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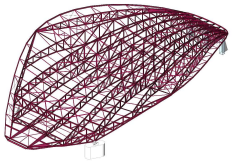
Summary Review

Krystyna Januszkiewicz

Aquatics Centre pp. 8-27

XXXth Summer Olympic Games in London

Zaha Hadid Architects, Aquatics Center, London



The London Aquatics Centre is an indoor facility with two 50-metre swimming pools and a 25-metre diving pool in Olympic Park at Stratford in London, it was one of the main venues of the 2012 Summer Olympic and the 2012 Summer Paralympics. The Aquatics Centre was designed by Zaha Hadid Architects.

The Aquatics Centre is within the Olympic Park Masterplan. Positioned on the south eastern edge of the Olympic Park. This complex sports facility is designed with an inherent flexibility to accommodate 17,500 spectators in 'Olympic' mode while also providing the optimum spectator capacity of 2000 for use in 'Legacy' mode after the Games.

The architectural concept of the London Aquatic Centre is inspired by the fluid geometries of water in motion, creating spaces and a surrounding environment that reflect the riverside landscapes of the Olympic Park. An undulating roof sweeps up from the ground as a wave - enclosing the pools of the Centre with a unifying gesture of fluidity, while also describing the volume of the swimming and diving pools. The Aquatics Centre is constructed on one of the most challenging and constrained sites of the Olympic Park. Double-curvature geometry has been used to create a structure of parabolic arches that create the unique characteristics of the roof. The roof undulates to differentiate an internal visual separation inside the pool hall between the competition pool volume and the diving pool volume.

The roof structure comprises a singly symmetric three-dimensional system of relatively simple two-dimensional trusses. These span the 120 m between the southern support wall and northern stair and service cores. The structural action of the roof is a combination of simple trusses in the central area spanning north–south between primary trusses, and a more complex arching and compression hoop action for wing areas that flank the central zone.

The outer trusses in the wing areas are kinked in plan, with a resulting line of tension across the roof at the widest point resisted by a cross-tie element. The northern end of the roof is supported on fixed spherical bearings to act astrue pins. The southern end is supported on three sliding spherical bearings along the top of the southern wall, with the central bearing only allowed to slide along the central axis of the building.

The challenges set by the geometry of the sculptural reinforced concrete diving boards were unique. To ensure adequate performance of all four critical requirements – structural stability, deflection, vibration and aesthetic appearance – accurate analysis of the constantly varying geometry was needed along with a reinforcement arrangement that permitted placement prior to closure of the glass-reinforced plastic formwork moulds. The three-dimensional design geometry was cut into sections along the length of the boards, which were then used to establish the section properties for the analysis digital models.

This complex, iconic, high-quality sports facility was delivered on schedule a full year before the London 2012 games.

Mateusz Zwierzycki

New Concept of High-rise Buildings pp. 28-35

Asymptote Architects, Velo Towers, Seoul, South Korea

Asymptote Architecture (ASY) studio has revealed their Velo Towers project. Placed in Yongsan International Business District (South Korea), masterplanned by Daniel Libeskind, the project peaks to form new boundaries for residential architecture. Its dynamic arrangement of stacked and rotated volumes is aimed to counterpoint conventional extrusion of massing, which is common for today supertall structures. By breaking down the scale, architects achieve a socially engaging and dynamic environment, amplified with terraces floating high above the ground and multifunctional bridges. The house common amenities, including : fitness and recreation centers, lounges, pools, spas etc., which will serve as social focal points.

ASY may be considered an avant-garde studio, as their latest projects seem to be sn architectural and engineering state-of-th--art. Their most well-known building is Yas Hotel in Dubai, where advanced computational geometry methods were applied to optimize the use of resources and structure complexity. Velo Towers will probably establish some new architectural workflow methods, mainly because facade panels are to derive techniques from automotive and naval industries, Today, the automotive branch of industry is one of the most robotized ones, and thus the expectations regarding Velo Towers are placed really high. Velo Towers are planned to be Completed by 2024, simultaneously with the whole Yongsan IBD development.

Radosław Bałaziński

Expressionism is back in Hamburg pp. 36-42

Erick van Egeraat completes *Sumatrakontor*, Hamburg

At Hamburg Hafencity the brand new “Sumatrakontor” by Dutch Architect Erick van Egeraat was officially opened. The 37.000 square-meter, ten-story, multifunctional building houses a variety of inner-urban functions including a five-star hotel, offices and conference rooms, retail outlets, high-end housing and an underground parking garage.

