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LIGHT IN ARCHITECTURE
– ARCHITECTURE IN LIGHTŚWIATŁO W ARCHITEKTURZE
– ARCHITEKTURA W ŚWIETLE

Abstract

In December 2013 the 68th Meeting of the United Nations named 2015 The International Year of Light-Based Technologies. This fact was to focus the world's population on the importance of light technology in promoting balanced progress. In this context, the omnipresent use of light in architecture (the inner and outer buildings space) requires analysis and revision.

Keywords: the international year of light, the art of space illumination, energy saving

Streszczenie

W grudniu 2013 roku 68. Sesja Zgromadzenia Ogólnego Narodów Zjednoczonych proklamowała rok 2015 Międzynarodowym Rokiem Światła i Technologii Wykorzystujących Światło. Fakt ten miał zwrócić uwagę społeczności świata na znaczenie technologii wykorzystujących światło dla promocji zrównoważonego rozwoju. W tym kontekście analizy i rewizji wymaga również wszechobecna gra światłem w architekturze stosowana w postaci oświetlenia przestrzeni wewnętrznej, jak i zewnętrznej bryły obiektu.

Słowa kluczowe: Międzynarodowy Rok Światła, sztuka oświetlania przestrzeni, energooszczędność

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The author has been in the game of defining the architectural space for years – shaping buildings and commenting on architectural activities in the art of shaping space (Le Corbusier – the game of shapes in light). The light in architecture helps greatly in perceiving the phenomenon of permeating the inner and outer space. From the present point of view the requirements of the light architecture seem to be obvious. In January 2015 (UNESCO headquarters in Paris) the official inauguration of the International Year of Light-Based Technologies took place. There were over ten thousand guests from all over the world. The International Year of Light-Based Technologies was proclaimed at the end of December 2013 during the 68th Meeting of the United Nations. The initiative was put forward by The Science Institutions Consortium and was formally submitted during the 37th UNESCO General Meeting (November 2013) by Mexico, with the support of New Zealand and almost thirty other countries. The proclamation was supposed to focus the world's population on the importance of light technology in promoting balanced progress as well as searching for solutions to the problems of energy supply in the world, access to architectural education, and the health of urban inhabitants.

In the 21st century light is present in all aspects of our daily lives and fields of science. It has made many things possible, such as revolutionary discoveries in medicine, international communication (internet), and the search for solutions to many cultural problems of the global community. In 2015, the chairman of the International Year of Light-Based Technologies committee said: “The International Year of Light-Based Technologies provides a unique chance of showing the decision makers and all members of the international community the potential of light-based technologies.” Every country taking part in this endeavour put forward one person who can be contacted with all Year of Light matters and connected activities. In Poland it is Professor Tomasz R. Woliński from the Technical University of Warsaw, representing the Photonics Society of Poland. Many anniversaries will take place in 2015:

- description of optical rules by Ibn Al Haythem in 1015;
- presentation of the “wave” nature of light by the Augustine-Jean Fresnel in 1815;
- description of electromagnetic waves by James Clark Maxwell in 1865;
- description of light in time and space by Albert Einstein in 1915 (the theory of relativity);
- the success of using fibre-optic cables in communication – Charles Kao 1965;

The Festival of The Year of Light is coordinated by the International Committee in partnership with UNESCO. The main sponsors of the event:

- European Physics Society (EPS);
- International Society of Photonics and Optics (SPIE);
- Optic Society (OSA);
- International Society of Photonics IEEE (IPS);
- American Associates of Physics (AAS).

There are over one hundred institutions from 85 countries which want to cooperate. Every month of the present year is dedicated to a particular scientist who has made breakthroughs in the science of light. There are many planned activities concerning electrical energy savings and efficient lighting. The “Days of Light for the Earth” serve to show the role of light in nature, promote energy saving, and make people realize the dangers of light pollution. Architects use light in space shaping as well. Just as in previous years, the main forum of exchanging experiences is THE INTERNATIONAL LUMINALE EXPO (Frankfurt – Rhine – Main), which is a “CULTURAL BIENNALE”, with thousands of visitors and displays from all over the world as well as nearly three million people from

