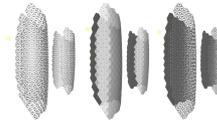


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Summary Review

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Krystyna Januszkiewicz, Mateusz Zwierzycki,

Sensitive skin of Al Bahar Towers in Abu Dhabi, UAE pp. 10-23

Aedas Abu Dhabi and Arup London

The Al Bahar Towers innovative dynamic façade opens and closes in response to the movement of the sun, reducing solar gain by more than 50 percent, creating a more comfortable internal environment for occupants and producing a distinctive external aesthetics which helps to define the building as a gateway to the UAE capital. The façade was conceived as a contemporary interpretation of the traditional Islamic “mashrabiya” a popular form of wooden lattice screen found in vernacular Islamic architecture and used as a device for achieving privacy.

The design concept for Aedas’ innovative competition winning design is derived from an algorithmic composition, informed by Islamic principles of design, that has been supplemented by the application of a dynamic translucent ‘mashrabiya’ which opens and closes in response to the movement of the sun. The resulting composition seeks to create a building which is both culturally and environmentally responsive, reflecting the aspirations of the brief while also respecting the emergent Abu Dhabi 2030 Plan. The building is targeting a LEED Silver rating and is on programme for occupation at the beginning of 2013.

In order to generate the form of the towers, Aedas applied the principles of geometric composition derived from traditional Islamic architecture. Geometric composition has been a defining characteristic of Islamic architecture for centuries, the circle and rotation reflecting the concept of unification and unity evident in nature; an important concept in Islam and in the emerging science of biomimicry.

Following an intense period of analysis, and influenced by both the client’s brief and also the orientation of the site, Aedas began to develop the distinctive form of the towers using parametric design techniques to generate a defining geometry. Their starting point was two cylindrical towers; a circle producing the most efficient form in terms of wall to floor area whilst also creating the greatest volume with the east surface area. The circular plan form was articulated to reduce solar exposure on the most heavily exposed elevations and in so doing began to generate a natural orientation. The form of the towers was then sculpted around the core, narrower at the base and at the top, but broader around the intermediate floors. The crown of the tower was cut at an angle to maximise solar gain for roof mounted photovoltaics. Sky gardens were introduced in the most heavily exposed southerly elevation to further reduce solar gain while providing an amenity space for users.

Completed in June 2012, the 145 meter towers mashrabiya shading system was developed by the computational design team at Aedas. Using a parametric description for the geometry of the actuated facade panels, the team was able to simulate their operation in response to the sun exposure and changing incidence angles during the different days of the year. The screen operates as a curtain wall, sitting two meters outside the buildings’ exterior on an independent frame. Each triangle is coated with fiberglass and programmed to respond to the movement of the sun. In the evening, all the screens will close. For the project’s sustainable engineering and sensitive cultural and urban approach, the towers were awarded the 2012 Tall Building Innovation Award by the Council of Tall Buildings and Urban Habitat.

Best Tall Buildings Award 2012 pp. 24-27
(ed.)

Great towers in Canada, Qatar, Australia and Italy have been named the best tall buildings in the world for 2012 by the Council on Tall Buildings and Urban Habitat (CTBUH), the international not-for-profit association. The CTBUH received 78 entries from around the world for its Best Tall Building awards. The majority of the entries were from Asia, followed by the Middle East. The number of entries from the Americas continued to decline, reflecting the impact of the recent global recession.



The four regional winners include the Absolute Towers in Mississauga, Canada (Americas); 1 Bligh Street, Sydney (Asia and Australia); Palazzo Lombardia, Milan (Europe); and Doha Tower/Burj Qatar, Doha (Middle East and Africa). The Al Bahar Towers in Abu Dhabi won the CTBUH's first Innovation Award for the project's computer-controlled sun-screen. In addition to groundbreaking designs, this year's award winners demonstrate the continued renaissance of tall building development around the world. Palazzo Lombardia is the first tall building in Italy to earn CTBUH recognition and 1 Bligh is the first building in Australia honoured in this fashion.

