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Oxford Review of Education

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/core20

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To cite this article: Edita Riaubienė & Liutauras Nekrošius (2021) Standardisation and architectural ideas for school buildings in Soviet Lithuania, Oxford Review of Education, 47:5, 638-658, DOI: 10.1080/03054985.2021.1953974

To link to this article: https://doi.org/10.1080/03054985.2021.1953974

Published online: 03 Nov 2021.

OXFORD REVIEW OF EDUCATION
2021, VOL. 47, NO. 5, 638–658
https://doi.org/10.1080/03054985.2021.1953974

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Standardisation and architectural ideas for school buildings in Soviet Lithuania

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ABSTRACT

The architecture of secondary school buildings implemented according to typified and customised design projects in Soviet Lithuania has been analysed as a manifestation of certain timeframe conditions and possibilities. The research has revealed architects' creativity, represented values, and ideas under the conditions of a strictly regulated and standardised state construction industry. The influences of changing educational paradigms, building construction regulations, and the political and cultural context on the architectural results of a certain typological group have been taken into account. The research results are relevant for a more detailed understanding of the development peculiarities of the Soviet era, as well as the rearrangement of schooling spaces by adapting them to contemporary needs. The research is focused on the period starting from 1955, when a shift was made to industrialised and standardised architecture, up to 1990 when Lithuania regained its independence.

KEYWORDS

Lithuanian school architecture; architects' ideas; architectural standardisation; Soviet building industry; typified project

Introduction

We are interested in school architecture as a causal and developing phenomenon, which is understood as a spatial formation preconditioned by diverse and changing ideological, social, educational, architectural and construction contexts. Therefore, we analyse schools of Lithuania as a manifestation of certain chronological conditions and possibilities. Our main focus is on school buildings implemented in the 1960s – 1980s. In Soviet times, school buildings were understood as utilitarian public objects built according to the logic of economic sparseness and typified design projects (projects adjusted to multiple use) – even in exceptional cases, when the construction of school buildings was allowed according to customised design projects. The present research aims to answer the question: what was the creative input of architects in generating cultural value while working under conditions of ideological education and a strictly regulated and standardised state-owned construction industry? From an architectural aspect, school buildings are relatively divided into typified (as rational problem solving) and customised (as reflective design).

Contemporary aspirations for sustainable development and demographic economic dynamics determine the extensive use of school buildings of the previous epoch for

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contemporary education. To adapt these buildings to the essentially changed needs of contemporary education, it is necessary to understand the cultural, economic, and political contexts in which such buildings were constructed. For preservation and fostering the identity of adapted buildings, it is crucially important to understand the values and ideas assumed by their architects.

Deeper knowledge about Lithuanian school buildings can contribute to a more detailed understanding of the developmental peculiarities of Soviet era architecture. The results of Soviet architecture in Lithuania (as well as in Latvia and Estonia) were absolutely different from those in other Soviet republics due to the shorter period of occupation and their longstanding involvement in a wider European cultural tradition. They were also different when compared to the countries of Central Europe that were forced into the Soviet sphere of influence at approximately the same time, although the latter managed to retain their statehood and more independence.

The standardised architecture of educational institutions of the second half of the twentieth century has received less interest from researchers in comparison to mass residential construction (Drėmaitė, 2017; Maxim, 2009; Meuser & Zadorin, 2016; Zarecor, 2011) or the more expressive architecture of cultural and servicing establishments (Chaubin, 2011; Kulić, 2019; Šiupšinskas & Lankots, 2019). Functionally and spatially complex school buildings, however, were one of the most frequently built type of public buildings, as well as one of the key elements of Soviet urban planning, that influenced significantly the cityscape of newly formed mass residential districts. Besides, the standardisation and industrialised construction of public buildings had started with school buildings.

Architectural research of this period is especially important in order fully to comprehend the development of the architectural profession. After WWII, in the newly incorporated Soviet bloc countries, architecture was generated under unprecedentedly unique conditions: private architectural practice was abolished, overarching systems of state-owned design institutes were introduced, private property on the whole was abolished, and the market economy transformed into the Soviet planned economy. In the mid-1950s, the modernisation of the built environment resulted in unprecedented changes in the sphere of architecture and construction: architectural typification as 'the use of a limited number of building designs according to programmatic types' (Zarecor, 2011, p. 54) and industrialised construction (prefabricated constructional components assembled on the site) had become a dominant feature in the entire Soviet bloc.

Methodology

This research focuses on the creative ideas of architects, the process of how architects embody their intentions in architectural creation and form cultural identity.

