

# Study of The Zemgale Olympic Center Building Architecture in The Indoor/Outdoor context

Aija Grietēna, Aija Ziemeļniece, *Latvia University of Agriculture*

**Abstract.** As both the objective and subjective circumstances change, the need arises again to find a balance in the face of the challenges set by the contemporary urban environment when as a result of application of glass panels the indoor and the outdoor space easily merge into one another. Due to the balanced and appropriate application of glass panels, the new Zemgale Olympic Center in Jelgava is obviously a rather successful example of outdoor/indoor space communication in this type of buildings. The validity of the conclusions obtained using the inductive method during the previous studies has been proven also in this part of the study – the harmony between the outdoor/indoor space can only be achieved by skillful subordination of values, namely - both the emotional message and the materials used must serve one overall purpose. The quality of interspace harmony directly depends on the subordination of the set goals and the appropriateness of the achieved results to these goals - the inductive method has proved this hypothesis true.

**Keywords:** architecture, interior, indoor/outdoor harmony, glass systems.

## Introduction

The last decade in the Latvian architecture is characterized by a construction of new type of sports and recreation complexes. Their geometrical shape varies, but they all have one feature in common - large glass panel facades. Riga, Daugavpils, Liepāja, Jelgava and Ventspils have a number of modern sports centers, characterized by an active indoor/outdoor space communication achieved through the application of large glass systems. For example: Ventspils Olympic Center (1997); Olympic Sports Center, (2005) Riga; Liepāja Olympic Center (2008); Daugavpils Olympic Center (2009); Zemgale Olympic Center (2010). Even a number of small towns and rural centers nowadays boast such buildings. All these modern, spacious, colorful and geometrically bold buildings have a common trait – the outdoor and the indoor space is merged together by means of extensive application of glass systems. This tendency not only affects the areas surrounding the entrance of the building, but also exposes the indoor space to the outdoor space and merges the outdoor space into the indoor space, thus removing the traditional spatial boundaries also in such areas that have previously been considered as functionally discreet - for example, swimming pools, spas with saunas and bubble baths, fitness halls and other similar premises.

Architects, landscape architects, artists and scientists of all times have been looking for the key of harmony, trying to use it as precisely as possible [8; 9; 13]. What are the examples of successful collaborative principles and conditions in the field of the interspace communication today?

Based on the previous findings, obtained in my research on the indoor/outdoor space harmonious development opportunities in the art of the environmental building [1; 2; 3; 4; 5], there is a logical need to continue research in the direction started, looking for answers to the opportunities for harmonious development of the interspace (in the indoor/outdoor environmental art).

*Purpose of study:* to find out whether the interspace harmony principles obtained in the previous phases of the study and their priorities in the architecture of educational establishments, sacred buildings, library and functionally transformed, renovated buildings [1; 2; 3; 4; 5] apply also to other functionally different buildings, in this case the Olympic Center, in the art of the environmental building as well as generalized with the inductive reasoning (cognition from the individual case to the general statement) method [11].

*Hypothesis* – the quality of the mutual harmony of any room is directly proportional to the subordination of the set aims and the conformity of the results obtained.

### *Assignments:*

1. To study and analyse factors of harmony in the indoor/outdoor interaction in the new building of the Zemgale Olympic Center of Latvia at 24 Kronvalda St., Jelgava.

2. To determine priorities of the indoor/outdoor harmony, to compare the results with the ones obtained in the previous studies and to define the general conclusions.

