gardens are stitched through the existing neighborhood on currently empty lots. The collectively owned and managed infrastructure is both a gathering point and a new revenue stream for additional community services and an enhanced public realm.

Project authors Eric Mahoney, Haibin Tan, Constance Bodurow, studio[ci]; Will Bright, IS@H; all Detroit, USA.

Not pictured: Andrew Bradford, studio[ci]; David Cross and Darrel West, IS@H; Donald Carpenter, Drummond Carpenter; Mark Hagerter, Michigan Solar Solutions; Nathaniel Autrey, DTE Energy; Mark Drotar, Meaghan Markiewicz, Paige Spagnuolo, Ruiyi Liu, Amin Toghiani, Yaochen Pan, Timothy Miller, Yu Zhu, Brandi Patterson, Cory Benjamin, Drew Mittig, Fares Ahmed, Lina Alosachie, all Lawrence Technological University; Karl Seidman, Leigh Carroll, Grant Williams, Samuel Jung, Kelly Blynn, David Musselman, all Massachusetts Institute of Technology; all Detroit, USA.

A fundamentally optimistic approach

The LafargeHolcim Awards jury North America commended the proposal’s fundamentally optimistic approach. Taking the pocket vacancies normally characterized as the biggest problem in Detroit, the design turns them into an opportunity to create a compelling sustainable neighborhood. The combination of solar and geothermal energy, rainwater collection, and community gardening is particularly powerful in a city that struggles to provide basic services at municipal level. Physical investiture is complemented with education through training programs and investment through collective ownership and revenue sharing. Here, the infrastructure of energy and food production reinforces the infrastructure of community building. The strengths of the project in organization and planning are not yet matched by its architectural expression and the jury noted that the multifunctional umbrella roof will need to be refined as it moves into more detailed design phases.

Stacked

Modular midrise housing

Vancouver, Canada
To provide affordable housing, the proposal introduces a midrise, mixed use building type. The project is part of a longer study by the authors to improve the economic and spatial models for affordable housing. The adaptable timber panelized construction allows for versatility in unit layouts and the building mass, creating a variegated expression. The project achieves net zero energy through a high insulation value together with geothermal heating and cooling. Through flexibility, the proposed system empowers residents to invent their own future.

Project authors Cynthia Wilson and Oliver Lang, LWPAC + Intelligent City, Vancouver, Canada.

Not pictured: Martina Caniglia and Ryan Gillespie, LWPAC + Intelligent City; Thomas Bocahut, Jenny Lee, and Mingyue Zhang, LWPAC; all Vancouver, Canada.

Merging sustainability with affordability

The LafargeHolcim Awards jury North America was impressed by the comprehensive, construction-based approach. By focusing on streamlining the building process, the proposal is able to merge sustainability with affordability. The question it addresses is a crucial one in many cities across the region: how to provide sustainable, affordable housing in high-value urban areas. It does so through a careful examination of housing’s basics: aggregation, modularity, and scalability. This approach is further strengthened by its focus not just on components but systems and its concentrated effort to strive for net zero energy. The project’s methodology that makes high quality, affordable housing a question of both engineering and spatial quality is a powerful claim.
Global Flora

Net zero greenhouse for Wellesley College  Wellesley, MA, USA
This project is an expansion of the botanical collection at Wellesley College. It is conceived as an educational link between the institution and the community. This project reimagines the greenhouse — typically an energy- and water-intensive program — as a net zero energy building. Particular care is taken to source all materials for the project locally and with low resource intensity both for construction and operations. The lightweight pillow cladding weighs just three percent of what the same area would out of typical insulated glass. The three biomes — dry, temperate, and humid — help support each other through passive air and heat exchange.

Virtuosity of integration

From Joseph Paxton onward, the greenhouse has been a compelling architectural type for everything from plants to exhibitions to radical housing. Greenhouses stand for challenges posed to the profession of architecture to reduce the means needed for enclosure. The LafargeHolcim Awards jury North America greatly valued this project for addressing this history with a reduction not just in material for enclosure; but also in the resources needed for ongoing use. Sustainability is at the very core of the design in structure, form, and system. The project meets sustainability metrics as a matter of course and then goes much further to achieve a virtuosity of integration.
Cricket Shelter

Modular edible insect farm

New York City, USA
This pavilion is a demonstration of an urban farming system that minimizes the ecological footprint of protein-rich food production. Animal meat production is extremely resource intensive. This project proposes an alternative that emits just 1% of the greenhouse gas emissions and requires 0.001% of the land to produce the same amount of protein annually when compared to beef production. The interconnected pods that comprise the structure include cricket habitats and their water and food supply connected via circulation tubes. The modular construction educates consumers on the use of the farming apparatus, which ultimately envisions a food supply chain decoupled from environmental destruction.

An exuberant architectural expression

As provocative as this entry might seem, it is nonetheless commended by the Lafarge-Holcim Awards jury North America for its radical approach to food systems. The project should be seen as a provocation to the status quo of meat production, which is carbon intensive. It proposes a form of protein that is less carbon intensive. The exuberant architectural expression was understood by the jury as a means of calling attention to the possibilities of insect farming, making it appear sanitary and futuristic, if not yet palatable.
Elemental Construction
UCLA Warner Graduate Art Studio renovation and addition
Culver City, CA, USA
The proposed building provides a new home for the Warner Graduate Art Studios at the University of California Los Angeles (UCLA) on the site of a former wallpaper factory in Culver City, Los Angeles County. The project’s basic objectives are twofold: to rehabilitate existing urban and architectural elements through adaptive reuse and complementary additions; and to frame a discourse on the role of mundane construction as the generator of space and form. Under the motto “Adapting for a Flexible Future”, the new addition – an L-shaped building comprised of naturally ventilated spaces and a series of outdoor courtyards – is designed in such a way as to accommodate forthcoming changes. While stitching the new complex into the surrounding fabric, the project fuses together new and old structures to allow differentiated and yet unanticipated uses to unfold freely.

An extraordinary approach for an ordinary structure

The LafargeHolcim Awards jury North America appreciated the idea to bring a nondescript building back to life through new construction, a design respectful of the existing structure, while introducing new spatial qualities to the entire ensemble. A dialog is established between past and present, for an educational facility directed toward the future – a dialog most clearly expressed in the sequence of spaces at the intersection of the “new” and the “old”. The jury valued the efforts undertaken to integrate low-technology principles in the design, without falling into clichés of “sustainability”. Economic, contextual, and environmental aspects are combined to form a sophisticated building in an extraordinary approach for an ordinary structure. The project gives due credit to an understanding of sustainability as a “common sense” culture, contributing to an elemental construction of poetic expression.

Project authors Mark Lee and Sharon Johnston, Johnston Marklee, Los Angeles, USA.