The design has been prepared by the method (form-making) using digital design tools. In this method, the design process does not deviate from the conventional pattern, and digital tools only help the designer to present their creative vision. Information processes are subjected to architect's creative intentions and used in preparing the design for implementation.

The office and conference spaces maximize the variety in use due to the flexible structure offering units from 400 to 4.000m^2. The retail in the lower floors ensure vitality in use and dynamics throughout the day. Erick van Egeraat’s design refers to the richly detailed existing red-brick harbor buildings of the *Speicherstad* but does so in a contemporary manner. The large volume appears to be ‘cut’ into 4 different volumes and this is underlined by a specific dialectic play between glass, aluminum and red natural stone slabs for each of the different volumes. The inner courtyard on the other hand emphasizes on the calm comfort of the traditional white plastered facades in the city center of Hamburg. Strongly emphasized corners refer *Sumatra* to *Chilehaus,* which is one of the most recognizable examples of expressionism and art deco in German architecture. On an urban scale, the building’s shape allows a semi-public space and stimulates social interaction, while its architectonic appearance strongly relates to the character of Hamburg.

Bolesław Stelmach
Extension of Fryderik CHopins's Museum pp. 44-45
in Żelazowa Wola, Poland

Fryderyk Chopin's home at his birthplace in Żelazowa Wola has been used as his biographical museum for more than one hundred years. In the 1930s, the preserved outbuilding, remodeled into a small manor house, was surrounded by a park with garden elements built of fieldstones, ceramics, concrete blocks and unprocessed timber. With time, the park fell into neglect, and required revalorization and adaptation for contemporary museum and touristic purposes. The Stelmach i Partnerzy practice, architects of the Chopin Center in Warsaw won in 2010 a competition for modernization of the entire site. In the old building, walls were dehumidified and foundations strengthened. On the park perimeter, three new pavilions were partly fused with the garden wall: a reception/park entrance pavilion, a concert hall/restaurant building, and a generally accessible orangery. Behind it, there was space enough for garages for cars and mechanical garden equipment. The architects reconstructed old garden elements of recovered old bricks and new, hand-formed ones. They designed new benches, garbage cans and lamps.

A new Glare the Central Station in Warsaw pp. 48-50
Lighting design by LUXIONA Poland (advertorial)

The Central Railway Station in Warsaw was constructed as a flagship project of the Polish People Republic during the economic boom fueled in the 1970s by Western loans. The station's design by Arseniusz Romanowicz was innovative but was altered many times during construction, adversely affecting the quality of the construction work and the station's functionality. This building is great functionalist architecture, example of masterpiece of polish modernism including beautiful interiors covered with white marble and aluminium exterior. Since the mid-1980s, Warsaw Central has been in decline. Nowadays, a few months before the UEFA Euro Football Championship, LUXIONA Poland provided their complementary design lighting system.
Every lighting design requires consideration of the amount of functional light provided, the energy consumed, as well as the aesthetic impact supplied by the lighting system. Architectural lighting design focuses on three fundamental aspects of the illumination of buildings or spaces. The first is the aesthetic appeal of a building, an aspect particularly important in the illumination of retail environments. Secondly, the ergonomic aspect: the measure of how much of a function the lighting plays. Thirdly is the energy efficiency issue to ensure that light is not wasted by over-illumination, either by illuminating vacant spaces unnecessarily or by providing more light than needed for the aesthetics or the task.
The LUXIONA Group, including LUXIONA Poland which continues to implement the Group strategy, specializes in the composition and creation of indoor and outdoor lighting systems, basing on the vast experts' experience and the broad scope of product brands.

Krystyna Januszkiewicz
Surface in digital design pp. 54-61

A new role of the surface in digital design derives from conceptual changes in architecture. The new architecture emerging from the digital technological revolution is expressed in curvilinear forms with a high degree of complexity. In the era of digital technology, the surface is treated as a skin, under which the functional content of the building is hidden These forms are characterized by a formal language, which is different from the one so far, tectonics and materiality.

