An Assessment of Architectural Stylistics and Functional Spatial Structure of Interwar Lithuanian Schools in the Global Context

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Abstract – The article analyses and compares general education and specialised schools built in Lithuania, Europe and the USA during interwar years. The main problem analysed in the article is the correspondence between the architectural stylistics and functional spatial structure of interwar Lithuanian school buildings with the same typology buildings in the regional context. The aim of the article is to assess the essence of changes of architectural stylistics and functional spatial structure, what caused these changes. Interwar architecture in Lithuania has many of the main trends of the global architecture of that time, so undoubtedly interwar period is considered to be one of the most significant periods in the history of Lithuanian architecture, which has laid the foundations for the further development of Lithuanian architecture.

Keywords – Architecture of schools, architectural styles, functional spatial structure, historicism, interwar architecture, modernism.

INTRODUCTION

It is considered that one of the most significant periods of the history of Lithuanian architecture is interwar period (yr. 1918–1940), that provided several guidelines for further development of Lithuanian architecture. Nevertheless the information found in literal sources mostly covers buildings of different typology; however, there are practically no detailed studies of the development of school buildings during the interwar period. The architecture and development of Lithuania’s interwar schools are discussed a little wider in the Master Thesis of R. Diliūnas [8], M. Valančius [19] and J. Baršauskas and publications of A. Stačiūnaitė-Vilnionis [5]. In the latter, in parallel, not only the development of school architecture but also the changes in educational needs are observed. Nevertheless the number of information sources analysing this connection in Lithuanian context is poor. The global situation compared to Lithuanian context of the same period was also poorly researched. The novelty of the research is manifested in the fact that the article observes not only the development of architectural stylistics of that time in general education and specialised schools, but also the influence of changing educational needs on the functional spatial change of buildings of this typology. The article determines the main features of interwar period architectural styles and trends, appearing in school architecture and functional spatial structure. According to them schools built in Lithuania, Europe and USA are selected, observing the change in architectural stylistics and functional spatial structure. The main focus of the analysis of schools is the architectural measures used to achieve the artistic value of the building, the composition of the building, the location of school premises in the building, and the function of these premises. The main problem raised in this article is the correspondence between the architectural stylistics and functional spatial structure of interwar Lithuanian school buildings with buildings of the same typology in a global context.

The aim of the article is to assess what caused the architectural stylistics and functional spatial structure and how essential were the changes made in the context of interwar territory of Lithuania, Europe and USA. In order to reach this aim the following tasks were set:

1. To determine the interwar period architectural styles and trends and their main features, manifesting in school architecture and functional spatial structure.
2. To detect and identify the most prominent factors, which have caused the change in the school's architectural stylistics and functional spatial structure from 1918 to 1939.
3. To select the most innovative examples of general education and specialized schools from the interwar period of Lithuania and the global context.
4. To compare the selected examples in terms of architectural stylistics and functional spatial structure.

The situation of the creation of the independent state of Lithuania until 1918 was extremely unfavourable for the expansion of education system and school architecture. Until the declaration of independence, the policy of Russification was taking place in the country, and the content and organization of teaching and establishment of schools depended on the tsar’s authorities. After the prohibition of Lithuanian printing in 1864, educational institutions under construction by the order of the tsar’s authorities formed the widest group of public buildings. According to N. Lukšionytė-Tolvašienė [12, 49] the economy and rationality was a dominant feature in the architecture of all the schools, only in rare cases outer and inner solutions with higher artistic intentions were found. According to R. Diliūnas [8, 19], there were typical projects made for these schools, therefore in the second half of the 19th century a special type of a school building started to form. One of such projects was developed in 1865 by architect Nikolajus Čaginas from Vilnius district, it is thought that by tsar’s order the wooden school of Nedzingė (Nedinge) was established according to this project. The layout of the inner premises of the school building was only slightly different from the layout of the traditional dwellings.

At that time in 1896 in the USA the matters of physical and psychological comfort of learners, personal education, the development of human innate powers were being discussed. Probably
because of the historical circumstances Lithuania fell behind other states of the world regarding this area while the start of World War I caused stagnation of the Lithuanian educational system.

