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Sustainable China Urban 1.5

ESPOO (FI) — In the Archiprix Utopias series, Archiprix International presents utopian graduation designs from Europe and explores how these reflect upon, and engage with, actual social issues and problems. Annabella Parkatti graduated from Aalto University with a degree in Architecture and Landscape Architecture. Her project

examines the characteristics of a sustainable city structure for Tianjin, located in northern China.

What is your graduation project about?

Sustainable China Urban 1.5 introduces a sustainable urban planning model for Tianjin, near Beijing. It demonstrates that, even by following current city planning rules, a sustainable, high-density city structure can be achieved in China. The planning site is the first parcel of a vast area comprising the 'Sino-Singapore Eco City' – 'eco' only in name, not in nature. To render the design comparable and realizable, the solution follows existing construction regulations in China and the same project programme as the actual Singaporean project.

The goal of low and dense urban structure has been achieved by placing buildings along the edges of the lots. The planning has been conducted in a way that enables the use of passive solar energy as an integrated part of each building in the city.

The pleasantness of a walkable city has also been emphasized, and differ-

ent functions were knowingly set within a walking distance. The current system of mono-functional planning has been replaced with a mix of functions, for example, by placing plenty of small commercial spaces at the street level of the buildings.

The green coverage rate throughout the city is very high, and these green areas are connected. The parks with small ponds, streams and filtration and flooding areas constitute a significant part of the city structure, which also enables natural and local treatment of rainwater.

Why did you choose a city in China as the location for your project?

I have been specializing in sustainable urban planning and was looking for a project which could actually have some impact on reality. The biggest urban construction boom the world has ever seen

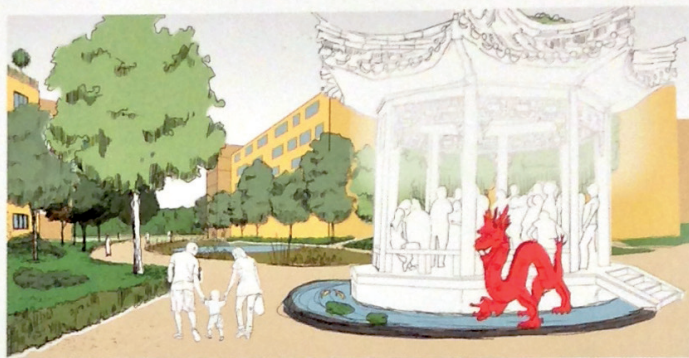
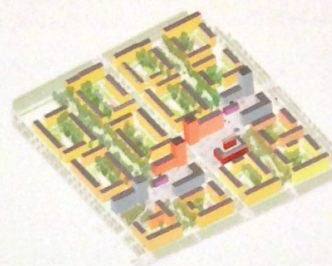
is taking place in China, and there are several sustainable city planning projects going on there. It seemed like a natural choice.

Is your proposal site-specific, or could it be copied in other places?

The project follows some globally applicable design principles, but all sustainable urban planning projects find their shape from the local site and conditions. The climate, soil, water, topography and vegetation of each location must be studied first, before making any planning proposals. There are also socio-cultural aspects to sustainable urban planning, which are extremely site related. The city is for the people, who are its users, after all. On the other hand, the proposal could

easily be used as a starting point for discussions in any country or location with a similar climate. (ANNABELLA PARKATTI AND MARINA VAN DEN BERGEN)

Sustainable China Urban 1.5 is one of the 287 projects taking part in the Archiprix International 2013 edition. Info www.archiprix.org



Playing with the facade grid

DUNAJSKÁ LUŽNÁ (SK) — Located in Dunajská Lužná, a small town south-east of the Slovakian capital of Bratislava, stands a modern-looking yet very energy-efficient house. The home functions as a show model for *Nízkoenergetické stavby* ('Low-energy construction'), a local developer that specializes in the realization of passive houses. It goes without saying that the residence is designed to use a minimum amount of energy to provide a comfortable climate, including a heat pump, triple glazing and roof insulation.