## Materials and Methods

Between the two rivers of Latvia – Daugava and Lielupe – lies a strip of land that has a great potential for development [7, 12]. It is a rapidly growing urban agglomeration between the capital of Latvia Riga (696 593 registered inhabitants) and the regional center Jelgava (61 795 registered inhabitants as of 01.07.2015) [10]. The distance between Riga and Jelgava (borders) is only 29.9 kilometers and the cities are connected by P100; E77; A8 motorway intensively used by numerous commuters. Jelgava experiences an increase in the demand for quality recreation and sports facilities as many of its inhabitants spend their working day in Riga. Being well aware of the situation, the Jelgava municipality has reacted accordingly and a multitude of sports and recreation activities is becoming available to its people. One of the recent newcomers is the Zemgale Olympic Center (2010). This building has been chosen as the main focus of the study. It is located in the part of the city called Parlielupe which lies between the Jelgava – Riga motorway and railway routes and is enclosed by Kronvalda, Akmenu and Strazdu streets. Due to its geographical location and also as a result of economic and political factors, this territory has recently witnessed a particularly rapid growth. The conceptual design of the multifunctional sports complex “Zemgale Olympic Center” was developed by the architect Maris Malahovskis. The detail design was developed and the construction works were carried out by “Latvijas Energoceltnieks”, Ltd. [6].

As the main method for studying of architecture, landscape architecture and interiors was the comparative method that expresses as informative, archival, interview and photo analysis. While inspecting the object in nature (October, 2015), photo images of architecture and interior were made with digital camera Sony X Peria C6603. Stylistic features of building architecture and interior (composition, coloristics, proportions – massiveness, filigreeing, glazing fields, level of emotionality), harmony in mutual interaction of landscape, architecture and interior were analyzed.

*Application of the comparative method for drawing the information summary for the research:*

1. Principles of applying glass systems in architecture:

Composition of glazed areas in space and their proportions, i.e. massiveness in relation to unglazed parts;

Compositional application of coloristic and light/shadow under the impact of insolation;

Assessment of semantic correspondence and level of emotionality of indoor/outdoor space in relation to the highest functional task of the space.

2. Outline of research materials in reference to the impact of compositional arrangement of outdoor space on the indoor space and vice versa:

Architectural form building, glazing and outdoor landscape of the building as the main criteria for the search of harmony between building architecture and landscape architecture thus finding compliance with their highest task;

Assessment of indoor/outdoor harmony: summary of views expressed experts and other respondents on correspondence of indoor/outdoor dialogue to the highest task of architecture.

During inspection of the building, architecture, landscape and interiors were photographed. With the help of inductive reasoning method the priority factors for assessing visual aesthetic quality of indoor/outdoor space were determined in the analytical generalisation stage. It was performed by inspecting the buildings in Latvia and trying to find out the general principles for setting the main criteria of indoor/outdoor harmony studies.

## Results and Discussion

1. Principles of applying glass systems in architecture:

*a. Composition of glazed areas in space and their proportions, i.e., massiveness in relation to unglazed parts.*

The Zemgale Olympic Center is characterized by elegant reservedness, purity of forms and graphic clarity. The greyish rectangular sports, office and recreation building harmonizes with the plasticity, openness, colorfulness and constructive dynamism of the roof of the stadium stands, and is beautifully integrated into the surrounding landscape as a powerful dominant feature. At the junction point on the level of the 2nd floor both contrasting sections create a viewing terrace (Fig. 4). The glazing of the facade with its exit onto the terrace opens the view of the monumental stands structures and the Southern part of the city from the inner space (the hall) (Fig. 6). The glazed main entrance facade of the building is located to the West. It bends around the building and merges into the adjacent facades (Fig. 1; 6; 8). A comfortable pedestrian square and a raised lawn surrounded by tall birches is located in front of the main entrance; the parking lot and the new decorative greenery lie next to the square and the lawn. In contrast to the largely open Western facade, the communication of the indoor and outdoor space in the remaining facades of the central building remains discreet and rather reserved (Fig. 2; 3; 4). Both during the day and at night, the transparent facade constantly carries a clear message from the indoor space into the outdoor space - sports and exercise matter in the



Fig.1. View on the ZOC building entrance [Source: photo by the author Aija Grietena personal archive, 16.10.2015]



