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SUNLIGHT IN ART EXHIBITION SPACES ON THE EXAMPLE OF VENICE BIENNALE PAVILIONS

Summary

The article discusses the subject of using sunlight in art exhibition interiors. The properties of sunlight that affect its role in highlighting the surroundings as well as art exhibitions spaces were discussed. A detailed analysis of the subject was presented on the subject of Venice Biennale pavilions: the pavilions of the Netherlands, Finland and the Nordic Pavilion. It was observed that sunlight is introduced into their interiors and modified within them using architectural tools employed in a well-thought-out manner meant to ensure optimal but variously altering and alternative conditions of illuminating exhibition pieces using sunlight. The research method was based on an analysis of designs and the author's perceptual experience. Conclusions include observations that sunlight provides the possibility of uniquely highlighting art, enriched with the choreography and orchestration of light, which tie a given exhibition to its location, time and reference to the space of the cosmos.

Key words: sunlight, art exhibition space, architecture, exhibition pavilion, choreography of sunlight, orchestration of sunlight.

Introduction

Sunlight¹ creates special conditions for illuminating exhibitions within art exhibition spaces. This was acknowledged by architects Yvonne Farrell and Shelly McNamara, curators of the 16th "Freespace" Architectural Biennale in Venice (2018), who decided that the main exhibitions in Padiglione Centrale and Corderie will be adapted to the specific sunlight that operates within the space of these buildings: the melancholic light of Corderie and the zenithal light of Padiglione Centrale². Sunlight highlights various properties of the interiors

¹ The authoress assumes that sunlight is light that operates on Earth and whose source is the Sun (Stec 2017).

² The curators wrote: "Era nostra intenzione che la dimensione eroica delle Corderie, con la loro struttura ripetuta in mattoni e la loro luce malinconica, contrastasse con la luminosità della luce allo zenit nel Padiglione Centrale. L'atmosfera così diversa all'interno di questi edifici ha influenzato e arricchito la nostra strategia curatoriale. Ci è piaciuto l'effetto che, grazie a queste loro qualità, gli spazi hanno avuto sulle nostre scelte e sulla collocazione dei partecipanti". Farrell Y. and McNamara S. (2018), pages without numbering.

of these buildings: their scale, structure, materials and atmosphere, offering different exhibition conditions.

The article features an analysis on the use of sunlight within art exhibition spaces³. Selected pavilions of the Venice Biennale were subjected to a detailed investigation. Used solely for alternating exhibitions of art and architecture, they are model examples for analysis. The fact the Biennale was open to the public between May and November caused many of them to be designed with using sunlight in their interiors in mind. These pavilions, thanks to their architecture, offer a constant repertoire of possibilities of illuminating exhibitions using sunlight. It is used in varying degrees but it exists, often inspiring artists and curators who incorporate sunlight into an exhibition as its constituent part. Of course, light can also be temporarily blocked or combined with light of a origin other than the sun.

Highlighting qualities of sunlight in an interior

Highlighting properties of sunlight can be seen in the perception of our surroundings. Although all light is used for it, only sunlight clearly points to the time and location of a given perceptual experience. The constant movement of the sun along the ecliptic in its daily rhythm causes side lighting (Boubekri 2014) and “side-top” lighting⁴ to be dynamic and changing, direct at times, creating a natural choreography⁵ within an interior, while top lighting (Boubekri 2014) is static, relatively unchanging and cool, scattered across the celestial sphere, creating a natural orchestration in an interior, which it enters simultaneously from different sides (Stec 2017). Changes in the ecliptic over the yearly cycle cause additional changes in the scope, angle of incidence and colour of light, associated also with air temperature. Sunlight is always local and never universal (Winskowski 2002). It points our attention to the place it shines on and at the same time at its source, located around 150 million kilometres away from the Earth.

Astronomical conditions cause sunlight to penetrate every interior on Earth from outside. Geographic conditions strengthen the unique and non-recurring quality of sunlight at a given place and time. The composition of the earth atmosphere is a deciding factor here, as it is within it that sunlight is reflected and filtered, creating the celestial sphere and co-creating the weather. The

³ Only spaces meant strictly for art exhibition were taken into consideration, excluding spaces with other primary functions, such as foyers.

⁴ “Side-top” light enters to the interior through a diagonal opening in the interior’s constraints. For the authoress it constitutes a separate category due to its specific properties which are a result of a combination of dynamism and directionality with a static character and scattering (Stec 2017). These characteristics were defined for European latitudes.