the Rhine – Main region. LIGHT + BUILDING and LUMINALE connects various groups, such as industrial companies, craftspeople, retail and wholesale traders, researchers, scientists, artists and culture propagators. During the expo, everything in the region between Aschaffenburg, Mainz, Offenbach and Darmstadt is focused on lighting. First shown a few years ago at the LUMINALE EXPO, interactive digital building lighting is starting to have more and more influence on architectural values. The “Light and Sound” presentations show lighting with magnetic music. Testing modern technology, measuring the potential of control equipment, sensors and software serves to develop the industry of energy saving and efficient products. The hope for “GREEN ENERGY” lies with OLED. The German Fraunhofer Institute was given the FUTURE AWARD 2011 for its OLED. Therefore, the LUMINALE, acting as the lighting laboratory, focuses the attention of the whole world and increases the requirements of the visitors, public and professionals visiting the LIGHT + BUILDING FRANKFURT EXPO. There is also a rise in interest in modernist architecture (with an analysis of the creative personality of Le Corbusier). During the 125th anniversary of the architect’s birth, the first Polish edition of “Into architecture” was published. 89 years since the publication of “Vers une architecture”, the Polish edition organizes the quotes from the book, which can be found in conversations, works and online, which were incorrectly and loosely translated. We are now certain that “architecture is a thought through, flawless, perfect game of shapes in light” – “L’architecture est le jeu, savant correct et magnifique des volumes sous la lumiere” – in this order and position. The author, in this quote, treats architecture as art. He sees building as sculpture and analyses its composition in accordance with the criteria of harmonious joining of the proportional shape with the surrounding area. Presently, also in Łódź, there is the custom of a permanent presentation of the city space structure through the “LIGHT DAYS FESTIVALS”. This mostly includes modern tenements, public utility buildings, refurbished classical ones, rationally modernized or masterfully rebuilt. Through the work of Olenderek & Olenderek Architekci, in the first decade of 21st century (in the Łódź downtown area) one of the first illuminated sealed buildings was erected. It serves as a bank with offices at Plac Wolności [fig 1]. There is another illuminated office building under construction (Electrical Equipment Company). The refurbishing of the interiors and exteriors of the construction architecture and environment buildings of The Science University should be seen as well [fig.2]. The park with the pond near the university (19th /20th-century water reservoir – in case of fire) was tidied up. The new academic structure, revitalized and adapted for the recreational purposes of the general public, has been exposed by off-road outdoor lamps that illuminate the paths to ensure student safety after dark [fig. 3].

The ZUMTOBEL Company is an example of an institution offering high quality products for illuminating outside elevation and inside building areas. The company publishes a magazine on lighting in architecture which provides information on valuable architectural shapes, and shows how illuminated buildings help area orientation. Using highly efficient LEDs saves energy. The current ZUMTOBEL lighting solution shape the architecture of a building through exposing details in a variety of ways (accurate light beam directing). Intelligent lighting direction systems are used to control the flow of multimedia data – during the day or night. In the past, the architect visionary Hugh Ferriss used light in his work – he started developing his own drawing style in 1920. He presented project designs with buildings in perspective illuminated by floodlights, during the night or fog. The shadow cast by the building was as important as revealing



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- III. 1. Bank office building on Plac Wolności in Łódź
- III. 2. Building of the Faculty of Construction, Architecture and Environmental Engineering at the Technical University in Łódź
- III. 3. Academic revitalized park area of Technical University in Łódź
- III. 4. Vision of the Muzeum Dzieci Zamojszczyzny

its elevation. His designs were often published as advertisements, serving the same role as present day architectural visualizations. The Interwar Period architects used a similar technique presenting objects in the night. The OOA Architects designed the concept of the DZIECI ZAMOJSZCZYŹNY MUSEUM. Editor Tomasz Wilde is the man behind this idea. The use of lighting (or its absence) is supposed to increase the tension and terror in the visitor's mind, which was present during the transportation of children. The visitor will be subjected to a strong feeling of dread and interact with the merciless deportation and pacification activity [fig. 4].

The First International Lighting Engineering, Architecture and Environmental Protection Conference (Poznań, 2011) welcomed many scientists, architects, designers and specialists using lighting at work. It served as an excellent discussion forum on the topic of varied use of light, also by perfect lighting designers, both inside (light in architecture) and outside (architecture in light). Perfect, which means the exposure of the function and presentation of the building shape.

Light, this mysterious substance which surrounds us, the sign of divinity, life, truth and beauty is omnipresent. Presently, with the abundance of the artificial light, we architects should responsibly use this magical medium in a creative and ecological game of space – PRO PUBLICO BONO – human-friendly in every respect.

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