These are free forms, whose formation is firstly based on the modeling of their surface, which determines the space for a usable content. Such a change in the approach creates a need for a reflection on what the surfaces that surround us *de facto* are, and what the role of the surface in architectural tradition, often identified with the decoration, was. For example, Gottfried Semper (1803-1879) argued for a return to the surface of architecture. In response to the aesthetic crisis brought on by the integration of industry and art, he sought a new source for principles with which to guide architectural invention. By looking to man's own productions. Ruled surfaces have been popular in architecture probably not only since the pioneering works of Antonio Gaudí (1852-1926) and Vladimir Shukhov (1853-1939). With their strong focus on structural elegance, these and many other contributions are in contrast to recent free-form architecture.
Today, a sketchy rationalization of free-form shapes with ruled surfaces may be achieved with existing CAD software, which do not support smooth ruled surface strip models. Compared to techniques such as interpolation or approximation of rectangular point grids or connecting two input curves by straight line segments through rail sweeps or lofts, the herein proposed framework significantly improves both on automation level and accuracy (minimal rationalization error). We begin our discussion by recalling how ruled surfaces are conveniently described with off-the-shelf CAD software. Several different strategies of geometrizing the surface were presented, in order to allow for its rationalization and materialization in the real space of CAD/CAM. These strategies were support-ed by examples of completed architectural objects.

Maria Helenowska-Peschke
On topology in designing architecture pp. 62-67

Topological inspirations in the contemporary architecture, which are rooted both in the theory and workshop design, change. Topology was formally established in the nineteenth century and it examines the qualitative features of geometric formations in the n-dimensional space, linking them with the idea of a dynamic, continuous transformation. The philosophical base of the topological turn in architecture is the idea of continuity between different elements and differences across heterogeneous systems, introduced by G. Lynn in his essay of 1993 entitled "Folding in Architecture". The interest in the topological transformations resulting in the new architectural formal language is also strongly related to the development of computational methods which "compute" geometry of the object based on a defined internal generative logic rather than allow for a direct modeling. An access to advanced computational tools for creating and modifying a unique, complex, curvilinear, folding geometry, catalyzed formal and conceptual exploration of the topological space by avant-garde designers. Architects inspired by the topological geometry seek for a new type of continuous spatial relationships, blurring the differences between the inside and the outside, explore the previously inaccessible, abstract, curvilinear, complex surfaces. In the paper, projects such as Eisenmann's *Max Reinhardt Haus* - capturing the essence of Möbius strip, *M. van Schaik's Australian Wildlife Health* - representing minimal Costa surface as well as *Arnhem Central Transfer Hall* designed by UN Studio and inspired by Klein bottle and Seifert surface are discused as interesting examples of topological tendencies in contemporary architecture. Under the influence of topology, the key words in contemporary architectural discourse become the transformation and metamorphosis, as well as dynamic variability, reflecting the continuous evolution and technological progress. Curved, expressive, "bent" forms being built imply a movement without actually moving and reflect continuous changes of matter. They aim to formally encompass social, economic and cultural progress brought by information era.

Przemysław Jaworski
We Build Parametric Pavilion pp. 69-71
Parametric Design Workshop in Wroclaw

Between the 20th and the 24th of July, the Faculty of Architecture of Technical University of Wroclaw together with LabDigiFab and Jawor Design Studio hosted parametric design workshop. Over five days, the participants gradually learned three different design environments: Generative Components, Grasshopper and Processing**.** On the fourth day, a special event took place – the assembly of a parametric pavillion, manufactured straight from a CAD model and CNC cut from 15mm-thick plywood. 20 people worked for several hours, having two laptops with a 3D model and a special numbering system instead of paper documentation. The successful assembly proved that nowadays architecture can be built from 3D data, like in BIM workflows, instead of regular 2D drawings.

Architektura chaosu. The lecture in Torun, Poland pp. 72-73
(ed.)

Chaos Architecture – the concept of complexity in the creation of a new architecture, is the title of lecture, presented by Paweł Rubinowicz in 'Wozownia' Art Gallery in Torun on April 25th, 2012. The event was a part of a wider project associated with architecture, run by Gallery in Torun since 2007, managed by Teresa Dudzińska. Several times a year contemporary Polish architects and critics are invited to present their visions of architecture. Sa far among the speakers there have been: Marek Budzynski, Krzysztof Ingarden, Robert Nakonieczny, Stefan Kurylowicz, Thomas Adviser, Marian Fiukus and Boleslaw Stelmach. For the first time within this project Rubinowicz took up themes of using advanced digital techniques in architectural design. The lecture presented his first creative activities and research in the field of using computation in architecture and the application of mathematical theory of deterministic chaos and fractal geometry, described in his PhD dissertation. The lecture also analyzed tendencies in the use of complex forms, visible in the various trends of contemporary architecture such as: deconstruction, metabolism, folding, blob architecture.