Fig. 2. View on the ZOC building from the courtyard  
[Source: photo by the author Aija Grietena personal archive, 16.10.2015]



Fig. 3. View on the ZOC building from the courtyard  
[Source: photo by the author Aija Grietēna personal archive, 16.10.2015]



Fig. 4. View on the ZOC junction point on the level of the 2nd floor – viewing terrace [Source: photo by the author Aija Grietēna personal archive, 16.10.2015]

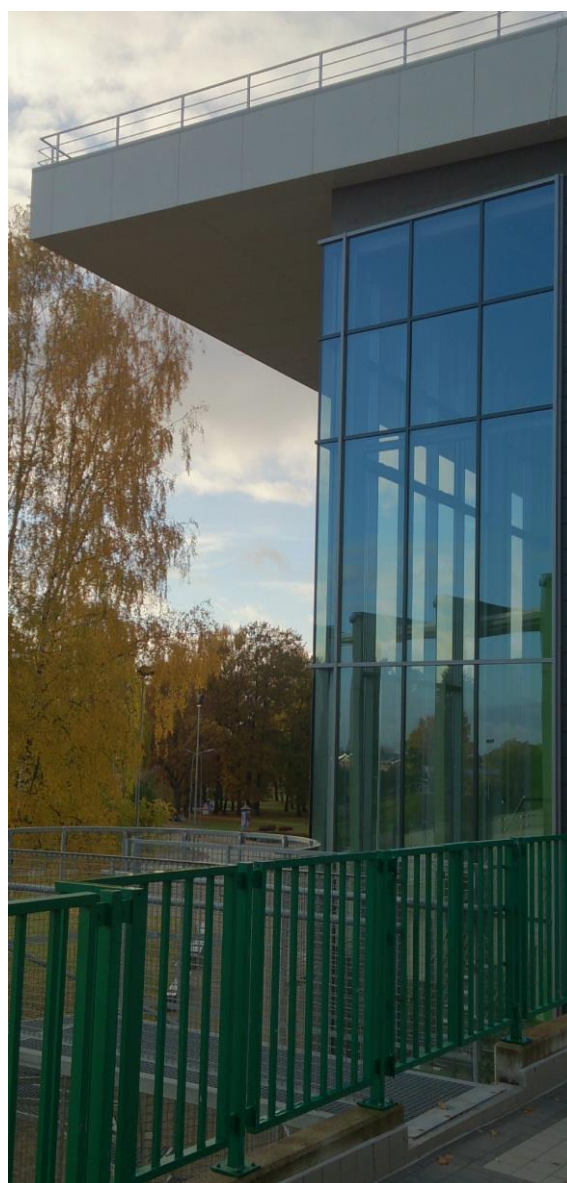


Fig. 5. View from the ZOC viewing terrace  
[Source: photo by the author Aija Grietēna personal archive, 16.10.2015]

life of each and every one of us! And it reaches even the doubtful, the lazy and the idle ones. The gigantic glass wall is not obtrusive as this might be the case if a non-transparent material had been used. As the time of the day and the seasons change, the glass reflects the indescribable beauty of the sky and the surrounding landscape, the moving clouds and the trees in the wind being especially impressive. One can enjoy magnificent sunsets through the glass wall on the second floor and, according to visitors, the blue moonlight effects create unforgettable atmosphere during the events that take place in the evenings. As the seasons change, the tall birches carry their rhythmical change of colors through the glazed facade into the prolonged rectangular-shaped inner space – the bare silhouettes of the winter trees are gradually replaced by the fresh tenderness of the young leaves of spring, mature greenness of summer and the yellow, golden and brown shades of the fall. This facade visually, aesthetically and functionally serves the purposes of the hall and the entire building perfectly (Fig. 5; 7; 8; 10), as it keeps the rest of the premises hidden and welcomes the passers-by to enter and experience the building themselves.