In this research, an assumption that architects 'perform social functions', the character of which allows the formation of architecture of different social layers (Stevens, 1998), has been taken into account. Two construction methods have been distinguished: standardised (mass production or prefabricated components) and unique (unique components) (Jenkins, 2002). The standardised method refers to architects designing for economic value, while the unique method is related to the priority of aesthetic value.

The researchers have distinguished two strategies of architectural design: design as rational problem-solving, and design based on reflective practice. Rational problem-

solving (Simon, 1967) presented a model for a design problem solution from the position of technical rationality, whereas the approach of reflective design (experimental with constant revision of the results) was a reaction to the dominance of the rational problem-solving approach (Schön, 1983). While analysing the ideas of selected architects, the researchers have observed how the concept of value determines the principles, process, and results of architectural design, which is directly related to the identity of architecture. The research is based on the summary compiled by Sebastian Lera (1980) covering values and intentions followed by architects in their professional practice for many years, and the list of design values further developed by Ukabi (2015) and Bianco (2018).

The prevalent approach in designing schools in Soviet Lithuania was rational problem solving. It corresponded to the typified design of buildings of mass construction. Reflective practice was not so common and corresponded to a unique design process. This research, however, has needed to take into consideration the observation by Kees Dorst (1997) that rational problem-solving 'has a sound theoretical background, but does not sound familiar to an architect; whereas reflective practice has a weak theoretical background but sounds much more true to an architect'. This statement allows us to make an assumption that irrational ideas and expressions of cultural values as found in typified projects are related to an architect's professional identity and practice.

The analysis of technical literature and legal regulations has been performed in order to identify the basic design requirements for educational buildings of the time. While pointing out the architectural context of the Soviet period, different scientific and professional publications have been used. Archive graphical documents (architectural drawings and sketches), interviews with architects, and analyses of their attitudes as found in professional literature have helped to reveal architects' ideas and cultural values.

The performed case studies with specific focus on the processes of preparation of school design projects have allowed the researchers to identify more clearly the architects' thoughts, ideas, and approaches that they generated and represented in their architecture. The objects for this research have been selected based on the diversity of their authors' personality, gender and generation, as well as differences in their design processes, implementation time and stylistics. The analyses have been performed on five typified school design projects, and five customised projects developed from 1960 to 1986.

Conceptual manifestation of Soviet Modernist architecture

Architecture and urban planning in the USSR were one of the most important tools for the implementation of communist utopia. Therefore, design and planning processes were monopolised, and, following WWII, this system was introduced in all newly incorporated Eastern European countries. The process was fast and uncompromising in the USSR-occupied Baltic States (Mikučianis, 2001). However, in the countries ruled by communists, but still retaining their statehood, this process was more gradual (Zarecor, 2011). The European Modernism dominant in Lithuania before WWII was replaced with the obligatory Stalinist Empire style within the first post-war decade. With the launch of economic reforms in the USSR in the mid-1950s, special attention was paid to the transformation of the architectural and construction sector. Nikita Khrushchev's speech to the All-Union Conference of Builders, Architects and Workers in the Building Materials Industry

delivered on 7 December 1954, as well as the resolution of the Central Committee of the Communist Party of the USSR On the Elimination of Excesses in Design and Construction declared in 1955 (KPSS, C. K., & SSSR, S. M., 1955), were two important documents, in which the new course for Soviet architecture was clearly stated. Accordingly, architecture had to be 'cleansed' of its decorative elements. But, more importantly, these changes had to solve the crucial, contemporary problems of the shortage of residential housing and its quality in the USSR (Khan-Magomedov, 2006). The main tools for the reform were listed: industrial methods of construction by the application of prefabricated structures and components, effective construction materials; production technology in construction; standardised design projects to make the construction faster and cheaper. One of the document's paragraphs defined the new aesthetic programme: 'attractiveness in buildings must be achieved through an organic relationship between their architectural forms, functions and good proportions, rather than unnatural and costly decorations'.

The resolution clearly emphasised the idea that it was important not only to use the given design and construction experience, but also to take on the experience and knowledge of other countries, which was an important change in attitude. In the 1960s, the isolation from outside information was softened, and more translated books on architecture appeared in limited editions. The magazine adapted for a Soviet reader 'Современная архитектура/ L'architecture d'aujourd'hui' was first published in Paris in 1964.