Not pictured: Nicholas Hofstede, Lindsay Erickson, David Gray, and Tori McKenna, Johnston Marklee; Kevin O’Connell and Amy Hackney, Simpson Gumpertz & Heger; Ishwar Dhungana, KPFF; Guy Smith, Horton Lees Brogden; Chris Sterpahn, Capital Projects Group; John Carter, C Plus C Consulting; Cassidy Green, CAIA; Walker Donahue, Jensen Hughes, all from Los Angeles; Sean Hira, ME Engineers, Culver City, CA; Hayden McKay, Horton Lees Brogden, New York City; Reto Geiser, MG&CO, Houston; Thomas McCorkell, Van Deusen & Associates, Pasadena, CA; Jim Good, Veneklasen; Pamela Burton, Pamela Burton & Company; both from Santa Monica, CA; all USA.
Ingrained Framework

All-timber high-rise load-bearing structure

Portland, OR, USA
The design of “Ingrained Framework” proposes a 12-level building using wood as the principal construction material. Intended for realization in the city of Portland, Oregon, the design recognizes timber as an important local resource, acknowledging the region’s long-standing tradition in wood construction. The project thereby intends to encourage widespread use of a carbon sequestering technology, while strengthening local economies in rural communities by increasing wood building product demand. Though similar structures have been erected in the region, it would be the first all mass timber high-rise in North America, using Cross Laminated Timber (CLT) for all load-bearing structural components, including the building’s stabilizing cores.

Successful step in a long series of advances

Perceiving the project as another successful step in a long series of advances in timber technology, the LafargeHolcim Awards jury North America was particularly taken by the extensive fire, structural, seismic, and acoustic testing undertaken to satisfy building code requirements – codes normally designed for steel and concrete structures and not particularly tailored to promote high-rise wood construction. Considering the project’s ecological objectives, the jury questioned the proposed aluminum composite façade, which partially offsets the benefits gained by the wood. This said, the jury appreciated the efforts undertaken to promote timber as a building material, not just for small-scale buildings, but most importantly for high-rise structures as well – a forerunner that will allow the building industry to adapt to new standards.
Reconciled Landscape
Urban watershed framework plan
Conway, AR, USA
This project reconstructs the wetland corridors lost to a previous generation of urban expansion. The new zones of green connectivity act as flood management and water filtration zones. The project crosses city boundaries, involving local and regional governments. To address different regulatory frameworks, it is structured as a toolkit of possible interventions. Each governing body can work within the kit of parts to implement the framework plan within existing policies. The water design aims to slow, soak, and spread urban runoff through landscape systems. It does so through retrofits to the existing urban fabric such as permeable paving and lakeshore stabilization.

A toolkit of possibilities

The LafargeHolcim Awards jury North America commended the project’s approach to a common problem: the loss of coastal permeability. Working here with a freshwater site, the project’s group of collaborators has developed a highly transferable approach. The project is seen more as common-sense additions to existing patterns of development. For example, its suburban areas remain suburban but do more to treat water and foster habitats than development as usual. As such, the project trades radicality for applicability, generating a toolkit of possibilities that could be implemented quickly with real, local impact.
Cooling Roof
Prototype for an evaporative roof for radiant cooling

Cherry Valley, CA, USA
Taking on the challenges of logistics centers at the periphery of cities as a point of the departure, the project unfolds as a research undertaking investigating the question of how to cool large structures with minimal means. With the objective in mind to reduce the building’s energy load, particularly the deployment of non-renewable resources, a thin layer of water is introduced as an additional roof layer – acting as a solar reflector, while providing thermal insulation. Whereas technical considerations are at the core of the project, the study culminates in a design of a big box structure that is as reduced in its formal manifestation as it is beautiful in its aesthetic simplicity.

Poetry of construction details

The project’s visionary stance caught the attention of the LafargeHolcim Awards jury North America. Acknowledging the research’s underlying critique pertaining to the inefficiency of complex and complicated mechanical systems in the contemporary building sector, the jury applauded the project’s thesis as well as choice of case study. Particularly valued was the set of ideas put forth concerning the detrimental impact of climate control technology on human-induced climate change. Moreover, the jury appreciated the relation established between the project’s scientific method of approach and the design’s formal appearance – the poetry of construction details and the presence of the architectural object at territorial scale.
Relational Urbanism
Protocol for agent-based neighborhood transformation  
Vancouver, Canada
Based on democratic principles of governance, communication, and participation, the project identifies a set of rules for establishing a sustainable urban neighborhood in the city of Vancouver in Canada. Instead of relying on a pre-established urban pattern, the strategy foregrounds a number of important criteria – such as the density of the urban fabric, the effect of shadow on neighboring buildings, views from each lot, parking needs, and green spaces – that are to be collectively negotiated by stakeholders in order to define the neighborhood’s future development. The approach establishes minimally-invasive interventions, which will develop in time according to the needs of both individuals and group collectives.

Creating an urban commons

The LafargeHolcim Awards jury North America especially commended the focus on questions of procedures, i.e. the design of processes, including stakeholder participation and its effects on physical form. Particularly interesting is the changing relationship between built and un-built areas that is constantly negotiated and re-negotiated in a process that engages a range of relevant parties. The proposal offers a method for a step-by-step urban densification, combining bottom-up and top-down as well as formal and informal practices – to create an urban commons. Of specific interest is the use of parametric design and digital technology as methods in order to anticipate the potential transformation of the neighborhood and its formal architectural expression in the future, testing aspects of Bruno Latour’s Actor Network Theory in practice.
Synanthropic Suburbia
Retrofitting residential neighborhoods
Markham, ON, Canada
Entitled “synanthropic suburbia”, the project explores potential architectural habitats for wildlife of various kinds that live near and benefit from human habitation – thus the use of the term synanthropic, meaning living in symbiotic relation with human beings. Based on a meticulous analysis of suburban neighborhoods in the province of Ontario and the city of Markham in particular, the project’s author proposes a set of small interventions for animal residents normally neglected in any design or planning process – in this case, raccoons, chimney swifts, tree swallows, blue birds, barn owls, and brown bats, all native species to the region.

Project author Sarah Gunawan, University of Waterloo, ON, Canada.

New architectural vocabularies

Bewildering aspects of the thesis notwithstanding, the LafargeHolcim Awards jury North America appreciated the design of so-called “ecological prosthetics” to be installed as micro-additions and habitats for animal users to houses across residential neighborhoods. Taking their cues from the iconography and type forms of existing houses, the interventions expand upon conventional building components to create entirely new architectural vocabularies. The “compost chimney”, “extended eave”, and “habitat dormer”, for example, provide living opportunities for wildlife and enhance the neighborhood’s ecosystem. The design promotes a discourse on the relation between human activity and the environment, offering strategies for understanding architecture in symbiotic rapport with nature, without succumbing to romantic notions of the “natural”.
Airflow Carving
Climate control experiments for enhanced comfort levels  
Boston, USA
The design exploration begins with a set of provocative questions pertaining to the climate control of buildings and the design implications of alternative approaches to cooling, ventilation, and lighting in construction. Can a building's thermal mass be great enough to maintain a stable ambient temperature, while providing adequate ventilation, in a temperate northern climate? Can the flow of air be guided through a building with only architectural elements, and without ducts? Which materials can be used to improve a building's comfort level? In order to answer the questions, a series of experiments were undertaken in a laboratory setting. Using airflow as a carving agent through the building's mass, architectural propositions were tested, while avoiding ventilation ducts. A combination of concrete and rammed earth is furthermore used as a construction material to maintain constant ambient temperature levels and thus enhance the structure's comfort provision for users.

