Review...

See opposite for an extract from this book

Designed for the future

By Jared Green

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REVIEW BY ROB HADDEN

There are as many ideas for ways to design sustainably for the future as there are architects and dreamers out in the world and, it was with this in mind that Jared Green set about asking eighty movers and shakers in the global built and natural environments for their views. They were each asked a simple question – ***What gives you hope that a sustainable future is possible?***

The range and input of ideas presented for your delectation span from the global to the local and cover all the usual suspects, plus many more that give pause for thought and lead us into areas we may have not yet considered.

A lot of emphasis is placed on social sustainability and the need for action at a community level, especially in urban areas of densification that seem to be on a lot of designers' minds. Many are pushing the ideas of city living as the way of the future as it concentrates all the needs locally and one can dispense with the car and all the trappings of suburban life.

A really good book and one that challenges a lot of stereotypes about 'sustainability.' This is a book that a lot of people will find very informative. I read it from front to back in one go over two nights.

London has been charging a congestion tax for years now and its purpose is to remove any excess traffic that is not there for a specific purpose. It encourages people to travel by public transport and leave their cars at home.

Existing colonies of termites are providing extraordinary information on heating and cooling our homes with porous materials that breath. These tiny creatures have created the perfect environment that remains at a stable temperature at all times of the year.

Singapore now has a biophilic hospital building that has an overabundance of greenery and spaces that promote healing with nature. This is being replicated in other buildings as well, as Singapore believes that we all should aspire to live in a garden environment.

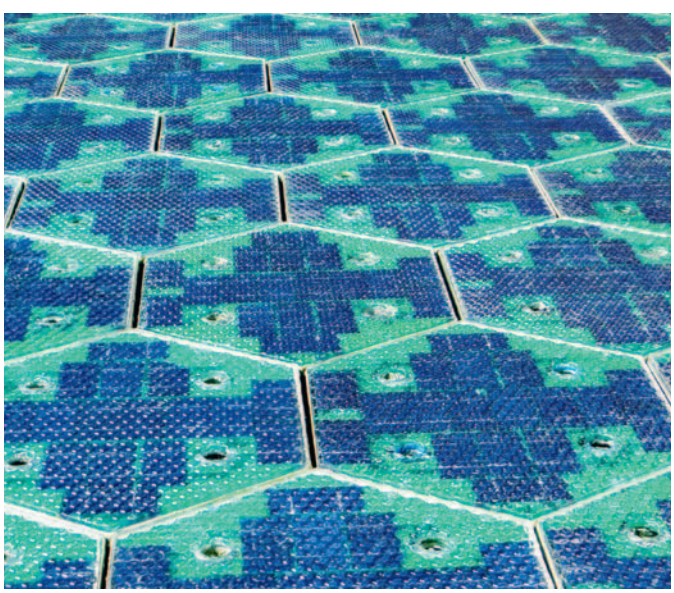
How do we educate young people to look at ways to be sustainable? Well we build a library in a subway station in Colombia and reach out to the marginalised kids who would never have had the chance to learn of these ideas.

Revitalising old neighbourhoods is inherently sustainable as well, as one uses existing housing stock and adapts them to 21st century living without the need to demolish or build anew.

Building materials come under scrutiny and some amazing approaches are being taken. How about walls and insulation grown from mushrooms?

Not all emphasis is on high tech either, with a look at Angkor Wat and various vernacular habitats around the world and how they viewed their means of survival and remaining sustainable in order to grow and thrive. There are lessons here in why some collapsed.

I could go on, but space limits what I can write about. There are a myriad of new and exciting ideas that these proponents of sustainable living, building, adaptation, reuse are using right now and the spin-offs from these drive the engine house of new solutions for the future. This is essentially a very positive book, driven by the energy and enthusiasm of its contributors. This book should be in the library of all those who think sustainability begins and ends with insulation and light bulbs because it will broaden your outlook and fuel your hunger for new directions and ideas. ◆



The Solar Roadways campaign of engineers Scott and Julie Brusaw is just one of the many innovative and clever options put forward in **Designed for the Future**.

