

# Archivolta 3(59)2013

## Summary Review

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### *From the Editor*

Sustainable development and energy-activity are the key issues tackled today by architecture and urban planning. This is in response to the global acceleration of urbanization and climate changes, while being aware of the depletion of natural resources at the same time. How to build to consume less and deliver more? Is it possible to find the answers in the form of model buildings and recipes to build cities?

We are trying to follow the course of events on the architectural scene, particularly in the Middle East and in Asia, in the countries which, with such a consciousness, have opened to the civilizations of the West and which are accelerating their development.

In Poland there are also architects whose attempts are to join in this global debate and who offer eco-friendly structural solutions, such as MCS promotes the benefits of using architectural membranes. The mindset of the academic education changes as well.

Digital technologies are conducive to the creation of new solutions for architecture and urban planning in an effort to improve the quality of living environment on our planet. Read more in this one and in subsequent issues of Av and visit us on Facebook.

Andrzej Koźlik

### **Galaxy SOHO in central Beijing** pp. 10-17

Zaha Hadid and Patrik Schumacher, Galaxy SOHO, Beijing, China, 2008-2012



In 2012, a multi-purpose retail, service and office center Galaxy SOHO in Beijing was opened (Zaha Hadid and Patrik Schumacher). The design was selected by way of a contest organized in 2008 by SOHO China Limited, China's largest real estate developer of office space. Galaxy SOHO is located in the center of Beijing, in the new prestigious district of Nanshuiguan. Due to the place of its implementation, in the vicinity of the historic city center (hutong), the structure became the subject of an international debate. The form of this structure was created in synthetic digital space and it is a spectacular example of parametric design. The form was inspired by cultivable terraces typical of the Chinese mountainous landscape and the context of the city. Discussing the project by Zaha Hadid said, "The design responds to the varied contextual relationships and dynamic conditions of Beijing. We have created a variety of public spaces that directly engage with the city, reinterpreting the traditional urban fabric and contemporary living patterns into a seamless urban landscape inspired by nature".

Galaxy SOHO offers 332,857 m<sup>2</sup> of usable space on 15 floors. There are restaurants, retail outlets, entertainment centers and offices. Through the use of digital design tools, numerous factors that affect the shape of the structure and its eco-efficiency were taken into account. Galaxy SOHO won RIBA Award in 2013, is also one of three projects nominated for this year's RIBA Lubetkin Prize, alongside Gardens by the Bay designed by Grant Associates and Wilkinson Eyre Architects in Singapore and an affordable housing project *Via Verde* in New York by Dattner Architects and Grimshaw.

## **CARBON ART Cultural Center in Zabrze pp. 18-19 (ed.)**

Konior Studio, Center “Carbon Art”, Zabrze, Poland – architectural competition, 2013



On 10<sup>th</sup> July 2013, the contest for an architectural design of the Cultural Center “Carbon Art” in Zabrze was concluded. The aim of the competition, which was announced in March, was to select the best concept of a public building in visual, functional and operational terms.

Out of 14 submitted works, the jury selected the best designs in terms of the content, awarding :

- 1<sup>st</sup> place to KONIOR STUDIO Tomasz Konior from Katowice,
- 2<sup>nd</sup> place to the company CONSULTOR Ltd from Poznań.

The Jury also awarded two honorable mentions to:

- Warsztat Architektury Pracownia Autorska Krzysztof Kozłowski from Sopot,
- 22 ARCHITEKCI Ltd from Warsaw.

The prize money amounted to 20 thousand PLN and 10 thousand PLN, respectively.

Located in the vicinity of the Hereditary Adit in Zabrze, the designed Cultural Center will hold the City Museum, the Center for Creativity, the Public Library and a multi-purpose auditorium for 320 spectators. The ground floor provides 80 parking spaces. Office space for individual users were located in the northern wing. The entrance zone was planned in the corner, at the intersection of the Jagiellońska and Słodczyka streets, providing the most convenient access to the individual functions of the building.

The design presented by KONIOR STUDIO is an attempt to combine history and modernity, to link mining tradition with education and broadly defined artistic activities. It is a kind of a cultural bridge across time and space, based on tradition and good continuation.