Merging technical with architectural exigencies

Though critical of the particular choice of the building’s function, the LafargeHolcim Awards jury North America nonetheless valued the author’s aim to essentially rethink the role of mechanical systems in architecture, while taking recourse to traditional principles for cooling buildings. The jury particularly applauded the project's critical stance concerning contemporary building practices and principally praised the bold exploration of alternative solutions using airflow as a generator for space- and form-making. Rather than perceiving technology as an autonomous domain, the project merges technical with architectural exigencies, turning the logic of a quasi-neutral and anonymous system into one producing an architecture with specific properties — an approach that could be easily applied to a range of everyday uses and programs.
Hydropuncture
Publicly-accessible water retention and treatment complex  Mexico City, Mexico
Serving a dense, impoverished neighborhood of Mexico City, this project combines much-needed water infrastructure with a new type of public space. Stepped terrain and a series of public buildings form a rich variety of courtyards. Low basins host wetlands and provide storage capacity to mitigate flooding during heavy rainfall. Upper levels move from soft landscape to hard paving, from park to plaza. By interweaving water management with public amenities, the project reintroduces water to the civic realm.

Spatially compelling design

Working with the topography of the site, this project reintroduces soft surfaces for water retention into a city that has all but eliminated them. The LafargeHolcim Awards jury Latin America was impressed by the equal attention given to technical considerations of water management, social provision of public space, and the economics of construction as well as long-term maintenance. Moreover, the design is spatially compelling – by articulating the logic of flowing water, it creates an attractive, dignified public realm in an area lacking basic infrastructure.
Community Capital
Neighborhood center in Paraisópolis
São Paulo, Brazil
Part of a long-term neighborhood upgrading process, the project is a mixed use civic hub. Across three adjacent buildings, it hosts, among other things, a dance school, auditorium, crèche, and commercial space. The design has been developed through collaboration between community organizations, a local architecture firm, and a private developer. The project is elaborated through time. Appropriation of the site through temporary events and structures makes the site a social space before construction even commences. Coinciding with a long-term investing model—“patient capital”—the durable, low-maintenance architecture foresees the popularity of the civic center for generations to come.

The intelligence of economic architecture

In an exciting inversion, the social space of the project precedes the physical space. The LafargeHolcim Awards jury Latin America was greatly impressed by this logic and the corresponding long-term investment strategy that makes compelling sustainable development financially feasible. The intelligence of the economic architecture is matched by robust building forms that house activities determined by the community. Construction is strategically based as much as possible on existing local methods that have been adapted to improve durability and decrease maintenance. As the site is made and remade, it is continuously strengthening its role as a center for community empowerment.

Project authors Jonathan Franklin, Exxpon, and Sol Camacho Davalos, Raddar, both São Paulo, Brazil.

Not pictured: Maria Arquero de Alarcon, University of Michigan, Ann Arbor, USA; Heloisa Escudeiro, Haydar Baydoun, Giusepe Filocomo, Didier Callot, Eric Emnser, Gabriel Barbosa, Camille Dardanne, Raddar, São Paulo, Brazil.
Urban Circulatory System
Sanitation system in informal communities
Rio de Janeiro, Brazil
This project localizes water treatment, cleaning wastewater where it is produced. Rainwater harvesting, septic tanks, and wetlands are introduced in informal settlements to manage the wastewater now flowing through the neighborhood as open sewage. The improvement in public health also reduces CO₂ output and stabilizes the ground, helping to prevent landslides. Implementation is envisioned as a fractal approach, from the grouping of several residences, to schools, to whole neighborhoods.

Active relationship with urban infrastructure

The LafargeHolcim Awards jury Latin America was impressed with the detailed analysis of water flows as an urban “circulatory system” running through the favela. Taking on the pressing challenge of water sanitation in informal areas in Rio de Janeiro with intelligence and playfulness, the proposal challenges the notion that sewage needs to be hidden away underground and introduces innovation into a stigmatized but crucial part of urban infrastructure. By making water treatment local and visible, the proposed scheme creates an active relationship between water management and the community.
Incremental Weaving
Affordable housing with integrated workspaces

Cartagena, Colombia
This neighborhood design integrates workspace to enhance the potential livelihood of a vulnerable, displaced population. The base unit is a patio house design of locally-sourced prefabricated panels. Production of the components needed for the houses is intended to spark a new local industry that could employ residents. Houses adapt to the plot conditions, responding to a corner lot or major street and can be expanded as families or home businesses grow. Homes are grouped to encourage community building and social interaction within an urban plan designed to maximize shading.

A richness of interpretation

The longer the members of the LafargeHolcim Awards jury Latin America considered the project, the more depth they found in a project that is not flashy but is, they felt, exceptionally well resolved. From the wall panel to the settlement plan, the project has a richness of interpretation and a level of detail ripe for implementation. This is further underscored by the impressive economic model that delivers excellent quality at a low construction cost. The inclusion of means of livelihood within many housing developments is a crucial question for precarious communities. Here, workspace is included as a negotiation between the space of the home and the space of the street. Weaving working into living and houses into a neighborhood, the project produces a dense carpet of possibility for community building.
Pure Math
Minimal-impact research institute
Rio de Janeiro, Brazil
On the site of a former quarry, the project extends the headquarters of Brazil’s premier mathematics institution, National Institute for Pure & Applied Mathematics (IMPA). Housing for researchers, a library, and classrooms are set into thin, elevated bars that extend from the edge of the city into the forest canopy. Each pavilion-like structure is functionally indeterminate, anticipating changes in use over time. Generous communal spaces encourage interaction between the researchers. Each volume is broken down into the planes of an array of shading devices that give the building a light, responsive expression.

Light architecture on a sensitive site

The project expertly situates the building along the topographic lines of a sensitive site with minimal impact to the surrounding forest. The resulting light architecture integrates shading, ventilation, and photovoltaic panels into a convincing, attractive whole. Through the unique environment created, the LafargeHolcim Awards jury Latin America hopes that the project will encourage the study of mathematics for a future generation of researchers who could live and work there. This aspirational impact, in a country that scores low in mathematical competency, could raise the profile of mathematics in Brazil.
Seeding Health
Relocatable modular surgical hospital
Masaya, Nicaragua
This project is a prototype for temporary rural surgical hospitals. Because of the sensitivity of the equipment and supplies, it proposes a hybrid approach of prefabrication and local construction. Recycled shipping containers are outfitted as the core spaces of the hospital – operating room, pharmacy, kitchen, and laundry – and delivered in situ. Local builders erect wooden piles and place the containers in an elevated courtyard arrangement. Local carpentry is then also used to cover the containers with a tessellated timber roof for shading and ventilation. As the medical center expands, the complex can grow with it. Clinic rooms and patient rooms extend out from the surgical core in a pinwheel arrangement. When the surgical core is relocated, these wings remain as a lasting resource for local public health.

A thoughtful solution

The project addresses an important concern: how to provide high-level healthcare in rural regions. The LafargeHolcim Awards jury Latin America found the solution proposed here commendable. The project was commissioned by a medical organization focusing on the treatment of childhood cancer in developing countries. Their work relies on donations of time by volunteer doctors and equipment from hospitals. Within this specific arrangement, the project was seen to be a thoughtful solution that tries to use temporary medical support to induce long-term change.
Socio-Spatial Governmentality
City building strategy
Curridabat, Costa Rica
A project-as-process, the plan for an eastern suburb of San José envisions the city in coexistence with its flora and fauna. The project overlays several networks of interventions. The current parks are rehabilitated and some transformed into new wetlands for flood mitigation. Roads double their function to act as “bio-corridors” linking parks and forests particularly for pollinators that bring great benefits for biodiversity. Punctual interventions for meeting points and cultural facilities at the neighborhood level are realized through participatory planning and renovation. Together, the discrete layers reconfigure the habitat of flora, fauna, and human beings as “citizens” of Curridabat.