**A. The Change of Architectural Stylistics and Functional Spatial Structure of Lithuanian Schools in Interwar Period**

Though in 1918 the independence in Lithuania was declared in unfavourable conditions, a lot of attention was given to education. According to the data of 1923, 32.64 per cent of citizens of Lithuania were illiterate [17], therefore, in order to decrease illiteracy of the citizens various educational camps and courses were organised and evening schools were established. The number of learners has increased by seven times, so the establishment of new schools was necessary. Besides, an interest in education of a child had appeared, the idea of a democratic education was also proposed in developing a democratic state. At that time in 1907 in Italy, a Montessori movement that emphasized a comprehensive development of people in both physical and spiritual area had begun. In 1919 in Germany, a Valdorf pedagogy that seeks to educate the strength and abilities of body, spirit and soul of a learner was created. After the declaration of independence the most famous educators of Lithuania such as Jonas Vabalas-Gudaitis, Pranas Mašiotas, Vydūnas, Marija Pečkauskaitė, Gabrielė Petkevičaitė-Bitė and others have also started to encourage the creation of schools favourable to education of a child. The same year, a project of Lithuanian education reform entrusted to Aukusti Robert Niemi [4, 27] a Professor of Helsinki University, was prepared. In the book “A Material for the Reform of Lithuanian Schools” A. R. Niemi suggested to introduce 6 years of compulsory primary education for children aged 7–13. Compulsory education in Lithuania was introduced only in 1928. While in Prussia compulsory primary education was introduced in 1736 [18], in Germany – in 1763, in Italy – in 1859, in England – in 1880, and in Belgium – in 1914 [14, 132].

In the 3rd decade of the 20th century the necessity for new schools in Lithuania was caused by the established compulsory primary education. Around the year 1890, when the industry in cities was expanding, the architecture of historicism from St. Petersburg [9, 29] spread by the elder generation of architects who had acquired their education in the Russian Empire came to Lithuania. The restrained forms of classicism can be seen in the building of Saulės Gymnasium of Švėkšna (Figs. 1 and 2) built in 1928 to the project of architects Antanas Maciejauskas and Jonas Salenekas, and Vincas Kudirka Progymnasium (former Elementary School of Daktaras Vincas Kudirka) of Šiauliai built in 1930 to the project of architect Karolis Reisonas.

The 4th decade of 20th century is considered to be the beginning of the modern architecture of Lithuania and is associated with the younger generation of architects who acquired their education in Western Europe and in Vytautas Magnus University. To describe that time, architecture of Lithuania is still using several concepts like rationalism, functionalism, constructivism, modernised historicism and art deco. A need to organize space more rationally, to plan a building functionally, to select traditional and new materials and constructions economically appeared. Unlike historicism, modernism sought to simplify and rationalise the decor and the elements. Rhythm and proportions became the most important esthetical expression in the new architecture, though symbolic or ornamental bas-relief [11] on facade could also be found. Žemaitė Gymnasium of Telšiai (former Motiejus Valančius gymnasium) (Figs. 3 and 4) was built in 1936 to the project of Steponas Stulginskis. The functionalist building consists of three interconnected volumes with a recreational space in its centre. The Gymnasium also has an astronomical observatory and an ornithological station. An observation terrace was designed on the roof of the school. At that time the school stood out with its architecture of minimalistic facade, contrast between
black and white colours and functional zoning by distinguishing the blocks of hall, administration and classes.

The buildings reflecting modernism with the elements of Bauhaus constructed in Klaipėda over the interwar period were designed by the architect Herbert Reissmann. In Vytautas Didysis Gymnasium of Klaipėda (Figs. 5 and 6) built to his project in 1934, premises for both classes and laboratories of physics and chemistry were built. The school was equipped with rooms for practical work, a separate hall for biology, woodworking and mechanics workshops, and a specialized drawing class. The school has a distinctive character of Klaipėda Bauhaus, the dominating element of its facade are horizontal window strips made of dark clinker bricks displayed between the windows. The school has a massive rounded corner adapted to the street junction that stands out as a feature of the functional architecture. The architectural trend of rationalism and functionalism in Lithuania has mostly unfolded in the architecture of schools. With the changes of functional and hygiene requirements, expanded curriculums and with the functional architectural ideas spreading, conditions for grouping functional space of school appeared, the premises of teaching and halls were separated.

Jonas Jablonskis Gymnasium in Kaunas (former Elementary School of Jonas Jablonskis) built in 1931 to the project of Antanas Jokimas stood out with its modern exterior and functionally well-resolved plan. In this school gymnastics hall and auxiliary handicraft rooms, a canteen, and showers were designed, it was even equipped with a swimming pool. The architectural school solutions are smooth facades with no decorations that allow to be classified as modernist buildings.