⁵ Choreography is based on the slow movement of sunlight in accordance with the Sun’s movement along the ecliptic.

architecture can be designed as a specific apparatus used to introduce the local sunlight into an interior and that appropriately modifies it according to the interior's function.

Effects of highlighting using sunlight

Highlighting an exhibition interior using sunlight is associated with exposing its constraints (walls, the floor, ceiling/vault/celestial sphere, massing) or space, as we can place an exhibition in any of these interior elements. This is why sunlight must be introduced and modified in such a manner as to highlight: – all constraints in a uniform manner, the vividness of an interior, – solely the space of an interior, – the blending of the interior with the exterior, – a separate fragment of the interior's constraints, – the filter for sunlight. Interiors with highlighted vividness obtained using scattered light, entering through a hidden opening or absorbed by semi-translucent yet colourless partitions are considered to be good for exhibiting art. This light has a specific softness, causes “atmospheric silence” (Plaummer 2009), highlighting the vividness of exhibition pieces, underlining their shape and causing them to appear as if frozen in space. The highlighting of vividness is also aided by blocking views of surroundings. The highlighting of space itself is the easiest to produce using top lighting⁶ using an expansive skylight above its central part. Elements that make a space more dense, that are either suspended or standing, gain in visual value, create the effect of a forest lit by top sunlight. The blending of the interior with the exterior is associated with opening the exhibition space into a view of the surroundings and of the sky. Highlighting a fragment of the interior can be obtained by direct sunlight. It adds expressiveness and theatricalises an exhibition. When well-used, it highlights a work or its element against the background of the interior (Twarowski 1962) and heightens the observer's focus. Mieczysław Twarowski wrote of increasing a work's compositional values by creating “phases of visual expressions”⁷ thanks to the dynamic of this light. Highlighting an element of an exhibition can be performed thanks to a trail of sunlight (Twarowski 1962, Stec 2017). It is formed by directed sunlight introduced into a shaded interior in such a manner so that it forms a strong contrast with the darkness of the interior and so that the elongated path of light leads to the highlighted element. The trail of light is temporary and focuses an observer's attention on the illuminated work. Extremely exposes the interior the

⁶ The distinction is made between “top light” in the sense of a zenith light, which falls unto a tool of introducing light into an interior, e.g. a skylight and light entering an interior from above. There are examples, in which an interior is entered side light from above (Stec 2017).

⁷ Twarowski wrote: “When I studied layouts of shades and lights in the garden compositions of Tivoli and Ravello, I observed a distinct reaction among visitors many times. Compositions that, when a period of poor illumination, were left unnoticed, attracted large groups of tourists who expressed their enjoyment during times when impressive shadow patterns formed on them” (Twarowski 1962, p. 93).

filter for sunlight (a stained glass, a grate pattern), because causes the strongly interferes a sharp contrasts of the light and shadow pattern or the colour of light with the work's expression.

When analysing the helioplasticity of sculptural compositions, Twarowski distinguished shadows produced within the composition itself, shadows cast on the background and shadows cast by shadow projectors. He also noted two types of highlighting an interior using local sunlight, visible in Egyptian and Greek temples⁸.

Sunlight is sometimes used in contemporary museums (Winskowski 2002, Gyurkovich 2017), although more often in foyers rather than in exhibition spaces. Apart from the specificity of an exhibition that might require sunlight to be excluded from presentation space (e.g. projections), the root cause are difficulties associated with appropriately modifying sunlight with architecture (Winskowski 2002).

One example of highlighting art using sunlight is provided by Kunsthaus Bregenz (arch. Peter Zumthor, 1997). The exhibition spaces on the first, second and third floors are penetrated by sunlight from above, filtered by a suspended ceiling from semi-translucent glass, while previously being reflected numerous times using ducts within the structure of the building. As a result of scattering-channelling and filtering (Stec 2017), sunlight enters the interiors tempered, naturally changing its intensity and colour, highlighting with its choreography and current weather and time of the exhibition.

Philippe Rahm used sunlight in his temporary exhibition project "Géologie blanche" (Grand Palais, Paris, 2009), which took place within the space of Grand Palais, illuminated by sunlight from above. Rahm used this lighting in his design method, based on modelling a white cuboid at the centre, according to optimal spatial and lighting conditions for individual exhibition pieces. In "Géologie blanche", every sculpture, painting, installation or projection found its "custom designed" place of exhibition. Sunlight turned out to be sufficient, as the white surfaces of the model reflected 80% of it.