Natalia Malinga

Transformation of Urban Space in Gdynia pp. 28-33

Gdynia Film School by Mobius Architekci



At the end of last year, the architectural competition was resolved associated with the transformation of the Grunwald Square in Gdynia by introducing there a new public facility designed for the Gdynia Film School. The work by Mobius Architekci from Warsaw, awarded the second prize, is noteworthy. They presented the architecture searching for a new pattern of relations with nature and the universe, entering into a new cultural dimension of the information society, which is also concerned with ecology. It is the architecture which is entering into the world of media and commerce, looking for a place in cyberspace and ordinary reality. This project is one of the few attempts in Poland to apply digital design tools to create forms with complex geometry. Free form which, as the works of Nature, is "fluid" and ephemeral, beautifully modeled, and stands out, giving the identity to the anonymous urban space.

Augmented Reality first time in Poland p. 34

(ed.)



From January 29th to 1st February this year Augmented exhibition of architecture took place at the International Poznan Fair BUDMA. First time in Poland architects have seen famous architectural works in an Augmented Reality (AR) context.

AR, is a type of virtual reality that aims to duplicate the world's environment in a computer. An augmented reality system generates a composite view for the user that is the combination of the real scene viewed by the user and a virtual scene generated by the computer that augments the scene with additional information. The virtual scene generated by the computer is designed to enhance the user's sensory perception of the virtual world they are seeing or interacting with. The goal of Augmented Reality is to create a system in which the user cannot tell the difference between the real world and the virtual augmentation of it. Today Augmented Reality is used in entertainment, military training, engineering design, robotics, manufacturing and other indus-

tries. By introducing the use of the augmented reality application 'urbase' in the presentation of unfinished architectural projects. Produced by artefacto, the program is an emerging design and communication tool to allow for sharing, review and persuasion by making the non-existent exist. Digital depictions bring structures to life in real time and space within your mobile devices. A selection of globally renowned practices have created digital 3D representations of their ongoing work to be viewed through the urbase application.

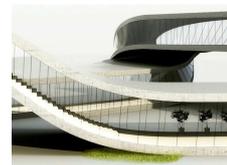
Krystyna Januszkiewicz

Digital designing and digital fabrication pp. 36-41



Designing (CAD) and manufacturing (CAM) integrated the practice of erecting buildings with their designing. Increasingly strong historical relationship between architecture and the means of production is becoming a challenge for the new digital design, manufacturing and construction processes. With digital technologies and techniques at its disposal, the construction industry has new challenges. The leading companies on the construction market are German companies, such as Covertex, Seele, Finneforest Merk, who now implement designs of internationally renowned architects. Digital fabrication and migration of data from the architect to the manufacturer is due to a practical approach rather than the idealized goals. Implementation of geometrically complex structures and building systems with different components is a viable proposition. It is important, therefore, to consider the relationship between non-digital skills and tools and digital techniques as well as technology. Research carried out by construction companies suggest that the transfer and integration with CAM in the design of buildings requires a new approach to the production through the understanding of traditional means and skills. The possibility of mass production of various building components, with the same ease as standardized parts, provokes to introduce the concept of mass-customization in the design of architecture and production.

The World's First 3D-Printed Building p. 46
(ed.)



Dutch architecture studio Universe Architecture is planning to construct a house with a 3D printer for the first time. The Landscape House will be printed in sections using the giant D-Shape printer, which can produce sections of up to 6 x 9 meters using a mixture of sand and a binding agent. Architect Janjaap Ruijsenaars of Universe Architecture will collaborate with Italian inventor Enrico Dini, who developed the D-Shape printer, to build the house, which has a looping form based on a Möbius strip. 3D printing website is saying: "It will be the first 3D printed building in the world. I hope it can be opened to the public when it's finished". The team are working with mathematician and artist Rinus Roelofs to develop the house which they estimate will take around 18 months to complete. The D-Shape printer will create hollow volumes that will be filled with fiber-reinforced concrete to give it strength. The volumes will then be joined together to create the house.

Parametric architecture in Złote Tarasy Warsaw shopping center p. 47
(ed.)



Custore is an experimental project of a pavilion in a Warsaw shopping centre, Złote Tarasy, that is a combination of a store and an art gallery. Made in plywood, the pavilion's sculptural form was computer-generated. The initiators of Custore concept store ('customise' + 'store') wanted to create a space that would be the combination of a shop and art gallery. The products presented in

the store can be found on several touch-screens. These screens also make it possible for the customer to be creative and have an influence on their own furniture. The key guideline from the client was that the pavilion should provide a partial visual isolation while still being open to the surrounding space. They achieved this by having a relatively open and graphic structure but also using a material that gives an impression of warmth. Inside, the space is quite small and this strengthens the cosy effect.