Modernised historicism in Lithuania stands out in its own harmony in principles of historicism and modernism. In the buildings classified as belonging to modernised historicism a mixture of modernisation and local folklore motives can be found. In Lithuania the school buildings that have these features were designed by Feliksas Bielinski and Stasys Kudokas. Motiejus Valančius School in Kaunas is classified as belonging to modernised historicism. The school designed by Stasys Kudokas in 1935 has interwoven elements of monumental historicism and functionalism. Antanas Smetona Gymnasium (former Secondary School No. 2) designed by Feliksas Bielinski in 1937‒1938 was intentionally detracted from the street, thus forming a representational space (Figs. 7 and 8).
J. Baršauskas and A. Stapulionis [5] claim that school designing in the 4th decade in terms of functional solutions was of quite a high quality. Nevertheless only 12–13 per cent of the state budget was allocated to education at that time, and only at the end of the decade about one third of the income was already allocated to state education, but when the construction of schools had to flourish, the Second World War stopped all the work that had begun.

To summarise, it can be stated that school buildings of historicism style in Lithuania have a symmetrical composition of facades and plans and monumentality. A school building itself and its inner premises often have a shape of a square or rectangle. The architectural stylistics of these schools stand out by being most prone to external effects: various decorative elements, fountains, pilasters decorated with reliefs, semicircular arched windows. Often a compact room layout in a building and also not seldom a grouping of premises around a corridor, which is in the centre of the building, can be noticed in the functional spatial structure of school buildings of historicism style. A corridor in a plan of a school usually is narrow and dark, therefore it is not very suitable for recreation of students.

Modernised historicism style stood out with its harmony in principles of architectural motives. The schools of this style designed in Lithuania are quite different. In functional solution of some of them a symmetry can be seen and an asymmetry of others, nevertheless there is no visible functional spatial structure in separation of the building zones. However, all the premises that are necessary for school were designed and quite wide corridors for recreation were designated. Historicism in these schools can be seen in architectural stylistics in which rounded windows or facades decorated with slight reliefs or pilasters stand out. In some cases rounded architectural forms that remind of functionalism appear in the architectural stylistics of schools.

During the expansion of ideas of functional architecture, representativeness of the buildings was refused and more complex compositions by rejecting monobloc structure and symmetry were created. In the architectural stylistics school of constructivism, functionalism, rationalism and fine decor is totally rejected and the expressiveness is sought through good proportion, window rhythm and often by rounded forms. A clear differentiation of functional spatial structure of separating two or three zones of the building can be seen in larger, built in Lithuanian modern-
ism, schools with a larger number of premises. Wider corridors with classes located on one or two sides around it are designed as a recreational zone.

**B. The Change of Architectural Stylistics and Functional Spatial Structure of Schools During Interwar Period in the Context of The Region**

In order to protect against the widespread tuberculosis open air schools became well established after World War I. “An Open Air School” (Figs. 9 and 10), which was based on light and air architecture and designed by architects Eugéne Bcaudouin and Marcel Lods in 1935 in France, stands out in the context of open air schools. This building comprised eight separate glass pavilions – classrooms. These classrooms were surrounded by a glass wall from three sides and a complex air conditioning system emitted a curtain of warm air so that children did not get cold in the premise. These classroom pavilions were connected by a glass corridor, which comprised other necessary premises. The type of open air schools was popular until 1943 when medicine for treatment of tuberculosis was discovered.

In Russia of the Stalinism period typical projects of neoclassical schools were designed. One of the examples is Academic Gymnasium No 56 in Saint Petersburg designed by Noi (Noah) Abramovich Trotsky and A. S. Martynov, built in 1936 (former School No. 56) (Figs. 11 and 12). Another example is Lyceum No. 533 of Krasnogvardeisky administrative region of Saint Petersburg (former Vocational School No. 35) designed by L. E. Ass and A. S. Ginzberg and built in 1936. Symmetrical composition and monumentality dominated in the architecture and functional spatial structure of these schools. However, unlike in Lithuania, the classes of the Saint Petersburg schools were situated on one side of a wide and light corridor, which were used for students leisure time.

Around 1914, a constructivism trend formed in the Tsarist Russia. However this trend was initiated not by architects, but by the famous painters of the country—Vladimir Tatlin and Kazimir Malevich [16, 27], who paved their way to modern architecture by making experiments with different compositions. The representatives of the constructivist architecture in the Tsarist Russia did not accept strict triangle forms, therefore they were looking for compositional varieties, did not circumvent sharp turns, curved circles and unexpected solutions. An example of such ambitious projects of the Soviet Union’s constructivists Aleksandr Sergeevich Nikolski and Alexander Vasilievich Krestin was October 10th School (former 1st and 2nd level School No 68) built in Saint Petersburg in 1925–1927 (Figs. 13 and 14).
This school was designed as a new type of a school building with reference to new soviet educational methods. There were workshops, a drawing classroom, a reading-room, a canteen, assembly and sports halls. The school even had its observatory dome, which currently is not used any longer. One more example of the constructivism architecture is the technology school also designed in Saint Petersburg in 1930–1932. It is a 250 metre long building with classrooms arranged on both sides of a longitudinal corridor by an architect Igor Ivanovich Fomin. The school was intended for 1640 students, however in 1930 the number of students reached even 2085. At that time it was one of the largest schools built in the city [21]. In Soviet Union modernism schools were characterized by large and long volumes, but this could certainly have been caused by a large number of learners or a plot of land. In Lithuanian school buildings were arranged more compactly.