## **The International VELUX Award 2014 for Students of Architecture is held for the sixth time (Press Release)**



The International VELUX Award 2014 wants to encourage students of architecture to explore the theme of daylight in its widest sense - and to create a deeper understanding of this specific and ever-relevant source of energy and light.

Daylight in dense urban settings. Daylight and sustainability. How to transport and store daylight? Daylight, water and wind. Going back to the fundamentals of daylight in architecture. Daylight, health and well-being. Conceptual experiments, poetic thinking and beautiful reflections. Over and over again the juries of the International VELUX Award have been amazed by the experimental thinking and innovation power of the future generations of architects.

On 2 September, the International VELUX Award opens once again to challenge new students on the Light of Tomorrow.

Celebrating its 10 years anniversary, the International VELUX Award 2014 for Students of Architecture invites the global architect student community to explore and investigate daylight in architecture in its widest sense; an ever relevant topic with a wide, international appeal judging from the more than 3,000 entries that have been submitted for the Award during previous awards. In the 2012 edition alone, the jury found the winners among 983 entries from 59 countries.

### **Register before 3 March 2014**

To participate in the Award, please register before 3 March 2014 and submit your project before 2 May 2014. The Award is open to any registered student of architecture - individual or team - all over the world.

**Polish architects win awards in international competitions (ed.)** pp. 20-21



In 2013, for the fourth time, FAKRO has become an inspiration for architects around the world. The designers from such exotic countries as Jamaica, South Africa, Mexico, Hong Kong, and from almost all European countries, including France, Denmark, Austria, Germany, Spain, the UK and Poland, were competing for the awards.

The competition task was to create a visualization of an architectural concept of an attic full of light and human-friendly creative solutions. The project was supposed to include at least 10 FAKRO roof windows, selected from a wide range of products of this company.

The Danish team of architects Live Between Buildings consisting of: Ole Robin Storjohann (Germany) and Mateusz Mastalski (Poland) are the winners of the International Competition for architects NEW VISION OF THE LOFT. The second place was taken by Katarzyna Penar and Wojciech Okrzesik, the Poles working in the UK, and the third place went to: Piotr Skrzycki and Dawid Szczepański from Poland. The best architects received checks with a value of five, three and two thousand euros. The competition was organized by FAKRO with the help of the international architectural magazine A10 New European Architecture.

The international architectural competition “Camelot Research & Visitors Center” organized in 2013 by ARCHmedium from Barcelona was won by the students of the Faculty of Architecture at Gdańsk University of Technology: Kacper Radziszewski and Jakub Grabowski.

The task was the development of the Camelot hill, which was to house the castle of King Arthur, and in fact there was a settlement with a rampart. The task was to design a building that handles tourism and a site dedicated to scientists working on the hill. With reference to the legendary Round Table, the winners from Gdańsk proposed three structures with a diameter of 80 meters, which they combined with ramps to form a pedestrian passageway at the height of the ramparts. Structures with green roofs were to be built of local building materials in the same way as in the days of King Arthur.

Natalia Malinga

**Sports complex of the XXI century, Constantine, Algeria** pp. 22-34

Modern Construction Systems, Sports complex, Constantine, Algeria, 2012

Architectural competition



On 7<sup>th</sup> July 2012, the results of an international tender for an architectural design of a sports complex in Constantine (Algeria) were announced. The intention of the organizers of the tender was to determine the best concept of a complex of sports facilities that would meet the conditions required for the Summer Olympics. The contest was won by the architectural design office Modern Construction Systems (MCS) from Poznań. The presented design turned out to be the best, both in terms of the adopted functional, spatial and structural solutions, as well as ideological significance.

Due to the imperative of sustainable development, a unique membrane structures of a complex geometry were designed.

Using topographical and climatic conditions, a unique urban composition was created.

As far as communication is concerned, an easy access from the city, the airport and the highway from Algiers to the east of the country was provided. The central building of the proposed sports complex is a football stadium with an athletics track (50 thousand spectators). Other facilities include a multi-functional sports hall (five thousand spectators), a complex of Olympic swimming pools (three thousand spectators), a complex of tennis courts with a stand (one thousand seats) and an indoor tennis court (four thousand spectators), a complex for the equestrian sports

(the total of 1.9 thousand spectators), and the hotel with a conference center. These objects are the manifestation of environmental awareness of the era as well as of modern technical and technological capabilities in the design and implementation of sustainable architecture .