*a. Compositional application of coloristic and light/shadow under the impact of insolation.*

One of the long sides of the prolonged rectangular inner space is covered with glass panels. The opposite wall on the level of the 1st floor is painted orange, whereas on the level of the 2nd floor medium grey has been chosen in order to absorb the sharp light and shadow contrasts. As the visitor enters the hall, the orange effect creates the feel of warm welcome. The grey serves as a background for advertising posters and the fascinating play of light and shadows. Both end walls of the prolonged space are brightly painted – one of them red, the other one – green. Thus the inner space (the hall) has obtained a joyful look and spatially seems better proportioned than it actually is. The glazed facade carries expressive impermanence into the inner space. There is only one drawback that makes the visitors feel uncomfortable, namely - the second row of windows that can only be opened mechanically, does not provide sufficient ventilation on hot summer days. The direct sunlight heats up the hall substantially as the glazed facade has neither blinds from the inside nor shutters from the outside. As numerous events take place on summer evenings, this problem should be resolved in the future.

*a. Assessment of semantic correspondence and level of emotionality of indoor/outdoor space in relation to the highest functional task of the space.*

From the outside the glazed facade reminds a magnificent cinema screen reflecting the sun and the ever-changing play of light, whereas the monolith grey wall in the background serves

as a screen for the shadows that fall from the glass structures and turn into a constantly moving graphical performance. The large mirror located on the first floor next to the coatroom and opposite the glazed facade, reflects the picturesque birches growing around the building. This is a pleasant surprise for the visitors of the coatroom and the cafe as there is an impression that they are surrounded by birches. The mirror projects the outdoor space onto the opposite wall and enhances the relaxing effect of the landscape (Fig. 10). Skillful application of the glass panels and the mirror ensures the appropriate spatial quality in the functional areas of the building. Likewise, efficient use of the advantages provided by the interspace dialogue - the doors on both ends of the long corridors are glazed - has improved the spatial quality of the 1st floor passages located on both sides of the main sports hall. The symbolic “light at the end of the tunnel” creates powerful momentum and is a strong reference-point emphasized by a brightly colored section on the floor (Fig. 11). The stairwells adjoin the glazed facade and the visitors may enjoy the scenic views from different locations while walking up or down the stairs (Fig. 7; 9).

*2. Outline of research materials in reference to the impact of compositional arrangement of outdoor space on the indoor space and vice versa:*

*a. Architectural form building, glazing and outdoor landscape of the building as the main criteria for the search of harmony between building architecture and landscape architecture thus finding compliance with their highest task.*

The Zemgale Olympic Center is a building where harmony is retained between the outdoor and the indoor space (in this case – the hall). This has been achieved by choosing the right proportions between the glazed facade and the adjacent front square with the green zone. Appropriate use of the glass systems and a witty application of mirrors improves the functional quality and the indoor/outdoor space communication in such areas as the cafe, the coatroom, the passages, the stairwells and, of course, the central hall. The location of the main glazed facade to the West helps to add the necessary impermanence to the indoor space as it is a source of constant play of light, shadows and sunrays. The red end wall, when lit by the Southern sun, emits the feeling of activity and inspiration.

*b. Assessment of indoor/outdoor harmony: summary of views expressed by experts and other respondents on correspondence of indoor/outdoor dialogue to the highest task of architecture:*

The interviewed visitors and employees of the center are excited about all the aesthetic and visual





Fig. 6. View from the ZOC indoor 2nd floor on the viewing terrace [Source: photo by the author Aija Grietēna personal archive, 16.10.2015]



Fig. 7. View on the ZOC halle ground floor interer [Source: photo by the author Aija Grietēna personal archive, 16.10.2015]



Fig. 10. View on the interer mirror wall [Source: photo by the author Aija Grietēna personal archive, 16.10.2015]



Fig. 8. View on the ZOC halle 2nd floor interer [Source: photo by the author Aija Grietēna personal archive, 16.10.2015]