For Lithuanian architecture, this period became important because of changes in the professional community of architects. WWII, occupation, deportations and emigration resulted in a severe loss of the major part of the community of architects who practised before the war. In the first post-war decades, they were replaced by Stalinist Empire style representatives from Russia. But, starting in the 1950s, with a gradual decentralisation of the Soviet economy, some parts of the decision-making powers were passed over to the Soviet republics. The newcomers from Russia were gradually replaced by the new generation of local architects. Although taught in the light of the doctrine of Stalinist architecture, the first post-war generation of architects looked for inspiration in three sources of the Modernist architecture: European and American architecture of the time known to them only fragmentarily from the foreign press; pre-war Lithuanian architecture; and Bolshevik Constructivism. Several architectural tours organised around 1960 to Finland had a significant impact on Lithuanian, as well as neighbouring Latvian, Belarusian and especially Estonian architecture. Such cultural orientation of Lithuanian architects led to the stylistic development of local architecture: in the 1970s and 1980s it experienced the trends common to Western architecture, such as Structuralism, Regionalism and Postmodernism.

The 'effective construction material' mentioned in the resolution became concrete. Fast residential housing construction was relevant not only in the Soviet bloc, but also in Western European countries, due to the destruction of the war, intensifying industrialisation, and its preconditioned urbanisation. But the reason the Soviets were so focused on concrete as the only construction material, according to Forty (2013), was the shortfall of qualified labour in the USSR – for assembly of reinforced concrete structures they needed only workers of lower competence as compared to those working with metal structures. So, a shortage of personnel and the state being the only contracting party were the

factors determining such an exclusively massive use of prefabricated reinforced concrete structures (Forty, 2013, p. 150).

Educational architecture between rational and utilitarian

The existence of standardisation on a global scale could be confirmed by discussions held at the International Union of Architects' Congress, titled 'Architecture and Technology' (1961). As well as other ideas, the statement by Piero Luigi Nervi that standardised architecture was the 'Style of Truth' (Nervi, 1956) was further developed. Such an approach was more consistent with economic industrial conditions than an architect's will to grant an aesthetic expression to architecture. The logic of minimum input and maximum return characteristic to technologies had penetrated the entire culture of architecture (Kei, 2019, p. 107).

Because of the specific form of ownership, the state was the only contracting party of architecture, and the design process was organised in specialised planning institutes. The central design institutes of the Soviet Union were engaged in designing typified projects suitable for use in the entire country. Local institutes founded in the republics of the USSR often had the capacity only to prepare adaptations of design projects made in Moscow; less often they could prepare typified projects for local use, and only in very rare cases could they engage in customised projects for singular use.

In 1955, the development of a residential sector was orientated towards the industrialisation of construction and the standardisation of architecture. Fast mass construction, however, caused huge problems of quality and identity. The dominance of typified projects influenced the architect's profession, the creativity of the process, and the artistic value. In Lithuania, the problem of attractiveness of typified design was identified and discussed in the Soviet professional press (Polis, 1987). Excessively high requirements were set for design projects made for multiple reiteration: the use of the lowest possible number of unified industrial products, integration of innovative scientific and technological achievements, improvement of architectural and operational qualities of buildings, and reduction of costs. But typified design was still unattractive to architects, because the procedure of preparation and approval of projects often protracted for three to four years, due to changing technical norms that quickly became outdated. The attractiveness of typified design was also affected by the fact that in the preparation of customised projects some exceeded norms were allowed to compensate for others, whereas each typified project had to meet the requirements perfectly. A customised project from the start of its development always had a specific state-owned enterprise performing the contractor's function, whereas typified projects had no single owner. After implementation, typified projects remained anonymous and authors rarely attracted media attention.

When designing schools, architects had to comply with construction norms and regulations for public buildings (Gosstroy, 1964, 1974) with respect to the quantity values for educational buildings (groups of schooling premises and territory areas) which were related to the number of students and the educational organisation structure (primary/secondary school). The essential value for such a calculation was always a class of 40 (or at upper educational level, 36) schoolchildren. The changes in construction regulations were mostly related to the systemic and programme changes in the educational system itself.

The architecture of the 1950s and 1960s was often evaluated according to its cost and speed of construction, the prescribed norms, and quantity values (progress) were reflected in the architectural practice and representation (Maxim, 2009). However, while analysing the design projects of school buildings of this period, researchers tend to emphasise the purely utilitarian and rational character of this mass, standardised and industrialised architecture, and seek to reveal and prove that the unquenchable aspiration for efficiency and industrialisation was combined with expressiveness and experience.

Construction of schools according to typified projects in Lithuania only began in the 1950s. These were four-storey buildings of compact volume, based on 'the existence minimum' criteria (Baršauskas & Stapulionis, 1974). Starting in 1958, the construction of four-storey, symmetric, masonry school buildings, with innovative features, such as a gallery-type arrangement of premises and gymnasia, was commenced (for 920 school-children, No. 2–02-73, archit. 'Giprograd' P. Karakis, G. Zujev, N. Savchenko).