In 1919, a German architect Walter Gropius established an art school in Weimar city, Germany, giving rise to Bauhaus style, which became one of the most influential trends of the modernism architecture. The main features of this style are complete refusal of décor, rational, purified, but also aesthetic architectural forms, asymmetry, flat roofs, functional zoning, stripped windows, glass corners [6]. One of such schools, reflecting the Bauhaus style, is Alexander von Humboldt Gymnasium in Berlin (Figs. 15 and 16), Germany, designed and built by the architect Max Taut in 1928–1929. The school may be characterised by clear geometric forms, big glass areas, curved and rectangle volumes. Science classrooms and a sports hall were designed at the school and they were especially well-equipped for that period. The school stood out with the fields designed on the roof, where classes of Physical Education or Biology were organised.

The period of 1929–1933 was particularly economically difficult for the USA due to the Great Depression. Nevertheless even 70 per cent of funds were allocated for establishment of schools, but they were built according to the old design principles [2, 8]. Search for new solutions in school architecture based on the innovative education ideas of John Dewey and Maria Montessori started. On the basis of latter ideas the architect Richard Joseph Neutra suggested his own school model. The architecture of Corona Avenue, designed by him in California in 1935, is quite laconic, every designed classroom at the school had the possibility to open the glass outdoor wall and to organise classes outside. Open air schools encouraged the importance of reconsideration of school building plans as till then learning process involved only sitting by textbooks. The curriculum was extended, more active teaching methods were applied, attention was paid to practical things, and focus was on the importance of physical environment and its materiality [2, 8]. Therefore during the interwar period in the USA psychological influence of school buildings on students received more attention.

To summarise, it can be stated that development of the open air school caused a freer differentiation of school premises. With reference to climatic conditions and economic capital use of glass in school architecture increased, especially close relationship between the indoors and outdoors could be seen, thus emphasizing the innovative educational ideas and the importance of physical environment. Functional zoning and coherent refusal of representation in the stylistics of school architecture can be observed both in Lithuanian and foreign schools.

**Conclusion**

From 1864 to 1939 the architectural stylistics and the functional spatial structure of Lithuanian schools were formed by the political situation, new educational ideas, technologic and economic possibilities, hygiene requirements, architectural trends and creative provisions of architects themselves. Different school architecture in Lithuania was caused by finances allocated for schools, the establisher of the school, number of learners at it, educational needs, use of different materials, prevailing architectural trends. Due to political situation Lithuania could not create
independent national education system, therefore educational content, training organisation and establishment of schools depended on the central authority of the Tsarist Russia. Only after declaring independence of the country innovative educational ideas were started to be considered.

Comparing examples of Lithuanian and foreign schools in terms of architectural stylistics and functional spatial structure, it is possible to notice that new technological possibilities and new materials caused a consecutive change of architectural stylistics. Plentiful and petite elements of decor were refused; the tendency was going towards complete refusal of representativeness of buildings. In order to emphasise the functionality of a building in the architectural stylistics artistic expression was sought with the rhythm of various elements and windows and different architectural forms. Changed attitude towards the functional and hygiene requirements and changed educational needs in planned and spatial solution of schools caused functional zoning. In the Lithuanian and foreign contexts the functional premises of schools included innovative premises for that year, such as observatories, physics and chemical laboratories, woodworking and mechanics workshops, and drawing classrooms. The experience of foreign countries shows that in certain cases no attention was paid to architectural stylistics of schools, the focus was rather on proper structure of the school’s indoor areas, the possibility to join the indoors of the school with its outdoors. It can be stated that the interwar architecture in Lithuania almost kept pace with the world’s modernist, technological and aesthetic tendencies of that time.