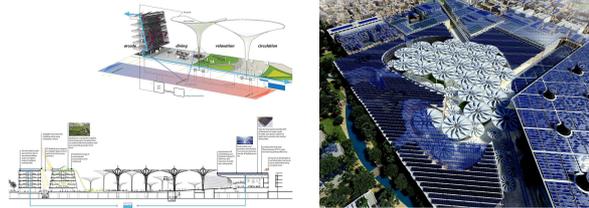
MCS is Poland's only multi-disciplinary design studio which, due to their professionalism and experience, may be placed right next to the world-renowned companies, such as Marg und Partner International and Schlaich Bergmann und Partner, the German studios specializing in architectural and structural design.

Krystyna Januszkiewicz

Henryk Katowicz-Kowalewski

**Energy active architecture** pp. 39-43

**The role of an experiment**



The authors of this paper try to prove that technological development of the energetic sector may have no positive influence on the development of energy-saving architecture if designers i.e. architects and engineers ignore aesthetic, social and philosophical assumptions. The development of energy active architecture depends on theoretical achievements but also on experimental practices - demonstrative buildings are an inherent element of the design process. The most important architectural experiments in this field have been presented, analyzed and evaluated. A particular example is Masdar, the world's first eco-city and the winning design for Masdar city center by LAVA (Laboratory for Visionary Architecture) in 2008.

Energetic explorations and architectural experiments undertaken by recent designers bring a range of new, surprising architectural concepts focused on reduction of energy used by the building industry.

They also open a way to important changes in the field of architecture: bring new systems of forms, new structures and compositional rules, new iconography and – in consequence – force potential inhabitants to change their habits, preferences and the way of operation of the building structure. An attempt to change relations between the building structure and its natural environment leads to inevitably changes of the relation Nature – Culture.

Recent and past attempts to implement experimental energy-saving building structures, where energetic parameters were treated as the main priority, didn't bring however important changes to building industry because the experimental objects (treated as a model and a prototype) were unacceptable proposals for common taste of an average inhabitant. Excess of technological creativity and simultaneous lack of aesthetic awareness also may become a barrier to architectural development.

New energy-saving architecture should be a manifesto of the creative coexistence of the new with the old, as well as a confirmation that only holistic thinking in sustainable design leads to proper relations Man-Technology-Nature-Culture.

Krystyna Januszkiewicz

**Minimal surfaces and architectural membranes** pp. 44-51



In the twenty-first century, tensile membrane structures are increasingly gaining popularity. They are treated as architectural "skin", which is to protect the utility contents, as well as to respond to the environment.

Design of membrane structures undoubtedly implies the issues of determining minimum surfaces and the material self-organization. Digital design tools, although they make it much easier to solve the resulting problems, also prompt to reflect upon their origins.

It is explained what the minimal surfaces are, and an overview of the research from the experiments with a soap membrane by Joseph A.F. Plateau (1801-1883) to the contemporary

research of Frei Otto is briefly presented, the results of which gave rise to the creation of digital database, which is necessary today in the design of tensile structures. Therefore, models with a soap membrane entered into the computer space as digital simulations, describing the geometry and behaviour of membrane structures. These are approximations of smooth curved surfaces on a grid of small triangles, controlled by internal forces and material properties. These simulations in the architectural and engineering design are made possible to be used by digital design tools addressed to engineers and architects. Examples of applications of these tools in the design of an architectural “skin” in the completed structures were presented.

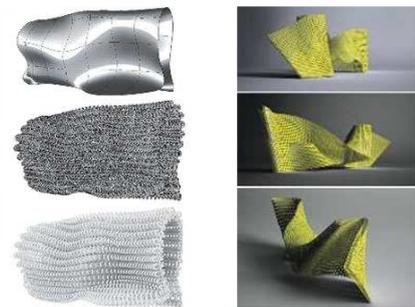
Attention was also drawn to the biofilm, based on biological models. It is about a study of smart biological membranes, which can interact with the environment by self-combining of biological structures and polymers. Using such membranes in construction would contribute to sustainable architecture reaching a higher level in its relationship with the natural environment.