**Implications for urban design**

The LafargeHolcim Awards jury Latin America was impressed with the close coordination between the municipality, community groups, and planners to transform dreams into reality. Though the project has honorable aims, the jury noted that its focus on the design of processes partially overshadows the design of the architectural outcome. Good governance and community participation, in this case, must be complemented by equally ambitious objectives concerning the formal and spatial qualities of the final product. This said, the jury valued the project’s emphasis on governance — or gouvernementalité, to borrow an expression coined by Michel Foucault — and its socio-spatial implications for urban design.
Territorial Figure
Tidal energy landscape
Punta Loyola, Argentina
Addressing the potential ramifications of human-induced climate change on the natural environment, the authors propose an infrastructure for the use of tidal energy in Rio Gallegos estuary at Punta Loyola in Argentina. Impressive in its territorial and geographic dimension, the project transcends the scales normally associated with the domains of architecture. This said, the design nonetheless is treated as an architectural intervention within the landscape, carefully designed as a figure drawn on water to incorporate a range of functions for humans, while providing an environment suitable for flora and fauna – a project merging infrastructure, landscape, and architecture in a magnificent natural setting.

Aesthetic potential of infrastructure

The LafargeHolcim Awards jury Latin America was particularly taken by the authors’ critical stance concerning contemporary methods of energy production and their vision to tap into tidal energy as a renewable resource for the generation of electric power. The project furthermore demonstrates that infrastructure must not remain hidden, but can be used in its aesthetic potential, combining technology and beauty to create an intervention that is in sync with nature. Lastly, the jury was impressed by the precision and quality of the details incorporated in the submission – a beautifully crafted comprehensive presentation, both innovative and visionary.
Clearwater Revival
Public baths and sewage treatment plant

Cerro de Pasco, Peru
Located in a contaminated body of water — formerly known as “the lake to drink” — in the city of Cerro de Pasco in Peru, the new construction offers the unpretentious need to inhabitants for washing themselves in clean, potable water. Combining a sewage treatment plant with baths and 400 shower cabins, the design is treated as a well-crafted and beautifully designed monument in the lake, albeit one satisfying basic functions desperately needed by the city population. The project’s ambition to provide both clean water as well as a place to bathe is a response to the wasteful use of an existing resource by ruthless industrial exploitation. Though poetic in its architectural expression, the design’s political message cannot be overlooked, namely, to treat both the natural environment and humans with greatest respect.

Architecture giving tribute to the value of water

The project’s multiple agendas caught the attention of the LafargeHolcim Awards jury Latin America, namely, to provide a municipal facility for the treatment of polluted water as well as one for people to simply wash themselves. The jury furthermore appreciated the idea to use residual solid waste — a byproduct of sewage treatment — as an energy source to heat the water used in the public bath. Although conceived as a machine in the midst of an environment under threat, the building nonetheless aspires to be more than a piece of infrastructure, for it offers as much of a social gathering space within the city as it celebrates water as a collective good — an architecture giving tribute to the value of water as a collective resource to be cherished.
Service Points
Public facility towers  Córdoba, Argentina
“Service Points” are new small towers inserted within the informal fabric of Córdoba, Argentina. The project’s twofold objective is to provide an array of services for low-income populations as well as to increase social interaction among citizens. Covering a spectrum of amenities, the towers offer spaces for multiple uses – ranging from everyday activities such as childcare, cooking, and laundry to cultural activities such as theater, music, and exhibitions. In terms of their construction, the towers form an adaptable framework (including the necessary infrastructure), which can be transformed to accommodate current as well as hitherto unforeseen needs. The structures correspondingly define open outdoor spaces, which can be used and thus appropriated by the users as well.

The LafargeHolcim Awards jury Latin America considers the project to offer a provocative and contemporary interpretation of Cedric Price’s experimental proposals of the 1960s and 1970s; projects such as the Fun Palace, the InterAction Centre, or the Generator Project. Not unlike Price’s vision, the so-called “Service Points” are tools for capacity- and community-building. Likewise, they offer a physical armature that is adaptable to ever-changing societal needs. The jury applauds the authors’ vision of foregrounding not only architecture’s socio-spatial characteristics, but above all architecture’s role as an agent for improving the conditions of underprivileged and often marginalized communities.
Revealing Infrastructure

Multipurpose telecommunication towers

Medellín, Colombia
Whether camouflaged or in plain view, mobile telephone telecommunication antennas are spreading across cities worldwide. Questioning their mono-functionality, the project’s authors argue in favor of a strategy that would open up infrastructure to a broad palette of functions that could benefit communities, specifically those with insufficient public amenities. The design thus seeks to generate a novel network of public facilities attached to either existing or new telecommunication towers – appropriately so in Medellín, Colombia, a city undoubtedly open to innovation.

Project authors Daniel Felipe Zuluaga Londoño, Alejandro Vargas Marulanda and Iojann Restrepo García; all from Universidad Nacional de Colombia, Sede Medellín, Colombia.

Nodes for more than one function

The LafargeHolcim Awards jury Latin America highly praised the idea of an infrastructure that could perform more than a single function and particularly commended the project’s underlying proposition to transform antennas into multipurpose nodes within Medellín’s city fabric. Of particular interest, as noted by the jury, is the integration of a range of low-technology measures aimed at improving the environmental performance of entire city sectors – whether concerning the production of energy, the retention of rainwater, or the collection of household waste.
Legacy Restored
Religious and secular complex
Dandaji, Niger
The project for a religious and secular complex in the village of Dandaji promotes economic growth in the region through innovation in environmental technologies. The proposed new mosque as well as the restoration of an existing house of worship are accordingly conceived as test beds for sustainable research, exploring new techniques pertaining to the use of renewable resources – energy for heating and cooling, rainwater retention, temperature control, daylight, and natural ventilation. At the core of the scheme is the intention to establish a careful balance between the natural and fabricated realm – an objective most clearly expressed in the project’s landscape strategy, which aims to integrate the buildings into their natural setting.

Maintaining knowledge via construction

The LafargeHolcim Awards jury Middle East Africa greatly appreciated the project’s reuse of an existing structure and close engagement with the social and built fabric of the village; and ultimately felt that the project was both an intelligent reinterpretation of tradition and very much at home in the context. The believable depictions of life in the project were a further strength. The combination of traditional and new forms as well as techniques allows the possibility of maintaining knowledge through construction, integrates the passive climate control of traditional massive, cross ventilated structures, and engages in a discourse on the history of the site and on the project’s role in bringing a community together.
Weaving and Stamping
Elementary school and craft training center
Aït Benhaddou, Morocco
Through its program and the buildings themselves, the project fosters local artisanship. The complex will house a children’s school and an adult training space within a recent expansion of the village of Aït Benhaddou. By means of straightforward architectural forms that follow principles of passive climate control, the expression of the design counters narratives that commend only industrial materials as modern. The project incorporates local rammed earth construction and also uses local wool and cane weaving as screens and canopies to shade the facades and exterior common spaces. The woven screens are produced by local women.