Fig. 9. View from the ZOC halle 2nd floor indoor on the outdoor [Source: photo by the author Aija Grietēna personal archive, 16.10.2015]



Fig. 11. View on the glazed doors on both ends of the long corridors [Source: photo by the author Aija Grietēna personal archive, 16.10.2015]

effects they may enjoy in this type of building at any time of the day and year thanks to the large glazed facade. The overall excitement is only marred by the skepticism of those who are in charge of keeping the enormous glazed facade impeccably clean on a daily basis. In summers the visitors are sometimes complaining about the heat.

The widely known architectural website A4D publishes the information about the most interesting and significant buildings nominated for the yearly prize of the Latvian Union of Architects. However, it promotes the expert discussion by expanding, so to speak, the official list. A4D chooses only the most significant public and commercial buildings evaluating them from its own point of view and adding to the list noteworthy achievements that due to whatever reason have not been nominated for the above contest. The Zemgale Olympic Center is one of such buildings. Notwithstanding its scale and quality, in 2010 it was overshadowed by the reconstruction of the tower of the Holy Trinity church. The people of Jelgava considered this project more significant and consequently the Olympic Center was left without the attention and recognition of the Latvian

Union of Architects. The followers of the A4D website, however, with 6 % of votes placed the Zemgale Olympic Center among the 16 most noteworthy buildings in Latvia in 2010, leaving the Holy Trinity church behind with 4 % of votes [14].

### Conclusions

1. Due to the balanced and appropriate application of glass panels, the new Zemgale Olympic Center in Jelgava is obviously a rather successful example of outdoor/indoor space communication in this type of buildings. Harmonious environment has been achieved by successfully correlating the aesthetic factors with the overall functional purpose. The few drawbacks that were described above can be eliminated with time.

2. The validity of the conclusions obtained using the inductive method during the previous studies has been proven also in this part of the study – the harmony between the outdoor/indoor space (interspace) can only be achieved by skillful subordination of values, namely - both the emotional message and the materials used must serve one overall purpose.

### References

1. **Balode, L., Grietēna, A.** Harmony of Rehabilitation Garden, Architecture and Interiors in the Brukna Manor Complex after the Funktional Transformation in the 21<sup>st</sup> Century. *Landscape Architecture and Art*, Volume 4, 2014, p. 17-31.
2. **Grietēna, A.** Glass as means of indoor/outdoor communication in architecture. *Landscape Architecture and Art*, Volume 6, 2015, p. 52-61.
3. **Grietēna, A.** Harmony in Indoor / Outdoor Context in the Architecture of 21<sup>st</sup> Century Schools. *Landscape Architecture and Art*, Volume 3, 2013, p. 58-67.
4. **Grietēna, A.** Study of Harmony in the Indoor / Outdoor Context of Architecture from G. Birkerts at the new building National Library of Latvia. *Landscape Architecture and Art*, Volume 5, 2014, p. 48-57.
5. **Grietēna, A.** Study of harmony in the indoor/outdoor context of architecture of the 21<sup>st</sup> century of Catholic church in Latvia. *Science – Future of Lithuania 2014*, 6 (3), p. 234-244.
6. Jelgavā sāks Zemgales Olimpiskā centra būvniecību [online 23.20.2015]. <http://www.abc.lv/article/4DFAD3D1-B52C-40B1-B9F2-5A3171C6DC1F/>
7. **Katlapa, A., Ziemeļniece, A.** The development of industrial areas of Parīelupe in Jelgava. *Landscape Architecture and Art*, Volume 6, 2015, p. 44-50.
8. Kimberly, E. *Geometry of design. Studies in proportion and composition*. New York: Princeton Architectural Press, 2001, 107 p.
9. **Kundziņš, M.** *Dabas formu estētika. Bionika un māksla*. Rīga: Madris, 2008, 168 p.
10. Latvijas iedzīvotāju skaits pašvaldībās [online 23.10.2015]. [http://www.pmlp.gov.lv/lv/assets/documents/Iedzivotaju%20re%C4%A3istrs/2015/ISPV\\_Pasvaldibas\\_iedzivotaju\\_skaits.pdf](http://www.pmlp.gov.lv/lv/assets/documents/Iedzivotaju%20re%C4%A3istrs/2015/ISPV_Pasvaldibas_iedzivotaju_skaits.pdf)
11. **Liepa, I.** *Pamatinformācijas un promocijas darba atbilstība*. Pētījumu metodoloģija, LLU dok. lekc. kurss, 2012
12. Mengots, A., Ziemeļniece, A. The cultural and historical heritage in the industrial areas of Parīelupe. *Landscape Architecture and Art*, Volume 6, 2015, p. 12-18.
13. Strautmanis, I. *Māksla arhitektūrā*. Rīga: Liesma, 1982, 103 p.
14. **Zvirgzdiņš, A.** Balso par 2010. gada labāko arhitektūru [online 26.10.2015]! <http://www.a4d.lv/lv/projekti/bal-so-par-2010-gada-labako-arhitekturu/>