In 1959 (Verkhovnyy Sovet SSSR, 1958) the secondary education curricula were supplemented with vocational training, therefore new disciplines were introduced, and the number of practical training and laboratory classes increased.

Reflecting on the reform, in 1960, the architect Leonas Laimutis Mardosas (b. 1929) prepared a typified design project of a secondary school for 964 students (No. 3116). For the first time, a universal system with a reinforced concrete framework (UK1), designed especially for public buildings, was used in the construction of this school. The framework was designed by the engineer Michailas Prikšaitis, who had been consulted by the architects designing schools. Forty-three types of framework elements and 23 types of exterior wall slabs were produced in Lithuania at the building construction plants. Buildings manufactured in this way were up to three times lighter than brickwork structures, their construction time was reduced twofold, and labour input was reduced almost by a half (Balčiūnas, 1971). This typified school design project was innovative not only in the structural, but also educational and architectural aspects.

According to the architect Mardosas, this school project was developed in several stages: first, he developed the main idea, then figured out a compositional solution, and only in the third stage did the design process begin. The idea was based on the author's former experience as a school teacher. Its essence was that a school had to be designed for a child. Therefore, a scale acceptable for a child was extremely important, because 'when a first-grader comes to school for the first time, he is scared: a huge house, and he feels so small inside it'. So, Mardosas designed a two-storey, pavilion type building (see Figure 1). In order to group students according to their interests and increase their safety-control possibilities, the architect had arranged the schooling premises into blocks according to students' age, and also into the specialised teaching (workshops and laboratories) and general school premises (gymnasium, event hall and canteen). Each block had its own semi-open, autonomous courtyard.

The functional grouping of school spaces, the division of the building into blocks, and making a close connection between the interior spaces and outdoor territories created certain possibilities for the humanisation of standardised school architecture. In the school designed by Mardosas, the canteen shared a common space with the public events hall – such a multifunctional solution was innovative at this time.

Since the interwar times of the independent Lithuanian state, basketball has been phenomenally popular in Lithuania. Therefore, at the beginning of the 1960s,