Reestablishing techniques of artisanship

The LafargeHolcim Awards jury Middle East Africa commended the intricate relationship between the project’s program and its design. By explicitly incorporating the craft traditions that the project aims to advance, the building’s construction actively cultivates its own program. The elegant architecture was seen as an intelligent way of reestablishing traditional techniques of artisanship that are no longer in common use. At the same time, the thick walls and modulated shading present a careful response to climatic conditions that are simultaneously used to give the design aesthetic complexity. The project still requires refinements that adjust to the realities of working with rammed earth construction. Despite this critique, the comprehensive, research-driven approach of the design convinced the jury of the project’s merits and its strong statement of craft as a living and modern tradition.
Pavilion Re-claimed
Adaptive reuse for refugee education  
El Marj, Lebanon
After the 2015 Milan Expo, the collaborators of the project repurposed the “Save the Children” pavilion to build a school for Syrian refugee children in the Jarahieh Informal Tented Settlement in the El Marj, Lebanon – an afterlife that could not have been more fitting. The pavilion was disassembled, shipped, and reassembled in a new configuration centered around an internal courtyard. Local residents were involved both in adapting the pavilion’s design to its new site and use as well as in the construction process. The wool from sheep – a waste product in the region – was used for insulation, a technique which has found resonance with the settlement’s inhabitants who are now employing it for their own homes. By reusing a temporary structure for a humanitarian purpose, the project contributes to sustainability through re-appropriation and calls attention to the opportunity for architectural structures to be reused beyond their originally intended purpose.

A potent template for future application

The LafargeHolcim Awards jury Middle East Africa was greatly moved by the project’s contribution to the ongoing humanitarian crisis of Syrian refugees and the ingenious reinvention of the pavilion as a school. Within a context lacking basic infrastructure, the project provides not only space for education, but also a dignified environment that is a source of pride for the community who helped to build it. Through the use of what would otherwise be material waste (i.e. both the pavilion and the wool insulation), the school is the impressive result of limited means and resources. The project is an implicit critique of the high-design, short lifecycle model of grand exhibition events and offers a potent template for future application.
Ascending Array
Miracle for Africa Foundation central library
Lilongwe, Malawi
The new central library for the campus of the Miracle for Africa Foundation in Lilongwe provides spaces for books, archives, reading rooms, classrooms, offices, and an open forum. The architectural aim is to maximize the use of natural light, while powering the building with solar energy. An ascending array of roof elements — each with a gentle curve, like wind moving across a field — gives orientation to all interior spaces. Small glass-encased rooms containing humidity-sensitive materials and activities are situated within a larger, passively cooled open plan. A locally-crafted bamboo screen enclosure acts as a permeable dust-filtering facade and allows natural cross ventilation to cool the building both during the day and at night.

**Distinctive landmark**

The LafargeHolcim Awards jury Middle East Africa commended the sophisticated, undulating design that synthesizes effective shading, natural ventilation, solar energy, and greywater recycling into one seductive and highly resolved form. It was further noted that ambitious architecture is so unusual in the region that — as a distinctive landmark with a noble program — the project could provide an aspirational environment. Despite the exceptional design, a clear depiction of the siting of the building — as, for example, a site plan — was unfortunately lacking, making it impossible to assess the library’s relation to its context. Nonetheless, the jury applauded the project’s overall design posture, taking sustainability beyond what it conventionally appears to be.
Reel to Real
Maisha Film Lab headquarters
Kampala, Uganda
The film training center in Kampala aims to empower a new generation of East African filmmakers, enabling them to see and narrate African experiences for a global audience. Maisha – meaning “life” in Kiswahili – is a non-profit organization dedicated to further the as-of-yet unrecognized East African film industry. Grounded in this mission, the building is designed as a series of open classrooms in a natural setting to foster discussion, learning, and contemplation. The building’s reduced material palette, consisting almost entirely of bricks produced from high-quality local clay, establishes an appropriate cinematic framework for a range of spatial sequences – an architecture with cinematic properties.

Impressive gesture of cultural empowerment

The LafargeHolcim Awards jury Middle East Africa found the project an impressive gesture of cultural empowerment that is also contextual, well positioned within the landscape, and aesthetically inspiring. The program of a film lab was commendable for its aspirational objective, namely, to encourage a next generation of East African filmmakers engaged in promoting the moving image as a regional art form in its own right. Though the stepped building and its pictorial series of views and spaces appeared convincing, the jury argued that the proposed brick technology might need to be partially reconsidered in view of more sustainable alternatives, which would be more compatible with the project’s primary objectives. This said, the design brilliantly foregrounds possible forms of interaction between the art of filmmaking and the art of building.

Project authors Massimo Lepore and Raul Pantaleo, representing TAMassociati of Trieste and Venice, Italy.
Refrigerating Jar
Shea butter storage for Nyingali community

Karaga District, Ghana
The striking storage tower for the Nyingali community is designed to induce a chimney effect to keep shea nuts cool and fresh before processing. By storing the nuts and processing them incrementally, the community will be able to sell processed shea butter for skin moisturizing when it commands a higher price in the market cycle. The base of the tower is a storage space with a double layer masonry construction designed to keep the interior cool. Its ceiling is made of glass foam, which is designed to act as a heat exchanger when damp. The volume above is cross-ventilated and draws hot air upwards. This project, which also includes a range of training programs, is part of a long-term engagement by the NGO Make Africa Better (MAB) to improve the production of shea butter in the village. The facilities are built in cooperation with volunteers from the village and the resulting structures are owned locally.

**Foregrounading architecture as an art form**

The LafargeHolcim Awards jury Middle East Africa was particularly appreciative that the project is a site of production that links into an existing fair trade economy – specifically one that employs women. The pleasing form is a subtle and familiar reference to the Islamic architecture in the predominantly Muslim region of Northern Ghana. The proposal is further strengthened by its situation within a long-term engagement with the community. In short, the project is exemplary in its inventive approach to social, economic, and ecological sustainability; while foregrounding architecture as an art form.
Through the Looking-Glass

Odek Center for Nodding Disease

Odek, Uganda
The playful and colorful explosion of forms in the project illustrate its focus as a space for children in the Center for Nodding Disease in Odek, Uganda. The building is planned as the second phase of a larger complex dedicated to the care of children with Nodding Disease, an affliction about which little is known but is widespread in Uganda. This “playground-as-campus” is the result of a participatory design process that incorporates the formal vernacular of traditional architecture as filtered through the drawings of its future inhabitants. The buildings will be constructed using local labor and traditional techniques with the aim of showcasing a post-conflict architecture, allowing inhabitants to rebuild their lives and homes.