See extract opposite.

Solar Roadways pilot
Photo: © Solar Roadways

Book extract

The following are excerpts from **DESIGNED FOR THE FUTURE: 80 Practical Ideas for a Sustainable World** by Jared Green, published by Princeton Architectural Press, 2015.

BIOMIMICRY AND BIODESIGN

BLAINE BROWNELL

Partner with building materials instead of killing them.

Biomimicry and biodesign—which involve creating lifelike or living systems, products, and technologies—give me hope about the future.

Several architects and engineers are using algae—living, photosynthesizing microbes—in building facades. The engineering firm Arup created a promising system for a German building expo: It has a living algae curtain wall, which harvests the building's algae as an energy source through a bioreactor.

Algae are pumped through the system and harvested for biomass, and then new algae are circulated in. As the algae circulate through the facade, they provide solar shading and thermal insulation. The advantage of the system is that it takes what is typically an eyesore in nature and makes use of its photosynthetic capabilities.

Why algae? Why use in a high-tech wall? That's the intriguing part. This system is about synthesizing industrial technology with living organisms. It's about harvesting nature in a new way. In the industrial way, we mine and then process materials, essentially killing them. This is how we work with trees and other plant fibers. Now, we can allow natural materials to play out their natural lives. We can harvest materials on-site in a form of agricultural architecture instead of using the old energy plant.

Blaine Brownell is associate professor at the University of Minnesota School of Architecture and author of Material Strategies: Innovative Applications in Architecture.

Solar Leaf Project, International Building Exhibition, Hamburg, Germany, 2013
Photo: © Colt International, Arup, SSC GmbH

SOLAR ROADWAYS

CHRISTOPH GIELEN

Design a new transportation system that the public can love.

To reduce carbon emissions, we must make improvements in our infrastructure and change our transportation habits. We need new multifunctional systems that the public can love in order to transcend political impasses.

The Solar Roadways campaign of the engineers Scott and Julie Brusaw may be just that! The duo creates solar-powered panels that can be used as building blocks for a smart road. The public response to this unusual innovation has been remarkable.

All manner of roads, driveways, and parking lots could be replaced with solar panels that can be driven on. A solar road produces electricity through photovoltaic cells underneath a heavy-duty, recycled glass surface that is shatter-resistant; its manufacture is based on airplane black box technology.

The roadway would produce renewable energy for nearby homes or feed into the electrical grid. Embedded LED lights could prevent accidents by signaling cars about oncoming obstacles. The panels would even have the ability to heat the street surface to just above freezing, so drivers would no longer have to worry about snow and ice in wintertime. The roadway would be able to monitor its own conditions. Communication lines could be run through the roads, replacing conventional ones above ground. And in the far future, the roadway could power autonomous vehicles.

We have about thirty thousand square miles of road space that could be transformed with Solar Roadways technology, but at what cost? A complete cost analysis hasn't been published as of June 2014, but the consensus among journalists is that installation costs might be 50 percent to 300 percent higher than building a regular road. Each twelve-square-foot (3.6 sq. m) panel may cost around ten thousand dollars, or four million dollars per mile. A one-mile-stretch (1.6 km) would take twenty years to pay for itself, at 2010 energy prices, with the amount of energy that it creates over that time.

It is important to recall that ambitious U.S. public works have been successfully funded before. In the 1950s the Federal Highway Administration spent twenty-five billion dollars over ten years to build up the national highway system and recouped all costs by taxes on fuel. And the Federal Highway Administration recently provided funding for building a Solar Roadways prototype—a parking lot with all these features, which is now complete.

People are eager for sustainable solutions —let's start by implementing Solar Roadways parking lots.

Christoph Gielen is an aerial photographer and author of the recent book Ciphers.