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SNØHETTA REVEALS UPDATES TO SF ARENA

PLAYING BALL



The new design features a smaller footprint and more public space.

SNØHETTA

The same week that it unveiled its design for a grand stair at the San Francisco Museum of Modern Art (SFMOMA), Snøhetta revealed updated designs for the Golden State Warriors arena, located on a 13-acre site at Piers 30–32 on the City by the Bay's waterfront. The plans, presented after a year and a half of talks with citizens and city agencies, now include an

The new design also reduced the size of the arena to 695,000 gross square feet, with space to accommodate just over 18,000 seats, and expanded the open public space at pier level to just under four acres, with total open public space at eight acres. Parks, plazas, and paths with water views will provide views of the bay. The new design reflects a desire to attract not only

The proposal arranges towers around a U-shaped plaza.



RELATED COMPANIES

RELATED BRINGS FRANK GEHRY BACK TO GRAND AVE PROJECT

Return of the King

Back in October Frank Gehry promised a crowd assembled at the Disney Concert Hall that he would be returning to the Grand Avenue Project—Related Companies' long-stalled effort to build a major retail, hospitality, and residential complex in downtown Los Angeles. His firm designed the multi-phase

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SPECIAL ISSUE: GLASS

THREE CASE STUDIES DEMONSTRATE THE PERFORMANCE, PROGRAMMATIC, AND DECORATIVE POTENTIAL OF GLASS. SEE PAGE 11. PLUS INNOVATIVE GLASS PRODUCTS. SEE PAGE 08.

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KEN SMITH MASTER PLAN FOR ORANGE COUNTY PARK ALTERED



ACT NATURALLY

Architecture Follows Nature: Biomimetic Principles for Innovative Design
By Ilaria Mazzoleni in collaboration with Shauna Price
CRC Press, \$79.96

Biomimicry is increasingly becoming one of those loaded words, like sustainability or innovation, rendered meaningless by overuse and over-application to concepts and objects further and further removed from their original intention. In its simplest definition, biomimicry is design inspired by natural systems and materials. Poorly

translated, this could mean anything from a building shaped like a bird to a coat rack in the form of a tree's branches.

In other words, biomimicry can easily become a slick appropriation of natural forms and imagery to no end in particular, as opposed to the application of scientific principles of nature and its systemic processes

to a design problem. Why shape a building like a bird—and surely this calls one particular architect to mind—unless you need the building to perform similarly to a bird?

In her work and writing, the Los Angeles architect and educator Ilaria Mazzoleni has sought to expand biomimicry's limited understanding in architecture to include

performative aspects she sees as central to a more balanced, holistic view of the world. For the last several years, Mazzoleni has taught a design investigation course focused on biomimetics at SCI-Arc (full disclosure: I have taught a separate class with Mazzoleni at SCI-Arc). She has now written a book, *Architecture Follows Nature: Biomimetic Principles for Innovative Design*, which builds on material produced in the course.

The book is divided into two parts. The first sets a theoretical framework for the concept, beginning with a light touch on historical precedents for expressions of nature in architecture and how the modern era has driven nature to extremes through over-consumption of natural resources with designs working against, rather than with natural processes. She then follows this with a similar discussion on biology and architecture. To underline her main point—that our era defines a shift from “bio-inspiration to biomimicry”—Mazzoleni relies on systems theory, which posits that nothing, not even a building, exists in isolation, but is dependent on a shifting network of other things. She suggests that parametric design, emerging materials science, and responsive, dynamic technologies increasingly make it easier for architects to ground their work within this systems approach.

In the second half of the book, Mazzoleni and her students follow through on this proposition with a series of case study projects that respond to the performative aspects of animal skins to develop a responsive architecture focused around the building envelope. Conceptually, she positions the envelope as fulfilling four main roles in architecture—communication, thermal