A catalyst for community rebuilding

The LafargeHolcim Awards jury Middle East Africa greatly appreciated the “Alice Through the Looking-Glass” strategy of tilting, coloring, and exaggerating the vernacular architecture of the region into something both new and exuberant. Further appreciation was given to the consideration the project gives not just to its main inhabitants but to using the project as a catalyst for community rebuilding after decades of war and displacement. By building up social and physical infrastructure and keeping the project by means of local ownership, the project is a contribution to the healing not just of children affected by Nodding Disease but of the village community as a whole.
Brick-Works

Brick kiln and incremental development project

Soshanguve, South Africa
The project “Brick-Works” is based on a critique of unsustainable practices in the production of fired bricks and proposes instead a set of principles to improve the sustainable performance of the brick-making industry. Going beyond technical exigencies, the proposal envisions brick-making as a catalyst of community-building – as demonstrated in the particular case of the township of Soshanguve in South Africa. The community currently relies on informal trade and subsistence farming to survive, and lacks the necessary infrastructure as well as skills for further development. By introducing a single kiln to this rural context, a culture of brick-making is incrementally established over time. As the community grows, socio-economic conditions gradually improve and new urban nodes are formed around the production facility.

Production facility as social space

The LafargeHolcim Awards jury Middle East Africa greatly appreciated the project’s bold critical as well as visionary stance and particularly the notion of using local construction industries to stimulate community-building at the local level. The author’s vision of “brick-works” as a living structure – an ensemble of buildings which expands and matures with the township by literally constructing both itself and its surrounding context – is a true contribution to the discourse on sustainable construction. Rather than perceiving the construction material industry as an abstract entity removed from daily life, the project promotes the integration of production facilities as places for gathering, working, building, learning, and living.
Recovering Aleppo
Rubble recycling units

Aleppo, Syria
In the city of Aleppo in Syria, war has indiscriminately destroyed the homes and neighborhoods of many, not to mention the livelihood of entire communities. Addressing the city’s devastation, the project proposes temporary structures embedded within the urban fabric to process concrete from damaged and destroyed buildings into aggregates useable in new construction. The intention is to recycle concrete rubble while reconstructing the city’s social and urban fabric. The so-called “recycling modules” are to be located there, where people once lived and are thus dispersed throughout the city, allowing citizens to rebuild their neighborhoods in situ. The proposal relies on civic engagement and offers hope and opportunity for the people of Aleppo to return to their devastated lands. With the support of a humanitarian agency, the project raises awareness on cultural continuity while rebuilding a “lost” city.

**Alleviating precarious living conditions**

The LafargeHolcim Awards jury Middle East Africa applauded the humanitarian tenets at the core of the project — a politically motivated initiative of young designers able to deploy their discipline for reconstructing war-devastated neighborhoods and for alleviating the precarious living conditions of a people under stress. Notwithstanding the overriding qualities of the scheme, the jury wondered whether it would have been possible to re-use the materials on site to build more permanent structures rather than temporary ones that would need to be repeatedly erected and dismantled. This said, the jury nonetheless argued that the proposal is founded on a strong ethical posture that more than simply deserves recognition, rebuilding communities while rebuilding their places to live — an enlightened next generation of architects reversing the senselessness actions of previous generations.
(In)formal Pattern Language
Designing processes for informal settlements
Cairo, Egypt
Revisiting and expanding upon Christopher Alexander’s “Pattern Language,” a method is being proposed to improve living conditions in Cairo’s informal settlements. Merging use patterns and architectural patterns in sustainable ways, a so-called “(in)formal pattern language” is proposed that takes its clues from the existing physical and cultural context. Rather than focusing on architecture’s final form per se, potential transformational procedures for its development are being identified, basically shifting the focus of the architect’s work from the “design of products” to the “design of processes.” The term “improvitecture” is herein introduced to identify an architecture based on both improvisation and improvement. Stakeholders are enticed to take charge of their environment via the deployment of straightforward “patterns” for improving their neighborhood.

Intersection between habitus and habitat

The LafargeHolcim Awards jury Middle East Africa admired the intellectual freshness of the author’s analytical approach to Cairo’s poverty-stricken districts. Particularly valued was the notion of an “(in)formal pattern language” that could guide users in improving their environment, a “language” that would not only allow people to take ownership of their specific neighborhood, but one that could also be easily transferred to similar sites in Cairo. Of specific interest is the proposed relation between daily activities and the architectural framework that determines the spaces that people inhabit – the intersection, as it were, between habitus and habitat. While the emphasis on processes was greatly appreciated, the jury nonetheless would like to encourage the author to be equally inventive when engaging in the design of architecture, rather than relying on established prototypical architectural “patterns,” so to speak.
Steps of Amman

Urban stair and library

Amman, Jordan
Is it a building, an infrastructure, or a patch of landscape? As a matter of fact, “Steps of Amman” in Jordan is a proposal for a hybrid structure, one simultaneously taking on architectural and infrastructural traits at once, while restoring a piece of the city’s undulating terrain. The structure furthermore combines a range of public functions: an urban square in form of a stair and an urban library embedded within one of the city’s hills. More than just a project for a building, the design makes a plea for reinforcing the civic role of architecture in contemporary culture. Though monumental in its scale and mass, the building is hardly noticeable as a structure in its own right, for it seamlessly merges with the city’s topography. Below ground, users discover another world, one dedicated to the promotion of culture as public good.

A crafted piece of civic architecture

Culture, as a form of interaction and key activity of civic life, evolves as the central theme of the design proposition. It is in this regard that the LafargeHolcim Awards jury Middle East Africa enthusiastically applauded the architectural and spatial qualities of the structure as a carefully crafted piece of civic architecture within the city fabric of Amman. Of particular importance is the sequence of public spaces both on top and below the stair, the latter potentially to be read as an amalgam of the Spanish Steps in Rome (though less lavish) and the Villa Malaparte in Capri (though less sculptural in its appearance). Additionally, the jury valued the beauty of the drawings that truly empower architecture as an art in its own right.
White Rabbit
Home for marginalized children
Thane, India
A home for 30 children, this building replaces their existing facility which tends to flood and lacks ventilation. The proposal reacts to the constrained site by leaving a void for ventilation at the back of the site, drawing air upward and providing indirect light. Terracotta louvers are envisioned as scaffolding for greenery that can help cool the interior and potentially provide a small business opportunity harvesting greens. The raised ground floor accommodates services for women and the elderly and the upper floors are reserved for the children and their caretakers. That this is mainly a space for children is reflected in the playful design sensitive to their scale and perception.

Urban building through the eyes of children

The LafargeHolcim Awards jury Asia Pacific was taken with the project’s “Alice in Wonderland”-like approach which re-envisions a small urban building through the eyes of children. In doing so, it also provides them with a dignified and comforting environment. The compact, quirky building form nevertheless achieves a feeling of spatial generosity through the inclusion of a central vertical void for circulation, light, and ventilation. The proposal goes beyond social sustainability to include passive building technology, innovating design measures, and a viable economic model. The next step towards implementation will need to be a further development of the project from compelling schematic design to a convincing translation into construction detailing.
Micro Library
Learning center  Bandung, Indonesia
Set within a park, this micro library aims to raise literacy by offering attractive spaces for reading. The proposal is part of a larger project to construct a network of libraries across the country. It will be the fourth completed by the group, each with a unique, site-specific design. This pavilion structure rests on four spirals of columns that define smaller enclosed spaces for storage, restrooms, and a prayer room. The rest of the covered space is completely open to the park. Ground and ceiling are covered with both natural and artificial greenery to extend the park into the building. Basic construction methods are easily achievable in the local context. By putting together simple components in a creative way, the project achieves complexity with minimal means.

Project authors Florian Heinzelmann and Daliana Suryawinata, SHAU, Bandung, Indonesia.