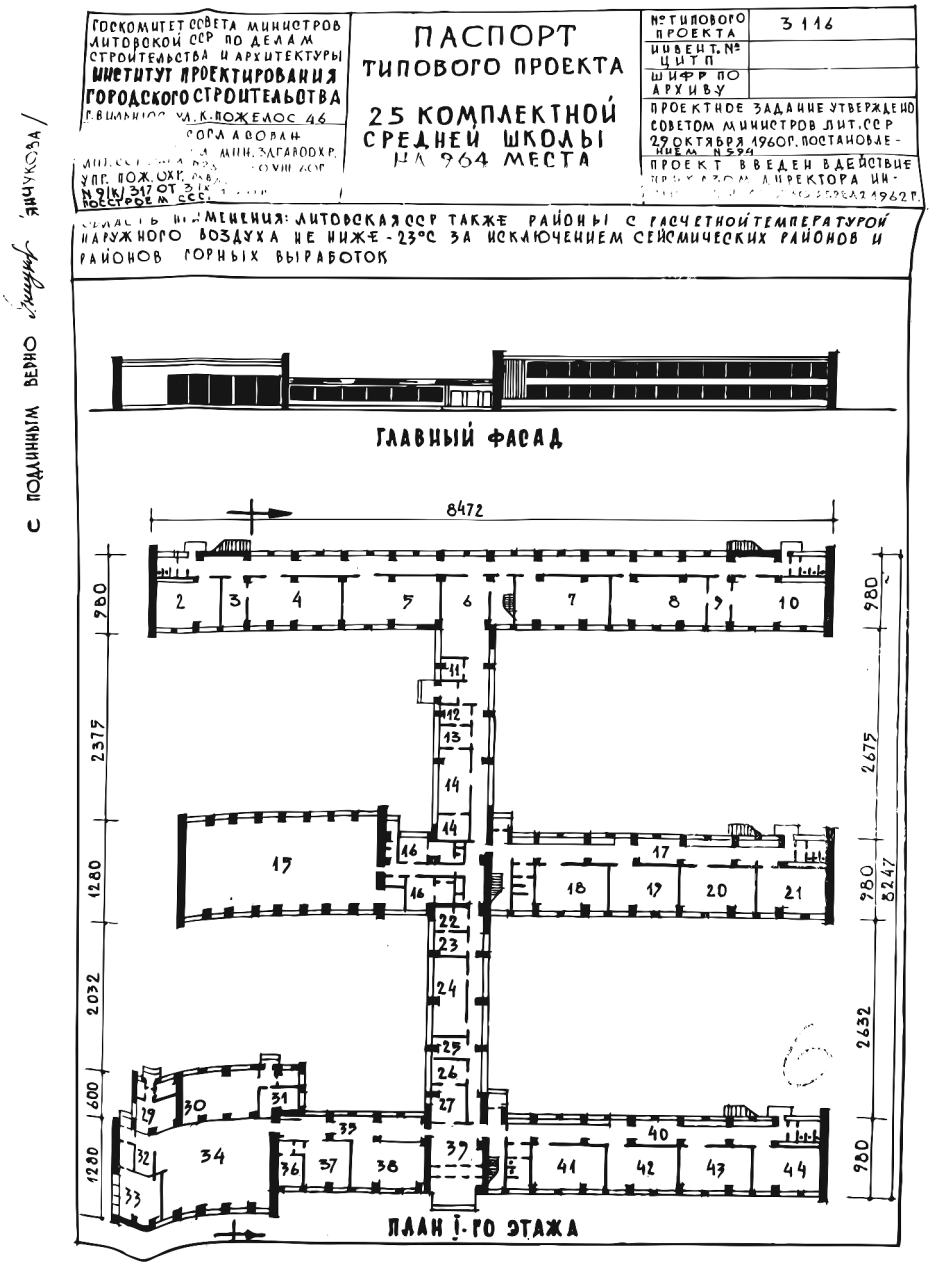

Figure 1. Fragment of the passport of the typified project. Main façade and ground level plan. Secondary School for 964 students No. 3116, 1960, architect Leonas Laimutis Mardosas [source: Vilnius Regional State Archive].

understanding this game as a factor for retaining and strengthening Lithuania's identity, the local sports community and architects initiated the updating of Soviet norms so that schools could have gymnasia suitable for basketball (15 x 30 metres). Unfortunately, their

attempts were unsuccessful. Nevertheless, a certain solution to this problem was found. Typified projects were approved in Moscow, but their adaptations for a specific place were designed and approved in the republics, where they were built. Lithuanians decided to design school gymnasia as separate blocks and thus be able to increase the gymnasia up to the basketball court size (Mardosas & Nekrošius, 2020). The Mardosas school project with the basketball court was implemented in 1966, in the resort town of Druskininkai (Baršauskas & Stapulionis, 1974).

The Mardosas school gained a lot of attention and mention in the press, which was not characteristic for typified design projects. It was publicised not only in the professional, but also in the popular press of the time, in Lithuania, the USSR, and even abroad. The author was awarded with the second highest state prize of the Council of Ministers in 1971. Such an appraisal shows that the project had met the expectations of the time: according to the standardised project, an industrially produced building was easily and quickly assembled on a site. In addition, the architect had articulated social values by implementing the idea that a 'school should be designed for children' based on empathy and personal experience, and he had logically organised the school spaces according to the interests, age and educational needs of its users. He had also revised and adapted the ideas of integration and multi-functionality of inner and outdoor spaces. Construction of an actual size basketball court in the school building had had a long-term effect and was perceived not only as a factor propagating physical activity, but also supporting the Lithuanian national identity.

The growing density and intensity of urban development, a lack of free, undeveloped areas in cities, and the gradually increasing significance of the criterion of economic efficiency, allowed for only seven schools of this type to be built. Later on, prepared typified projects had taller buildings, and the number of schoolchildren also increased. For example, in 1964, a school project for 1712 students prepared by Gipropros (No. 853) was adapted at the local Institute (No. 3780–19; 'Miestprojektas' architect Aloyzas Geibūnas, engineer M. Prikšaitis). The building was adjusted for the UK1 system developed in Lithuania: the public events hall and canteen block were corrected and the gymnasium volume increased to fit for basketball. Although projects of such a size were usual practice in the USSR, they were not suitable for Lithuania so were refused and smaller school buildings were chosen instead.

When, by the end of 1960s, the secondary education curriculum was revised, the study room system was introduced in schools, according to which senior students studied curriculum disciplines in separate training rooms or laboratories equipped especially for a particular subject. In addition to this, a new function was launched: that of longer schooling hours for some students. Reacting to the changes, a new typified school design project for 1284 students was prepared in 1969 (No. 222-1-94, 'Miestprojektas', architect A. Geibūnas, engineer Viktoras Ražaitis). In the composition of the three-storey building, the zoning into three functional parts was highlighted: that of primary schoolers (universal classrooms with spacious halls next to them), subject study rooms for senior students, and general premises lobby, administration, canteen, gymnasium and event hall (see Figure 2). Different building sections had their own separate entrances. Thus, different parts of the school premises could be used autonomously, but at the same time they were smoothly integrated into one whole by a central communication unit. Functional grouping and coherence of spaces were considered a priority by architects,