Adam M. Szymiski

**Free surface and the material** pp. 52-57

Parametric design in the research laboratory conducted by students of the Faculty of Architecture at Poznań University of Technology

**Knots and nets**



Experiments with multiple parameters with various formative forces applied at the same time are still a novel project (in Poland it has not yet been used) - especially when it comes to assessing different criteria, including spatial, structural and material characteristics and those resulting from the use.

Several such educational experiments were carried out at the Faculty of Architecture at Poznań University of Technology. In the research and project laboratory “Parametric Design”, newly established in the academic year 2012/2013, in the spring semester, under the supervision of Krystyna Januszkiewicz and assisted by Mateusz Zwierzycki, the fourth-year graduate students learned ins and outs of digital design in a direct relationship with the physical possibilities of the material.

Two students' works *U Knit* and *Net\_wall*, are examples of the presented design and research process of an architectural element of a complex geometry. This process meant to determine the relationship between the geometric characteristics of a shape and physical characteristics of the material, as well as to prepare their parametric record and a digital model which in the CAD/CAM system is necessary for the fabrication using CNC robots (similar tasks were carried out in the years 2003-2004 during classes in Architectural Associations in London).

The presented works show a new approach to architectural design, today called digital tectonics, which forces directing attention to those construction aspects of the design, which should be converted into the form right at the beginning of the process of creation. This forces an architect, a builder and a contractor to get closer, already at the initial stage of the design. At the same time it implies changes in architectural education and a need to improve the design tools.

Paweł Rubinowicz

**Cyber Urban Design** pp. 58-65



Virtual city models and supporting computer systems become invaluable tools of modern urban design techniques. There is an emerging potential for the development of new analytic methods practically inapplicable without the use of a computer. Therefore digital techniques become a cognition instrument important for creation of urban space. Using new tools can be considered

as a chance for progress and development in the field of urban design (or the so called “Cyber Urban Design”). Research in this field is being taken up at different universities and scientific units.

The team of Cyber Urban Center created at the Department of Civil Engineering and Architecture at West-Pomeranian University of Technology by architects: Professor Marzęcki and Doctors Klara Czyńska, Adam Zwoliński, Paweł Rubinowicz - follow the trend as well. The article presents selected issues undertaken by the CUC team related to urban landscape, tall buildings, analysis of urban structures and public spaces. Currently the new methods and software solutions for digital processing of 3D city models and advanced urban analyses are being developed. The new tools have already been applied by the CUC team in some significant planning studies in Poland completed for developing strategies and local plans. The recent objective of CUC is realization of international research project 2TaLL, which is already in its initiation stage. The effect will be formulation of guidelines for universal standard of urban analyses enabling definition of impact of tall buildings on urban landscape, considering different spatial and functional aspects. The research will be completed on selected European cities, for example Berlin and Frankfurt.

### **Roca Designer Competition** pp. 66 (ed.)



Until 8<sup>th</sup> September 2013, the jury of Roca Designer Competition were looking forward to receiving innovative bathroom designs showing concern for the environment and equipped with the products of the Roca company. This competition is yet another initiative of the manufacturer of bathroom equipment aiming to promote the work of Polish architects. The winning prize was 1,500 euros and the recognition and prestige in the field of design .

The jury of professionals in the world of architecture, including architect Konrad Rubaszekiewicz of the National Chamber of Polish Architects (IARP), Krystyna Januszkiewicz - editor in chief of “Archivolta” quarterly, Sebastian Osowski - editor in chief of “Occupation: Architect” magazine, as well as the representatives of Roca Polska - Joanna Dec-Galuk and Klaudia Bączek, will select one winning design. Patronage of the competition Roca Designer was taken by the Association of Polish Architects SARP as well as the sector and interior design media.

Roca offers bathroom accessories, with an emphasis on their design and functionality. Roca is a world leader in its sector. The Group with the Spanish capital dominates not only in Europe, but also in Latin America, India and Russia. It also successfully operates in China, the Middle East and many countries in Asia and Africa.

Marcin Giedrowicz

### **Roca London Gallery** pp. 67-73 Zaha Hadid Architects, Roca Gallery, London 2011



The Roca London Gallery is a single space of 1100m<sup>2</sup> including connected, semi-open zones for product displays and a meeting room space seamlessly incorporating a range of state-of-the-art interactive technologies and audio visual resources. Designed as a versatile multi-purpose environment, the Gallery will host a wide range of social and cultural events of interest to Roca, including exhibitions produced in-house and externally, meetings, presentations, debates and receptions. Zaha Hadid Architects has fully addressed this need for a place defining harmony between form and function in which visitors experience the very essence of Roca.