A territorial project defining community

The LafargeHolcim Awards jury Asia Pacific was impressed by the project’s vision of a network of libraries across Indonesia. Especially compelling is the specificity of each individual project. Every building responds to the needs of the local community and the urban context. Here, the project opens on all sides to the park around it, inviting the community to enter and explore. This is a fresh approach to the library – typically, a rarefied, closed environment. Unconventional materials – in this case, a moss ceiling and artificial grass floor – also make the project an exploration in unorthodox textures and construction techniques. By multiplying small, inviting reading spaces without replicating a single design gesture, the project constructs a territorial project reinforcing literacy and defining community.
Floating University
BRAC University campus
Dhaka, Bangladesh
This project achieves the impossible: it adds both built and open space to the city. The site is polluted swampland within Dhaka. Working with the client, an NGO-run university by BRAC (Building Resources Across Communities), the project team proposes a building that floats above the pond. First, the water itself is remediated into a bio-retention pond. The whole ground level of the project is opened to the public. Above, sustainable thinking permeates the design of the university building. Brise-soleil and planted facades optimize the interior climate, reducing cooling demand by 40%. Water recycling and rainwater collection reduces water use by nearly 50%. Photovoltaic panels and bee-keeping transform the roof into a productive environment. In total, green areas cover more surface than the area of the entire site.

Project authors Richard Hassell and Sim Choon Heok, WOHA, Singapore; Jalal Ahmad, J.A. Architects, Dhaka, Bangladesh; and Wolfgang Kessling, Transsolar Energietechnik, Munich, Germany.

Not pictured: Mun Summ Wong, WOHA, Singapore.

A new benchmark for sustainability

When this project is built, the LafargeHolcim Awards jury Asia Pacific believes that it will set a new benchmark for sustainability in Asia. Rapid urbanization has deteriorated Dhaka’s water bodies and natural habitats. The design remediates a natural area and opens it back up to the city. It situates the building in a way that allows both the university and the public to inhabit the site. Sustainability is deeply integrated into the building design, from thermal zoning to serious reductions in the use of energy and water. Particularly commendable is the way a single building is conceived as a larger rejuvenation project for the city.
Catenary Arches
Ban Chang town hall
Rayong, Thailand
The project began with a decision by the local community to invest in constructing a community hub instead of financing their annual festival – durable rather than temporary investment. The village is next to a large coal power plant that has impacted local health and economy. The building is a series of catenary arches out of concrete curving in different directions. An open air structure, it is intended to be functionally vague to host varied activities. The use of fly ash is common as a partial substitute for cement. In this location, though, it takes on additional meaning through the conversion of industrial waste into structure.

Imaginative construction for imaginative uses

The LafargeHolcim Awards jury Asia Pacific enjoyed the playfulness of this surreal pavilion. By multiplying the possibilities for cultural activities in the village, it fosters a greater sense of communal engagement. Also commendable is the activism that has spurred the project. Community leaders and the project’s architect have worked together to gain support for the project from locals and the public sector. This process has embedded the new building within the community before construction begins. Through this participation, it is clear that the imaginative construction will be met with equally imaginative uses.
Growing Grassroots
Training center for organic agriculture
Parung, West Java, Indonesia
The story of this project started a few decades ago. The Indonesia-based non-profit, non-governmental organization Urban Poor Consortium (UPC) acquired a parcel of land at the edge of an existing village to protect local farmers from imminent eviction. Plans were recently made, with the support of local stakeholders, to transform the existing farmland into a training center for young farmers interested in promoting organic agriculture. Part of the initiative is to harvest local materials – such as bamboo that is abundantly available in the area – in order to erect a number of farming and training facilities on site.

Sustainability for a broad range of challenges

Three aspects of the project were foregrounded during the jury deliberation process. First, the LafargeHolcim Awards jury Asia Pacific greatly appreciated the idea to use property – in this case, the purchase of a piece of land – as a form of counterpoise to unrestrained real estate development that most often compromises agricultural land in favor of urban growth. Second, the jury valued the initiative’s objective to promote organic agriculture, including measures to control water management on site and enhance soil fertility using sustainable methods of farming as a vehicle to encourage agriculture as a profession for young members of the community. Third, the jury valued that the above-mentioned concepts left their mark on the domain of sustainable construction, namely, the idea to use local materials, including bamboo, for the erection of new structures. All in all, the project demonstrates that sustainability can be brought to bear on a broad range of contemporary challenges.
Maximize the Minimum
Baitasi urban regeneration  
Beijing, China
Initiated by a state-owned enterprise, the project offers a set of strategies for the regeneration of the Baitasi historic neighborhood in the west downtown district of Beijing. Questioning the outcome of normative urbanization processes in China, which often rely on the eviction of local populations and the replacement of existing buildings by new construction, the proposed scheme empowers local stakeholders and vulnerable on-site residents to upgrade infrastructure and public services, while encouraging them to improve their housing and workshop units themselves. A so-called “max-min” concept is pursued that promotes the implementation of minimal means for maximum effect. New low-rise, courtyard housing will be added within the built fabric via pilot programs to increase densification without high-rise construction.

Fabric to create a living community

The LafargeHolcim Awards jury Asia Pacific appreciated the client’s aim to support low-income populations in their effort to remain on site, and this within an economic context marked by rampant gentrification. Valued were the methods used to identify the needs of inhabitants through door-to-door interviews, formal registration, and participatory meetings – needs that were then translated in comprehensive upgrading proposals for the improvement of infrastructure, public services, and living spaces. Viewed with great esteem was the idea that all physical construction, generally based on micro-scale and decentralized interventions, will be undertaken in such a way as to respect the historical fabric, without turning the neighborhood into an outdoor museum or a tourist attraction. Instead, the project aims at the regeneration of the existing social and physical fabric to create a living community by and for the people.
Water Collective
Multifunctional public space

Thecho, Nepal
This project replaces an existing dilapidated guesthouse with a new multifunctional building. The new structure restores and enhances a historic Paati – a type of covered public space – that was damaged in the 2015 earthquake. Wrapped around the Paati with its carefully restored 100-year old carved wooden columns and insets is a plinth design with a water tank at the center. The tank is used to collect and store water to enhance disaster preparedness. Above the tank is an open room for community use. When needed, the seismically-sound structure can also be used as emergency shelter. The roof collects rainwater, which is distributed to exterior taps for washing and laundry. For drinking water, a bio-sand filtration system inside the complex purifies water for a second set of taps. Through this system, the building provides safe water to the community – something the municipal system lacks.

For everyday life and times of crisis

The LafargeHolcim Awards jury Asia Pacific considered the design to be highly commendable in providing a space equally suitable for everyday life and times of crisis. Out of the need to provide basic infrastructure, it produces social space, drawing on the traditional role of water collection as a social activity. Its social sustainability is further strengthened by its operators: a local women’s cooperative, whose control over the water will have an empowering effect. In a region struggling to provide access to clean water, the social and infrastructural solution is also highly transferable.
Low-rise, high-density
Participatory village transformation
Guming near Nanning, China
The project for the regeneration of Guming village, 20 km west of Nanning, China, offers a model for a socially appropriate and economically robust form of bottom-up urban transformation of rural communities around the country. The gradual upgrade of the existing neighborhood tissue, combined with new carefully integrated interventions, goes hand in hand with economic measures that guarantee – via stakeholder participation – a sustainable development of the village’s physical and social space.