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CIVIC PROJECTS FOUNDATION

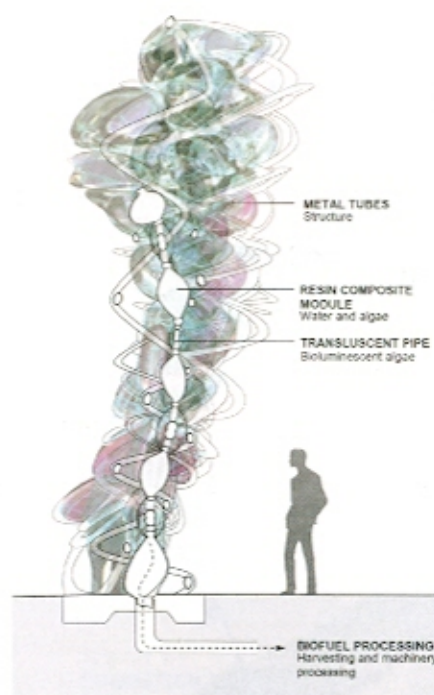
CAR TROUBLE? continued from page 15
"Possible Futures: Southern California in 2035," states: "This book does not deal directly with many radically alternative scenarios, including severe global depression, permanent drought in the Southwest, The Big One (massive earthquake), Peak Oil, and rapidly rising sea levels due to climate change. However these possibilities shouldn't be ignored."

So while the book seems relentlessly stuck in a form of short-term thinking, there are notable exceptions. Featured on the wrap-around cover design, the Origami Model T was designed by Sang-eun Lee in a project sponsored by Ford at Art Center

College of Design. Intended as a car to sell for under \$7,000 by utilizing an innovative manufacturing process, Lee's method was to apply origami methods to simplify shaping the body of a light, urban vehicle. Another notable exception, "Is an Environmentally Neutral Car Possible?" is by John Thackara, the author of *In the Bubble: Designing in a Complex World* (MIT Press) and a blog at designobserver.com. He writes about a start-up car company in the UK, Riversimple, whose purpose is "to build and operate cars for independent use while systematically pursuing elimination of the environmental damage caused by personal transport." The company currently has a "technology demonstrator vehicle" powered by electric motors and hydrogen fuel cells and with a body made from composite materials.

Of course, for many readers the essential question is what will those new cars look like in 2035? Geoffrey Wardle, Art Center's Executive Director of Graduate Transportation Design, in "The 2035 Look," takes the reader through a succinct and well illustrated history of car styling in the 20th century and beyond to 2035: "Writing in 2012, one thing is quite clear: the rate of change of the automobile industry is going to be faster and more significant between now and 2035 than perhaps the entire history of the car. Of course quite major, even catastrophic events, which are hard to predict, could completely change the direction of development."

CHIP LORD IS A PROFESSOR EMERITUS AT THE UNIVERSITY OF CALIFORNIA, SANTA CRUZ AND A FOUNDER OF ANT FARM.



from the way the lettuce sea slug, which has a leafy form and resides in shallow coral reefs in the Caribbean Sea, uses the sun's energy to drive a photosynthesis process with its green algae food source. Effectively, these transparently-skinned slugs are "off grid" for weeks or months at a time thanks to this solar process.

The architectural project inspired by the slug takes key aspects—clear skins, lots of surface area, an internal circulatory system for distributing energy—and applies it to a modular energy generation structure to create bio-diesel for post-earthquake Haiti. Formally, the structure appears like a congealed blob tower made up of individual plastic pods, each containing different algal species depending on solar orientation and desired rate of energy production. The project is idealized in the way we expect work produced in academia to look, but its technical merits are certainly there, especially in its use of modular, lightweight materials, which are conducive for post-disaster deployment.

There are several more such case studies, most of which, like the sea slug, neatly balance technological performance and what we might call "bio-aesthetics." In that respect, Mazzoleni's book is a helpful step in taking the application of biomimetic principles further in architecture. It is certainly refreshing for those who only have Janine Benyus' somewhat cheerleading 1997 book, *Biomimicry: Innovation Inspired by Nature*, and wondered, "what next?"

RUSSELL FORTMEYER LEADS SUSTAINABLE DESIGN FOR THE LA OFFICE OF ARUP. HE IS AN APPLIED STUDIES FACULTY MEMBER AT SCI-ARC.

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regulation, water balance, and protection. Her focus on the envelope is timely, since its role in architecture has never been more central. This owes as much to technology as it does the lack of potential design scope in the other aspects of buildings. In many cases, the envelope is the only site within architecture open to investigation. In terms of biomimicry, the envelope certainly represents the most direct and relevant comparison to the animal and plant worlds.

For example, one project takes inspiration

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