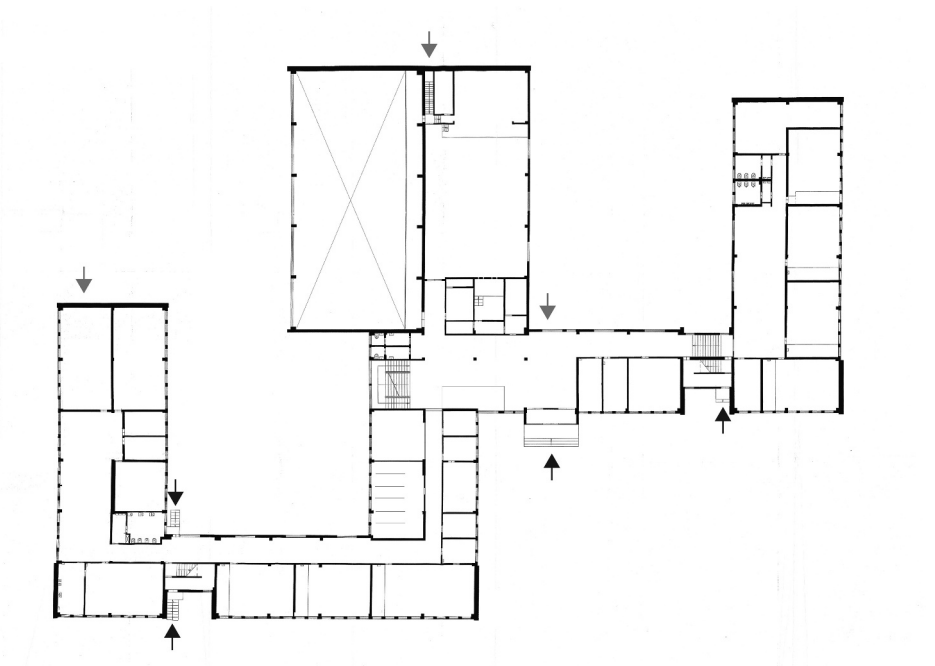

Figure 2. The scheme of the ground level plan of the typified school design for 1284 students, prepared in 1969, (No 222-1-94, 'Miestprojektas', architect Aloyzas Geibūnas, engineer Viktoras Ražaitis). The black arrows indicate access to the ground level school spaces; the grey arrows mark the additional access to the lower-level areas [scheme made by Evelina Vasiliauskaitė].

because that way the school could be used more conveniently as well as being fit for educational needs. This type of school was in compliance with the educational, functional, economic, and construction objectives of the time. These qualities made it one of the most popular school design projects in the Soviet period. The press of the time acclaimed this project and its architects as they 'had found a valuable proportion between simplicity and expressiveness' (Tarybinės, 1972).

The year 1975 saw another update in the Soviet education system, in that the duration of compulsory education was extended to eleven years. Therefore, in 1976 an architectural competition was organised for a typified school design accommodating 1300 students (Baginskienė, 1976; Balčiūnas, 1975). The design project which received second place at the competition later became quite often used for building schools. It was a project titled 'An Open Book' by architect Kazimieras Regimantas Plyčiuraitis-Plyčius (b. 1944), who showed that it was possible to match compactness and functional-spatial division into blocks with a three-storey teaching premises including a closed yard and a hall block (gymnasium, public events hall and canteen). The architect especially focused on the primary school as being distinguished by its educational specificity; therefore he designed the classrooms on the ground floor, isolated from other schooling spaces. The plans included a separate open-air classroom for each regular classroom.

As plans were made to advance the starting age for primary school from seven to six years old and extend it to age 12, a new typified school project was prepared for 1266 students in 1985. In order to create a building easily adaptable to different situations, its

architect, Sigitas Kuncevičius (b. 1958), formed a symmetric, two-storey, rectangular volume with a round closed inner yard and two equivalent entrances on the opposite sides and equivalent facades (Anuškevičienė, 1986). The architect paid special attention to the indoor recreation spaces which had been insufficient in the earlier schools. So, instead of long boring corridors, which had become unattractive attributes of a school, the architect designed high, bright spaces shaped like small amphitheatres for communication and recreation. Such a solution resulted in the creation of a completely different atmosphere for the school space, stimulated the communication powers of the school community, and responded to its needs for more liberal schooling.