REFERENCES

1. Bachitovas, J., Demereckas, K. Klaipėdos baukštas. Modernizmo architektūra. Klaipėda, 2011, 96 p.
2. Baker, L. History of school design and its indoor environmental standarts, 1900 to today, 2012, 30 p. [online]. National institute of building sciences [cited 22.12.2017]. http://www.nceef.org/pubs/greenschoolshistory.pdf
3. Bareckienė, A. Pradinės mokyklos – tautinės švietimo sistemos kūrimo kelyje, 2015 [online]. Lietuvos architektūros ir civilizacijos institutas [cited 16.12.2017]. http://www.sirvinta.net/mus/vykydyti-projekti/pradinės-mokyklos-tautinės-shvietimo-sistemos-kūrimo-kelyje/
4. Barkauskaitė, M. Švietimo reformos Lietuvoje 1918–1940 m. metais, Pedagogika, 2002, 60, pp. 26–30 [online, cited 17.12.2017]. http://etalpykla.literaturosinstitutas.lt/fedora/get/TL-LDB-0001.J.04–2002–1367156895021/DS.002.01.ARTIC
5. Barauskas, J., Stapulionis, A. Mokyklinių pastatų funkcinio – erdvinio tūroje. Vilniaus dailės akademijos leidykla, 2000, 180 p. ISSN 1392-0316
6. Buslaev, C. Unikalnoe zdanie v Samare kak simvol Sovetskoy epohi, 2016 (Уникальное здание в Самаре как символ Советской эпохи) [online], 2016, 23.12.2017]. http://sergeybuslaev.ru/unikalnoe-zdanie-v-samarie/
7. Diliūnas, K. Mokūkų architektūra: vertė ir išsaugojimo galimybės. VDU, Meno studijų ir meno kultūros ministras visuomenės, 2010, 113 p.
8. Drėmaičė, M. Pramonės architektūra skaičiuoja šimtmeciais [online]. Statyba ir architektūra, 2012, 8, p. 28–30 [cited 29.12.2017]. https://issuu.com/statybaarchitektura/docs/sa_2012_n8
9. Hille, T. Modern Schools – A Century of Design for Education. Wiley (C30197), 2011, 528 p.
10. Kančienė, J. Lietuvos tarnybos architektūra, 2014 [online], cited 16.12.2017). [www.kpd.lt/uploads/EN/Heritage%20en%20Lithuania/Heritage%20en%20Lithuania/10_LITHUANIAN_ARCHITECTURE_ SUJEAVIENIJE.TTL]
11. Lukšionytė-Tolvičiienė, N. Istoriizma ir modernais Vilniauses architektūros, Vilniaus dailės akademijos leidykla, 2000, 180 p. ISSN 1392-0316
12. Opień Air School in France, 2016 [online]. Architecture of Doom [cited 31.08.2018]. http://architectureofdoom.tumblr.com/post/4722320467/open-air-school-suresnes-france-eug%C3%A8ne
13. Saules Gymnasium of Švėkšna, photo by D. Varnaitė [online, cited 31.08.2018]. http://www.kpd.lt/svksnos-dvaras/
14. Sanderson, S. K. Modern Societies – A Comparative Perspective. Routledge, 2015, 222 p.
15. Stroitelstvo škol v Leningrade (Строительство школ в Ленинграде). No.1, 1936, pp. 37‒38.
16. Photo by Academic Gymnasium No. 56 in Saint Petersburg, designed by Valančius, A. Kas ir kaip projektavo mokyklas Žemaitijoje XX a. pirmoje pusėje. Žemaičių žemė 2007/3, 13–15.
17. Vytautas Didysis gymnasium plan. LCVA, f. 1622, ap. 4, b. 313, l. 5
18. Zemaitė Gymnasium of Telšiai, photo by V. Petrulis [online, cited 31.08.2018]. http://www.sirvinta.net/musu-vykdyti-projektai/pradines-mokyklos-tau
19. Open Air School in France, 2016 [online].
20. Žemaitė Gymnasium of Telšiai, photo by V. Petrulis [online, cited 31.08.2018]. http://www.sirvinta.net/musu-vykdyti-projektai/pradines-mokyklos-tau
21. Žemaitė Gymnasium of Telšiai, photo by V. Petrulis [online, cited 31.08.2018]. http://www.kpd.lt/architectures-objektas/63
22. Alexander von Humboldt Gymnasium in Berlin and its plan [online, cited 31.08.2018]. http://www.wikiwand.com/de/Alexander-von-Humboldt-Gymnasium
23. Sanderson, S. K. Modern Societies – A Comparative Perspective. Routledge, 2015, 222 p.
24. Photo by Academic Gymnasium No. 56 in Saint Petersburg, designed by Trotsky and Martynov, 1936 [online, cited 02.09.2018]. http://www.city
25. Stroitelstvo sk v Leningrade (Строительство школ в Ленинграде). Arhitektura Leningrada, No.1, 1936, pp. 37–38.
26. Register of Cultural Properties of Lithuania, unique code 26188.