Przemysław Jaworski,

Parametric and generative architecture pp. 48-49

- **revelation or evil** – the exhibition SARP Wrocław



At the beginning of December 2013 research group LabDigiFab (Faculty of Architecture, Technical University of Wrocław) together with Jawor Design Studio presented their projects and experiments as an exhibition under intriguing name *Parametric and generative architecture - revelation or evil*. The title and the content of the exhibition was supposed to attract supporters, sceptics as well as antagonists of digital design techniques.

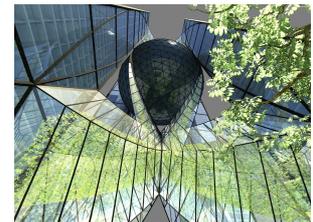
The number of visitors surprised the promoters and well exceeded the initial expectations - the exhibition was attended by over 200 people.

Digital craftsmanship, 3d-printed sculptures, phototropic sculptures, organic microstructures, generative cities and energetic relaxation - these are only a few of the titles that appeared on the displayed posters. Apart from visualisations and screenshots documenting design process, the projects were accompanied by 3d-printed models, made by ZMorph 3D printer which was exhibited as well.

Janusz Rębielak

Numerical methods in modeling of space structures pp. 50-57

Shaping of structural systems of tall buildings



The article presents examples of the results of applications of numerical model applications defined in the programming language Formian in the shaping processes of structural systems of tall buildings. These models are prepared by means of an assumed set of parameters, thanks to which shapes of the designed buildings can be quickly modified and adapted to the current requirements, what makes the co-operation between architects and engineers easier. Selected examples of buildings designed by means of two different structural systems proposed by the author have been presented. These exemplary buildings are located in the same place in the southern part of Wrocław. One of them is a system of framed polyhedron and it has been developed more than two decades ago. The combined structural system of tall building was invented only recently and it is considered to be the groundbreaking technical invention, which makes safe foundation of heavily loaded objects possible on the ground of very low load bearing capacity. It can be especially useful for buildings located in earthquake areas. Inspiration from nature and from theory of structures play an important role in the shaping process. Buildings designed using the proposed structural systems can obtain interesting and unique architectural forms.

Polish Design Focus p. 58

DMY International Design Festival Berlin June 6-9 2013

(Press Release)



Poland will be the fifth guest country of DMY International Design Festival Berlin. In cooperation with Polish Institute Berlin, the focus will present showcases of over 40 design studios, companies,

design schools as well as comprehensive exhibitions shedding light upon the contemporary design production of Germany's second largest neighbour country. Furthermore, the focus will present comprehensive, thematic exhibitions, including a showcase of award-winning designs from East and Central Europe, a curated selection by Łódź Design Festival as well as an exhibition by Gdynia Design Center on the subject of improvisation: the focus is on the processes, ideas and concepts that have played a crucial role in the design production. The participants will be selected by an advisory board of acclaimed protagonists of the Polish design scene including design publicist. The exhibitions and showcases will be complemented by conceptual installations and a varied program of lectures, talks and live interviews. All exhibitions and events will take place within the DMY International Design Festival at Airport Berlin Tempelhof from June 6-9. The Polish Design Focus is realized in cooperation with Polish Institute Berlin, supported by the Ministry of Foreign Affairs, the Ministry of Economy of the Republic of Poland, the City of Warsaw and the Foundation of German-Polish Cooperation (Stiftung für Deutsch-Polnische Zusammenarbeit).

Interzum award: intelligent material & design 2013 p. 59
(Press Release)



From 13 to 16 May 2013, the international supplier industry for the furniture and interior decorating industries will meet once again at the 'interzum cologne'. More than 1,400 exhibitors from all over the world will present visions for designing future living spaces, inspiring product developers, designers and architects worldwide. Their goods are the key to the trends of tomorrow. One decisive criterion for the economic success of products on the market is their quality. Even in advance of the 'interzum', the exhibitors at this leading trade fair have the chance to prove the quality of their products and to demonstrate their know-how – by competing in the 'interzum award: intelligent material & design 2013'. The competition, which is being organised by Koelnmesse in cooperation with red dot for the seventh time, is part of the exclusive service package for the exhibitors at the "interzum cologne" and is free of charge. The closing date for applications is 1 March 2013.