Although in some republics of the Soviet Union standardised designing was assigned to engineers, in Lithuania it remained part of architects' activities (Polis, 1987). Alongside the rational solutions and satisfying the requirements of economic efficiency, other innovative ideas were revealed in typified design projects of secondary schools prepared by Lithuanian architects. An observation by Simon (1967) – that architects prioritise satisfactory design rather than optimum design – is very relevant in this case. The analysis of typified school projects has shown that not only utilitarian, but also aesthetic and social values were embodied in them: harmonious proportions were selected, spaces were connected, and the sizes of such spaces adjusted. The architectural quality of typified projects was influenced by the holistic view of architects and the ability to match different things: technical requirements, structural frameworks, functional needs, consumers' expectations, the peculiarities of educational curricula, administration challenges and artistry.

Reflective designing as an identity forming activity

Intense rationalisation, standardisation, industrialisation and typification of architecture had resulted in exceptional monotony of form and content. Back in 1965, the USSR architects' congress harshly criticised the quality of the architecture of the time: the idea of decentralisation of design was suggested, and a proposal was submitted to renounce the excessive restrictions and allow the individualised design of important public architectural objects (Cibas, 1965). Such an attitude was also transferred to the Lithuanian field of architecture by stating that:

> 'in order to match organically all contradictory technical, normative, functional and artistic spatial requirements, which are dictated by the landscape itself, it is not enough to be a planner, but rather it is necessary to combine perfectly developed spatial thinking with great artistic insight. (. . .) We have no right to follow only technical expedience and deprive a person of things which provide a sense and understanding of beauty' (Mikučianis, 1974).

Although the State Committee for Construction Affairs in some cases could provide an opportunity to prepare a customised project taking into consideration the importance of the object, secondary schools were not considered as such and were built according to unique projects only in exclusive cases. Most frequently, such cases were related to the characteristics of the site intended for construction as inappropriate for a typified project – too small, located in an intensively urbanised territory or containing complicated terrain.

A secondary school for 1392 students needed to be fitted on to a corner site and to contend with a seven-metre slope, located at the approaches of Vilnius Old Town. In 1966–1969, the architect Elena Nijolė Bučiūtė (1930–2010) designed a school building made up of a four-to-five-storey training block and another two-storey building joined to the first one, where public events, sports, canteen and recreation functions were intended for the ground floor, and study rooms for art and technologies, a library, reading hall, administration and educational staff premises on the first floor. In order to achieve the permitted tectonic characteristics and a regionalist appearance, the architect combined a reinforced concrete frame with yellow ceramic brick walls and wood cladding. She wanted to ensure a supply of natural lighting to the school spaces, which were designed in the compact manner, so she used a number of dome lights on the roofing. In order to form the school core, the hall and laboratory premises were designed around the lobby, thus providing possibilities for convenient use outside school working hours (see Figure 3). Bučiūtė admired the transformability of spaces and designed the school's layout with multi-use scenarios possible within the same spatial structure. A real innovation of the time was the sliding acoustic partitions installed in the gymnasium which, in preparation for certain events, could be opened, and the corridor and canteen spaces expanded by connecting them for viewers of sports competitions (see Figure 4). Despite the complicated terrain and sensitive, historic urban environment, as well as the design programme, which required intensive development, the architect was able to implement