According to architect Daniel Hanušin, consciously dealing with numerous environmental aspects throughout the design and construction process is, at present, the biggest challenge for any architect. Interestingly, for him, and with regard to architectural style, this certainly need not always result in the obvious choice for an all-wood house with a green roof, now almost cliché. To give practical form to his ideas, Hanušin chose fibre cement to cover the exterior. The rectangular grid created by the joints between the white and grey panels gives the exterior a structured and orderly look. For the north-east facade, however, the sheeting is positioned in a playfully sloping manner, breaking the rigid pattern. In contrast with this two-tone cladding, a pair of differing planes of horizontal wooden boards make this otherwise flat facade into a vibrant whole. (EMIEL LAMERS)

Dunajská Lužná passive house, 2012 Architect Daniel Hanušin Client Nízkoenergetické stavby s.r.o. Fibre cement Cembris Address Mariánska Ulica 900 42 Dunajská Lužná Info www.pasivnastavba.sk

Book



Architecture Follows Nature – Biomimetic Principles For Innovative Design
Ilaria Mazzoleni (www.imstudio.us)
in collaboration with Shauna Price
CRC Press, Taylor & Francis Group, 2013,
264 pp., € 85.30, ISBN 978-1466506077

For centuries, architects have observed nature as a source of inspiration for their projects, emulated it as an ideal model of beauty and harmony, and attempted to unveil hidden proportions amongst its elements in order to decode its language. Recent decades have witnessed a tendency to re-evaluate our view of nature as a model for architecture with approaches based upon biomimetics or biomimicry. This new way of thinking about architecture hinges on the idea of applying biological principles to design, drawn from observations of the way organisms react and adapt to their environments.

In *Architecture Follows Nature*, Italian architect Ilaria Mazzoleni, in collaboration with biologist Shauna Price, extensively and scientifically explores a biomimetic

design approach. The book is the result of seven years of research, design and teaching conducted at the Southern California Institute of Architecture (SCI-Arc) in Los Angeles and in Italy.

Following a definition of the theoretical and historical framework for a biomimetic approach, the book investigates how biology can inform architecture, focusing on techniques based upon evolution and adaptation, climate and biomes, and ecosystems and biodiversity. In the first part, the crucial role played by the connection between humans and nature emerges, as well as that between systems – the criss-crossing of various disciplines, such as natural sciences and architecture. According to Mazzoleni, 'all humans have an inherited connection to nature on some level. Our innate ideas of beauty are connected to forms in the natural world.' Furthermore, 'architecture has a lot to learn from science, both from a methodological perspective, as a source of design precedents, and as a springboard for new ideas.'

This theoretical framework leads Mazzoleni to concentrate on the association between the biological feature of skin and the architectural element of the building envelope, stating that 'these components serve

as a bridge between realms'. In fact, the second part of the book is entirely dedicated to the exploration of skin in nature, examined through the lens of its particular functions (communication, thermoregulation, water resistance and protection) and possible applications in design. The theme is broadly investigated in several projects, such as *Polar bear*, *Snow leopard*, *Lettuce sea slug* and *Dyeing dart frog*, thereby 'combining the linear and analytic scientific method with the more lateral, synthetic, deductive creative design process'. Each project is twofold: firstly, the selected animal is introduced and the functions of its skin are analysed; secondly, biomimetic applications are proposed within a theoretical 'proto-architectural' project.

The book's cutting-edge aspect lies in the new methodology it develops, which, according to the author, offers a 'path for drawing design inspiration from nature', proposing a 'novel way of looking at the environment' and providing 'cues to undiscovered inspirations for a variety of audiences: designers and architects, engineers, biologists, and environmentalists'. In short, the book promotes a 'greater appreciation for biodiversity, the vast variety of species and their adaptation to their environment'. (SILVIO CARTA)