### INFORMATION ABOUT AUTHOR:

**Aija Grietēna** graduated in Architectural Sciences – Master of Architecture and Planning. At 2012 Aija started Doctoral studies in Latvia University of Agriculture. E-mail: [aijagrieten@gmail.com](mailto:aijagrieten@gmail.com)

**Aija Ziemeļniece**, Dr.arch., Professor at the Faculty of Rural Engineers, Department of Architecture and Construction of the Latvia University of Agriculture, 19 Akademijas iela, Jelgava, Latvia, LV-3001. E-mail: [aija@k-projekts.lv](mailto:aija@k-projekts.lv)

**Kopsavilkums.** Arhitekti, ainavu arhitekti, interjeristi, mākslinieki, zinātnieki un citi vides veidotāji visos laikos ir centušies pieslīpēt harmonijas atslēgas atbilstoši sava laikmeta sasniegtajiem un nākotnē sagaidāmajiem rezultātiem. Mainoties objektīviem un subjektīviem apstākļiem, rodas nepieciešamība atkal no jauna meklēt līdzsvaru mūsdienu urbānas vides izaicinājumu priekšā, kad iekštelpa un ārtelpa viegli saplūst viena otrā, pateicoties lielo stikloto plakņu pielietojumam arhitektūrā. Balstoties uz iepriekšējiem secinājumiem, kas iegūti manos pētījumos par iekštelpas/ārtelpas harmonijas attīstību vides veidošanas mākslā, radās likumsakarīga nepieciešamība turpināt pētījumus aizsāktajā virzienā, kas meklētu atbildes uz starptelpu harmonijas attīstības iespējām mūsdienās. Pielietojot induktīvo metodi apstiprinājās pētījumam izvirzītā hipotēze, ka **jebkuru telpu savstarpējās harmonijas kvalitāte ir tieši proporcionāli atkarīga no izvirzīto mērķu subordinācijas un iegūto rezultātu atbilstības tai.** Piemēram, ārtelpas/iekštelpas harmonija jaunajā Zemgales Olimpiskā centra ēkā Jelgavā sasniegta par prioritāti izvirzot dabiskas gaismas, gaismēnu rotaļu un ainavtelpas klātbūtni iekšējā hallē un maksimālu iekštelpas (halles) atvērtību ārtelpai. Šāda augsta līmeņa uzticēšanās starptelpu dialogā atbrūno apmeklētājus, vairojot pozitīvās emocijas. **Jo augstāka atbilstība starp mērķiem un rezultātu vides veidošanas mākslā, jo augstāks sasniegtās harmonijas līmenis.** Jo lielāka plaša starp tiem, jo lielāka disharmonija sagaidāma.