⁸ In the first, highlighting is "based on a gradation of light and shadow within a composition scheme of several interiors, ranging from a courtyard fully immersed in the sun's rays through a semi-dark hall to the most sacred and smallest interior with a statue of the godhead, lit only sporadically by a narrow trail of sunlight from above. In a Greek temple, in turn, this highlighting is based on a masterful play of light and shadow [...]: entire facades and sculpted details" (Stec 2017, p. 83).

Illustration 1. Austrian pavilion garden at the Venice Biennale



Comment: The installation “Sphere 1:50.000” is visible on the image (curator: Verena Konrad, exhibit: LAAC, 2016).

Source: author’s archives.

In the Venice Biennale Austria Pavilion (arch. Josef Hoffmann and Robert Kramreiter, 1934) sunlight co-created the “Sphere 1:50.000” installation (curator: Verena Konrad, exhibition piece: LAAC, 2016). It was placed in a garden that Hoffmann made a part of the pavilion and enclosed with an arched wall 20 years after the building’s opening. The installation refers to this arch through the erection of a spherically rounded floor in the garden, whose curvature has the same radius as that of the wall, namely: 128 metres. It is precisely 1:50.000 of the radius of planet Earth. The floor had a mirror-like surface and reflected the surroundings along with the celestial sphere, enabling a physical impression of perceiving the curvature of planet Earth⁹.

Three pavilions, built in the 1950’s and 1960’s and located in the Giardini Biennale grounds in Venice were selected for detailed analysis: the Netherlands Pavilion (arch. Thomas Gerrit Rietveld, 1953¹⁰), the Finland Pavilion (arch. Alvar Aalto, 1954) and the Nordic Pavilion (arch. Sverre Fehn, 1962). Giardini has a microclimate that is slightly cooler than the typical climate of the

⁹ V. Konrad in his curator’s description wrote that the sphere is an „instrument of deviation and symmetry that are superimposed upon one another, relativising and extending the space of the pavilion...”.

¹⁰ The pavilion designed by Rietveld replaced an earlier one, designed in 1912 by Ferdinand Boberg.

Venetian Lagoon and light is filtered by tree crowns and partially absorbed by greenery here.

Netherlands Pavilion

The interior of the Netherlands Pavilion is penetrated by sunlight from three sides and from above. Side light penetrates by glazed wall fragments: two from the east, one from the south and one from the north. The southern and northern glazed surfaces, located far from the corners of the building, make it possible for side light to penetrate the central sections of the interior, creating favourable conditions for highlighting the vividness of exhibition pieces. At the same time, this light reaches walls directly head on, creating favourable conditions for exhibiting paintings, graphics, photographs (Rasmussen 2015). Direct southern and eastern side light exposes their choreography. It increase the expressiveness of an exhibition.

However, it is primarily the light that enters from above that is the deciding factor in regards to the exceptionality of this interior. In astronomic terms, it is side light, as it falls unto the glazed walls of three light boxes on the flat roof from the sides. One of the boxes is L-shaped, thanks to which light enters it from the east and the north. The remaining ones are entered: from the south (the northern one) and from the west (the southern one), respectively¹¹. In this manner, the boxes capture side light from the four cardinal directions. It is hard to observe when viewing the pavilion from outside, as the glazed surfaces of the light boxes are always directed towards the centre of the space of the flat roof. From inside the boxes are obscured by a grid of semi translucent glass tiles that filter light before it can enter to the exhibition space (from above). Dynamic side light is highly modified here and takes on an extraordinary softness and also their choreography. It highlights the vividness of the interior, underscoring its corners through a gradation of light and shadow, as if covering objects with light, causing them to appear as if frozen, while maintaining the dynamic of the glow that moves along the interior, changing its colour and intensity along with time and the weather. The surfaces of the walls are highlighted by slipping light from above. It highlights the reliefs that are exhibited here (Rasmussen 2015).

The architectural apparatus for sunlight that is the Netherlands Pavilion makes it possible to vary its internal illumination: covering the glazed walls and leaving only the light from above or the other way around, as well as manipulating light coming from boxes.

¹¹ Light boxes can be interpreted as adjacent interior, from which it penetrates *lume di lume* - derivative light (Scamozzi 1615, Borys 2004, Stec 2017).

Illustration 2. Interior of the Netherlands Pavilion on the Venice Biennale grounds, arch. Thomas Gerrit Rietveld, 1953



Comment: We can see an L-shaped light box in the ceiling that captures northern side light (using its shorter glazed surface) and eastern side light (with its longer glazed surface).

Source: the same as in illustration 1.