Model for future urbanization

The proposal, according to the LafargeHolcim Awards jury Asia Pacific, delivers proof of how modernization might evolve within the context of a rural village, without taking recourse to tabula rasa strategies. On the contrary, due respect is given to traditional building morphologies, while allowing the built fabric to be improved and technically upgraded in time. The project offers a discourse on how to bridge the gap between historic preservation on the one hand and the need to modernize on the other. The jury applauded the measures taken to promote a form of habitation based on low-rise, high-density structures – as opposed to high-rise, high-density responses – that could well evolve as a transferable model for future urbanization in general, whether in China or other regions of the world.
Sacred and Profane

Water treatment infrastructure  
Varanasi, India
Water has always played an important role in the culture of India, both as a resource for everyday activities as well as a source of spiritual value. It is in this respect that the project, located on the edge of the Ganga River in Varanasi imagines a new typology of water purification infrastructure that transcends mere utility. Merging the disciplines of engineering, architecture, and urban design, not to mention sociology and anthropology, technical requirements are combined with places for social gathering and cultural rituals, in a set of carefully designed architectural interventions at the threshold between river and land. Key to the proposal is not only the treatment of the highly polluted water, but most importantly the making of a genius loci, uniting the sacred with the profane.

More than a servant to utility

The LafargeHolcim Awards jury Asia Pacific praised the skilful presentation of the project’s ideas and greatly appreciated the clarity and beauty of the submitted drawings that intelligently refer to Indian tradition, while acknowledging the present. This said, the jury wondered whether the technology deployed, particularly with respect to the water purification processor, could not have been partially substituted by more subtle and less intrusive methods as used in other parts of the project, for example, by means of rock and gabion water filtration as well as sedimentation pools. Criticism notwithstanding, the jury greatly valued the author’s objective to regard infrastructure as more than a mere servant to utility – to be reclaimed as a truly public resource and thus as a matter of design.
School Hub
Vocational training facility  Ruteng, Indonesia
Can a school be more than a school? Taking on this question as a point of departure, the project for a teaching and learning facility in Ruteng on the island of Flores, Indonesia, offers an alternative to the town’s existing temporary school barrack as well as the state’s current educational curriculum, proposing instead a school as hub for multiple activities – as community gathering space, as visitor center, as testing ground for local construction materials, as vocational training facility, and so forth. Based on an analysis of what the authors call “the town’s potentialities”, the proposal unfolds as an exploration of potential future opportunities translated in an architectural ensemble of discreet buildings that can evolve in time and as need may require.

**Problems perceived as opportunities**

The LafargeHolcim Awards jury Asia Pacific commended the young architects ethical posture and their courage to engage with existing challenges. Problems are perceived as opportunities to not only create a school but a center strongly connected to the community at large. The proposed structures explore local materials and assembly techniques, developed by both students and teachers to create a campus as hub able to contribute to the town’s economic long-term livelihood – a project with a clear thesis and a strong conviction that architecture can play a role in community building. The most promising feature of the project, according to the jury, is the promising idea to empower local craftsmen, through education and vocational training programs with a focus on sustainable construction and the promotion of local materials.
Meta(bio)lism
Exploring resilient ecosystems
Taichung, Taiwan
Titled “Meta(bio)lism”, the project – more than the design of a building – is conceived as a research platform exploring the relationship between human construction and natural ecosystems in the city of Taichung in Taiwan. Material stocks and flows are addressed at multiple scales, ranging from studies of local materials, such as clay, to the investigation of construction assemblies for roof structures at the building scale as well as examinations of urban patterns at the territorial scale. Of fundamental importance is the search for alternative proposals to current real estate development which, as stated by the author, “exploit nature instead of working with nature”.

Deep sensibility for concerns of sustainability

Whereas the beauty and precision of the submitted drawings initially captured the attention of the LafargeHolcim Awards jury Asia Pacific, a closer look at the project revealed a deep sensibility for social, technical, and environmental concerns – all combined and transformed into a stunning research for an architecture of the future in synthesis with natural metabolisms.

The jury was impressed by the scheme’s exuberant deployment of architectural and technical means – both analogue and digital – to explore and broad range of important themes relating to sustainable construction. This said, the jury argued that less might be more, recommending that the project could benefit from an economy of means, while maintaining its optimistic call for working with rather than against nature.
LafargeHolcim Awards and Acknowledgement prizes are bestowed on projects at an advanced stage of design; roughly three-quarters of these prize winning projects in the five competition cycles to date have been built. LafargeHolcim created a new prize in 2017 that was presented by a member of its top management at the Awards ceremony in each region to the author of a completed former prize winning project. LafargeHolcim Building Better Recognitions are a non-monetary distinctions that acknowledge the outstanding implementation of projects, which are already proving successful in the field.

From project to reality

LafargeHolcim Building Better Recognition Europe went to Gilles Delalex of Muoto Studio d’architecture for “Public Condenser – Low-cost flexible university building” in Paris. The project received Awards Silver 2014 Europe and was praised by the jury for its “minimal deployment of architectural and technical means to achieve a remarkable contribution to sustainable construction.”

The LafargeHolcim Building Better Recognition North America went to Gloria Lee and Nathan Swift of SwiftLeeOffice for “Net Zero Energy High-Performing School Buildings” on three sites in California. The project received Awards Silver 2011 North America and impressed the jury with a “promising approach for sustainability considering the full life-cycle of the structures and integrating a pragmatic concept for the use of renewable energy sources.”
The LafargeHolcim Building Better Recognition Latin America went to Mario Camargo of colectivo720 for “Articulated Site – Water reservoirs as public park” in Medellín, Colombia. The project received global Awards Gold 2015 and was applauded by the jury for “foregrounding the value of water as an important resource of urban life, while also celebrating a piece of infrastructure as a civic work of collective pride and beauty.”

The LafargeHolcim Building Better Recognition Middle East Africa went to Francis Kéré of Kéré Architecture in Berlin, for “Earth, wind and sun – Village school” in Gando, Burkina Faso. The project received global Awards Gold 2012 and impressed the jury by its “beauty and innovative architectural concept that is a shining example for new sustainable construction from a materials and technology perspective.”

The LafargeHolcim Building Better Recognition Asia Pacific went to Milinda Pathiraja of Robust Architecture Workshop for “Post-War Collective – Community Library and social recuperation” in Ambepussa, Sri Lanka. The project received global Award Silver 2015 and was celebrated by the jury for “outlining a set of tangible measures, ranging from the introduction of an educational program to the deployment of particular construction technologies.”
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The 6th LafargeHolcim Awards competition for sustainable construction projects and visions opens mid-2019 for submissions and closes in the first quarter of 2020. The Awards are run in collaboration with [phase eins], and Raecke Schreiber GbR as well as the operational companies of LafargeHolcim in all regions of the world by the office of the LafargeHolcim Foundation: Sibylle Bielefeldt, Kevin Jones, Kathrin Rüegger, Carmen Schmid, Edward Schwarz, and Marc Zutter.
Read interviews with global finalist project authors in this book
LafargeHolcim Awards  Fifth cycle of the regional and global competitions for sustainable construction