Marcin Giedrowicz
New Forms in Oxford pp. 61-64
Middle East Centre at St Antony's College by Zaha Hadid Architects



One of the world's most celebrated architects, Dame Zaha Hadid, will be in Oxford to mark the start of work on a building she has designed for the Middle East Centre at St Antony's College. The three-storey Softbridge building will form a suspended 'bridge' between numbers 66 and 68 Woodstock Road and will provide 1,200 square metres of floor-space. Its new lecture theatre, replacing the cramped rooms where public seminars are currently being held, offers 125 seats and disabled access. The building will also house a new library and purpose-built archive facility, doubling the amount of space currently available.

Zaha Hadid receives Aenne Burda Award for Creative Leadership p. 65
(ed.)



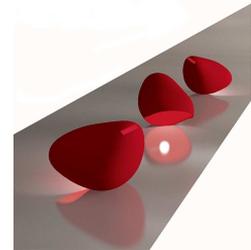
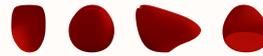
On Monday, 21 January 2013, architect Zaha Hadid received the *Aenne Burda Award for Creative Leadership* at the international DLD Conference in Munich. The Iraqi-born British architect and professor of architecture is regarded as the most important and influential figure of her profession worldwide. The *Aenne Burda Award for Creative Leadership* honors female digital

entrepreneurs for their visionary and successful ideas. Rhode Island School of Design president John Maeda delivered the honorific address on Zaha Hadid : “Leaders are needed when times are changing, creative leaders change times themselves. They make things – like Zaha. She’s unafraid to disrupt, she’s very optimistic. Today we celebrate her incredible optimism. The *Aenne Burda Award for Creative Leadership* honors women of outstanding entrepreneurial and creative achievement. The prize has been conferred annually since 2006 in memory of Aenne Burda , who passed away in 2005. As a visionary entrepreneur in post-WWII Germany, Aenne Burda turned a small publisher into the world’s largest fashion publishing house.

Joanna Kolata

Young Designers on the Arena Design pp. 66-67

International Poznan Fair BUDMA



In March 2013 Arena DESIGN was held for the fifth time organized by the Poznań International Fair. It is a meeting place for modern design and business, as well as a forum promoting a relationship between designers and manufacturers. Arena Design also educates by showing outstanding products, distinguished by excellent functional and ergonomic design.

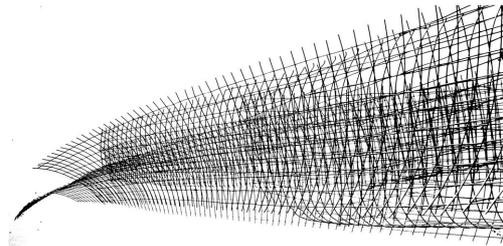
Besides the works of well-known designers such as Sofia Lagerkvist, Charlotte von der Lancken and Anna Lindgren from Swedish group Front Design, the works of students from different universities will be represented as well. Especially noteworthy projects and prototypes were made by young designers from the University of Arts in Poznan, as well as from the Faculty of Architecture, University of Technology.

Paweł Rubinowicz

Architecture of Surface pp. 72-75

from Gallery *FORMA*

West Pomeranian University of Technology in Szczecin



The artistic output of Szczecin's sculptor Ryszard Wilk can be inspiring for the young generation of architects functioning in the world of virtual form and digital prefabrication. The latest exhibition entitled “Przestrzelenie” (“Spacization”) refers to sculpture and plastic art, but at the same time it conveys an architectural message. In January and February 2013, the premiere presentation of the exhibition was held in the Architects’ Gallery Forma at the West Pomeranian University of Technology in Szczecin. The exhibition, among others, presented two projects. The first one is a large spatial ceramic sculpture “Współbrzmienie – zapis pamięci” (“Consonance – memory record”) presented physically in August 2012 at the international festival Sacrum non Profanum in Świnoujście. The second project is an installation made of steel mesh also used in other architectural creation of the artist (e.g. Concept of Maritime Museum of Szczecin). It is hard to avoid associating it with contemporary digital modelling architecture, parametric surfaces and topology. Wilk's works are surprisingly close to creation by such architects as Lars Spuybroek, Kas Oosterhuis and Mark Goulthorpe. The process of creating a large ceramic sculpture required intervention into the technology of mechanical pressing, burning and glazing of clay at an industrial scale. The installation is made of over 2000 different parts, each with its own place and number. Although, it is similar to digital prefabrication, the role of a computer model and CNC machines is played solely by memory and hand of the artist.