Finland Pavilion

In the Finland Pavilion, sunlight enters from above and, when doors are open, from two opposite sides through door openings. The interior of the timber pavilion, painted white, is highlighted by light that enters from above and which is astronomically a side-top light. It falls on the glazed surfaces of the gabled skylight with a three-sloped shape: with surfaces from the south, the south-east, the east and the north. In the space of the skylight, the light reaches the white surface of an opposing surface or, in exceptional conditions, the walls directly in front (on a summer afternoon we can observe direct side-top sunlight on the short north-eastern wall), or a bright structure suspended underneath the ridge that redirects it so that it can fall on the wall under the skylight. The white interior of the pavilion multiplies this light thanks to reflections. Although scattered light dominates its space, when its doors are open, external light from the west and east, along with a view of the surroundings, enter it.

Illustration 3. Interior of the Finland pavilion on the Venice Biennale grounds, arch. Alvar Aalto, 1954



Source: the same as in illustration 1.

Nordic Pavilion

Sunlight enters the Nordic Pavilion from above and from two sides: the west and the south. The shape of the low, cuboid pavilion causes side light not to penetrate the deeper parts of its interior. However, it is excellently highlighted by top light from above (Stec 2017), which enters through spaces between rows of concrete beams, where glass panels in the form of gutters were placed. Thanks to their proportions and materials, elements of the flat roof constitute a good tool of introducing and modifying sunlight. The tall beams channel and

disperse light on its side surfaces while convex gutters produce a sequence of dispersing reflections. In this manner, top light, which is static by nature, rather stable and cool, is reflected numerous times. This results in a uniform distribution of glow across the entire interior and a strongly highlighted scattering of light. The openwork of the ceiling that reaches walls makes it possible for light from above to slipping across wall surfaces, thanks to which it highlights the texture and three-dimensional forms that are placed there.

Illustration 4. Interior of the Nordic Pavilion on the Venice Biennale grounds, arch. Sverre Fehn, 1962



Source: the same as in illustration 1.

Conclusion

Thanks to astronomic and geographic conditions, sunlight offers a rich repertoire for illuminating exhibitions, causing them to be singular events. Appropriately introduced and modified by architecture, it creates lighting conditions that are always unique and richer than those of light from other sources, through the predictable yet uncontrollable but predictable for man, natural mutability and references to time and place. A rich repertoire is provided both by direct light – directed, dynamic – and scattered light. The choreography of dynamic light can be used in phases of illuminating a composition. Top light is traditionally used in exhibition spaces as neutral, relatively static, stable and cool, scattered across the celestial sphere. When modified by architecture, it reinforces the effect of blooming, of the spread of light, a soft gradation of shadows and light. Particularly attractive effects for illuminating exhibitions give the introduction of side light from above.

In the Netherlands and Nordic pavilions of the Venice Biennale, side light and light from above stabilised a balance between the centrifugal and centripetal highlighting of an interior. This makes it possible to produce alternative schemes. In the Finland Pavilion, when its doors are closed, illumination is more uniform and centrifugal.

Sunlight is not always sufficient to light exhibition pieces and can be combined with light from other sources, however, it always increases the capacity for original exhibition arrangement.

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Światło słoneczne w przestrzeni eksponowania sztuki na przykładzie pawilonów Biennale w Wenecji

Streszczenie

W artykule podjęto temat wykorzystania światła słonecznego we wnętrzach służących eksponowaniu sztuki. Omówiono właściwości światła słonecznego, wpływające na jego rolę eksponowania otoczenia, także przestrzeni wystawiania sztuki. Szczegółową analizę tematu przedstawiono na przykładzie pawilonów Biennale w Wenecji: Pawilonu Holandii, Finlandii i Państw Skandynawskich. Zauważono, że światło słoneczne jest wprowadzane do ich wnętrza i modyfikowane w nich dzięki architektonicznym narzędziom w przemyślany sposób, mający na celu zapewnienie optymalnych, ale też wariacyjnie zmiennych i wariantowych warunków oświetlenia eksponatów światłem dziennym. Metodę badania oparto na analizie projektów i doświadczeniu percepcyjnym autorki. We wnioskach zauważono, że światło słoneczne daje możliwości niepowtarzalnego eksponowania sztuki, wzbogaconego choreografią i orkiestracją światła, które wiążą daną wystawę z jej lokalizacją, czasem trwania i odniesieniem do przestrzeni kosmosu.

Słowa kluczowe: światło słoneczne, przestrzeń eksponowania sztuki, architektura, pawilon wystawienniczy, choreografia światła słonecznego, orkiestracja światła słonecznego.

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