The Winner Walzer pp.76-77
Heinemann Duty Free Shops Vienna
COOP HIMMELB(L)AU Wolf D. Prix & Partner ZT GmbH
(Press Release)

The task for the „Regionals" zones in the in the new "Skylink" terminal of the Vienna Airport was to translate the topic "Vienna" into the design of a multifunctional furniture element so that it can be experienced by the travellers and allows them to symbolically connect the inside of the airport with the city. COOP HIMMELB(L)AU's concept is based on the Viennese waltz as a central Viennese theme that via state-of-the-art scripting software is translated into the third dimension. Points of interpretation were the movement in space created by the dance steps with its traditional right and left turns, its fast pace and especially the "floating" form of the dance. This created a dynamic, space-encompassing sculpture. For the technical implementation again state-of-the-art tech-nology was utilized. The monolithic spatial sculpture was milled from PU foam from data that were transferred directly from a 3-D-Model, coated with Polyurethane and finally varnished with gold paint as a reference to the important Viennese time of Art Nouveau. As an additional dimension the medium sound is integrated in the design through the waltz "An der schönen blauen Donau" by Johann Strauss that in Austria is traditionally played at local festivities.

Agnieszka Glinkowska

A chair designed by polish architect pp. 80-81
is in red dot design museum collection

As many as 7 products from Poland have been awarded and distinguished in the world's most prestigous competition from industrial design sector – red dot design. Two products in particular, which can easily find application in arrangement of an office, have managed to attract our attention. As a lounge and conference chair with innovative design between the priorities of tradition and modernity, the SITAGWOODI won red dot product design award 2012. The clear, reduced design and sophisticated connection and processing of the materials bring out the main points. The lines are achieved by the combination of plywood shells to a homogeneous form. The versatile properties of wood in the mobility and strength as well as in the color range give the bucket seat of SITAGWOODI its distinctive flavor.

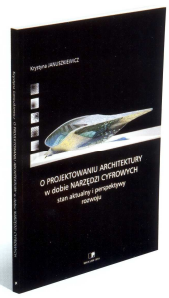
Dobroteka in Dobrodzien pp. 83-85
Polish Design Center
(advertorial)

In April this year, an object was opened, thanks to which Dobrodzien may become a Mecca for native lovers of design. A modern furniture pavilion made of concrete and glass was erected in the carpenters' town. The main attraction of the Dobroteka exhibition is the largest in Poland piece of relaxation furniture. Dobroteka is Poland's first furniture showroom which combines commercial, educational and research functions. This modern building was erected in Dobrodzien, in the Opole region, where there has been a tradition of wood processing and furniture production for 200 years. Inside there is an exhibition of the products by Polish companies from the region of Dobrodzien, presenting the latest trends in design. The authors of the building are the architects from the design studio M Point from Lubliniec, and the originators are the owners and founders of Dobroteka, Rafał Desczyk, Sebastian Kler and Piotr Kler.

Andrzej Koźlik

5 Senses Lounge Bar, Gtrona Spain pp. 86-90
ON-A Architects: Edwardo Gutieres Munnè

A lounge bar that was born with a premise: uniqueness and an exclusive treatment for the customer. It is a single space that is capable of generating various perceptions: visual, chromatic, auditory and sensory. The solution consists of a three-dimensional metal grid that is made up of more than 400 different pieces, which are deformed, stretched, shaped and adapted to the existing architecture of the building. It is a single shell that generates the space but at the same time separates it visually. A single solution with a multiplicity of variables.
ON-A architects, seated in Barcelona since 2005, was created as an international architectural laboratory with a great deal of professional experience in its background. The main objective of the studio is to help give meaning to the discipline of architecture by creating interesting solutions to everyday problems, as well as developing these solutions with the utmost quality and respect to the design, technology and knowledge of the environment.



On the Polish book market p. 68
The Polish market once again offers a unique position *On designing architecture in the digital tools* published by the Publishing House in Wroclaw. This book deals with the theory and practice of architecture created with the use of digital design tools and fabrication. It is compendium of knowledge necessary to understand the changes which are currently taking place in the design and theory of architecture, and which result from the influence and role of digital technologies.