The design brings about a connective language between the architecture and the bathroom products, with the movement of water ‘carving out’ the interior and moving through the Gallery as individual drops. A flowing, all-white space made of faceted GRG (gypsum) panels serves as

a central axis of the Gallery. Around this a number of smaller connected semi-enclosed spaces can be viewed through openings in walls. As a result, the visitor never feels enclosed in one space, but can always see beyond it into the space through overlapping and cutaway forms that enable a pleasing permeability to the Gallery.

The language of fluidity and natural movement is driven by ZHA's commitment to parametric design tools and to the creative possibilities arising from the constant evolution of manufacturing processes and techniques. Both panels and the moulds used to create them were realized via 3d modeling, and produced in a sequence so that they would be fully compatible. There are 272 GRC panels in total installed at the Roca London Gallery - 236 interior panels and 36 facade panels.

## 55 Art Biennale in Venice (ed.) pp. 76-77



A spectacular art event of 2013 is undoubtedly the Art Biennale in Venice, which has been held there for almost a hundred years. On June 1<sup>st</sup>, Giardini di Castello and Arsenale opened their doors, presenting 88 artists from five continents. Until November 24<sup>th</sup>, you can see the works of such artists as, among others, Richard Serra, Charles Ray, Sarah Lucas, Terjke Haapoja, Lin Xue, Mark Leckey, Emma Kunz, Morton Bartlett, Ryan Trecartin, Pamela Rosenkranz, Helen Marten, Jasica Jackson Hutchins, Kamille Henrom, Trisha Donnelly, and of the Polish artists as well. Apart from Konrad Smoleński, who represents Poland, at the invitation of the curator, the exhibition at the Central Pavilion is participated in by Mirosław Bałka, Artur Żmijewski, Paweł Althamer and Jakub J. Ziółkowski.

55 edition of the Venice Biennale is titled "Il Palazzo Enciclopedico", which refers to the whole knowledge acquired throughout centuries. Massimiliano Gioni, the curator of this year's Biennale, in this way recalled the work of Mario Auriti (1891-1980) of 1955. It is a vision of a skyscraper (136 floors), which would house all the knowledge and inventions of the mankind.

The adopted form of understanding the biennale as the Encyclopedic Palace has put a sign of equality between imagination on the border of a sleep and a dream, and the knowledge *per se*, representation and a thought, a myth and a scientific paradigm. It allowed for the presentation of the artistic consciousness of the era with easy access to all human knowledge, freedom of its understanding, and interpretation in the scientific and parascientific discourse, the era in which the media, telepresence and the rapid flow of information began to dominate. Hence the accumulation of a variety of the arts, among which attention was drawn to collections of sketches, installations, daguerreotypes, anthropological exhibits and unconventional experiments with sound as an artistic material.

This year's 55 Art Biennale in Venice is unlike the previous editions. This difference is reflected in the overall formula of the Biennale and in the exhibitions in national pavilions.

Przemysław Tomczak

## Art Education. Can art creation be learned? pp. 80-81



In July 2013, at the Faculty of Architecture at Poznań University of Technology, the BSC graduates of the Art Education in Fine Arts for the first time defended their thesis. This is a new major, educating future masters of fine arts, which was created just three years ago.

Students obtain interdisciplinary training here, gaining skills in both traditional and modern artistic techniques such as easel and wall painting, sculpture, ceramics, graphic design, graphic arts and multimedia, photography, intermedia. They are well acquainted with raster and vector techniques helpful in building and processing of 2D and 3D structures.

During supplementary MSc studies, students will learn the principles and technologies of creating stained glass and the use of advanced computer tools in the design and manufacture of the arts. They will also explore new technologies and develop their artistic consciousness.

A wide range of practical skills mastered during graduate studies opens a wide range of job opportunities in various companies and artistic institutions. And also, in the centers for popularizing culture or in education, as students gain a teaching certificate in order to be able to teach others after graduation, which does not preclude taking up individual artistic activity, though.