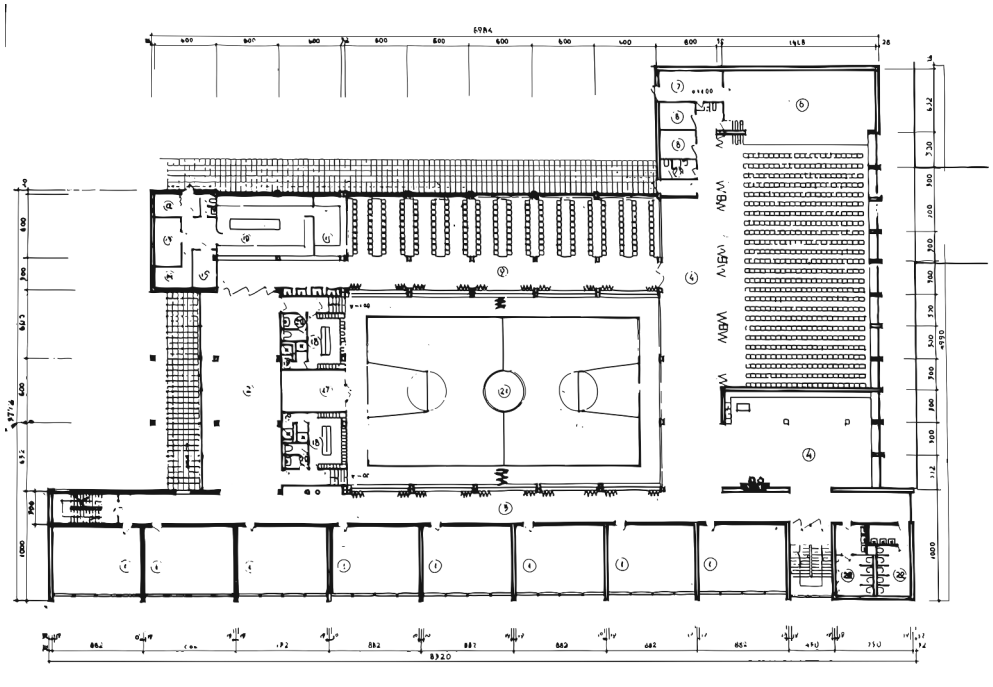

Figure 3. Halls were designed close to each other and the entrance lobby, so that it would be convenient to join the space and divide it into smaller spaces to be used after the school working hours. Ground level plan. Secondary School for 1392 students, 1966–69, architect Elena Nijolė Bučiūtė [source: Vilnius Regional State Archive].

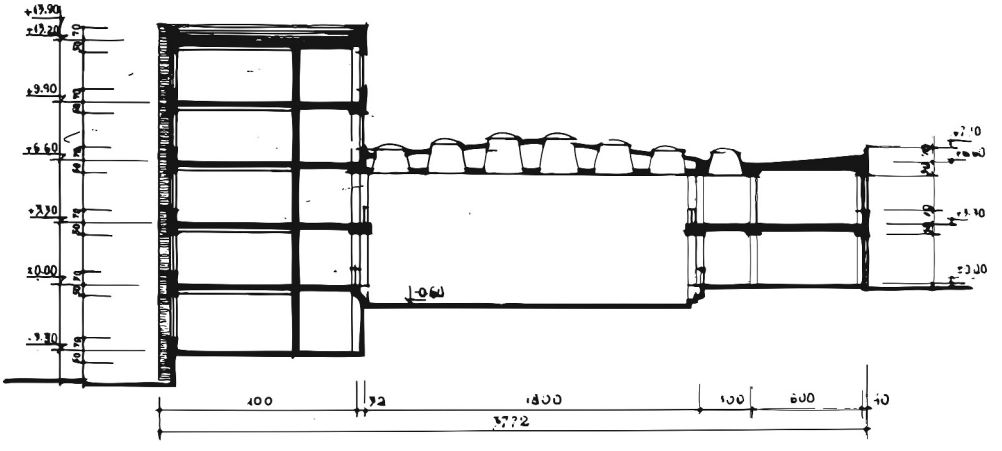

Figure 4. Sports events in the gymnasium could be watched by opening mobile acoustic partitions in the corridor and canteen. Cross-section. Secondary School for 1392 students, 1966–69, architect Elena Nijolė Bučiūtė [source: Vilnius Regional State Archive].

the main idea of the building: a modern urban school had to be compact, easily adaptable to different uses, and keep a close link with outdoor spaces and the historic environment.

Implemented in the period of 1967–1974, the residential area of Lazdynai in Vilnius was designed as an exclusive district from the very beginning. It was supposed to be a response to the growing criticism of industrialised mass housing in the Soviet Union – although mostly typified residential and public buildings were constructed in this district. A distinctive landscape and customised urban design were intended to turn it into a unique area. Only 16-storey tower blocks and two secondary schools were built in this district in a series of unique projects. The author of these buildings was the architect Česlovas Mazūras (b. 1942). His task was to accommodate a typified school project, but the construction sites were of extremely uneven terrain. So, Mazūras prepared and handed over to the approval commission his original school design project. Considering the fact that such an exclusive district needed more expressive landmarks than just mere adaptations of typified projects, Mazūras succeeded in making an absolutely new and original school project in the aspects of function, plan, and architectural composition (Balčiūnas, 1974). Perhaps these were the reasons the author was granted approval, and the school project for 1284 students was implemented in 1972–1974 (Balčiūnas, 1976). According to the architect, 'my graduation day was the happiest day in my life and I never wanted to go back to school'. So, he just wanted to design a school to which its graduates would wish to come back and, at the same time, 'to escape from the typical unattractive image of the Soviet school' (Mazūras & Open house Vilnius, 2015). In addition to the planned concept, Mazūras had to overcome the peculiarities of the Soviet construction industry: to find a way to construct a long building (138 metres) with only one crane using as many standardised construction elements as possible, as well as to negotiate the production of non-standardised elements. The building was constructed out of prefabricated reinforced concrete structures. But the author ensured its originality by using red ceramic brickwork for its exterior and a part of the interior walls. The main spatial concept was the image of the building as a town – two-storey cubes with courtyards and halls

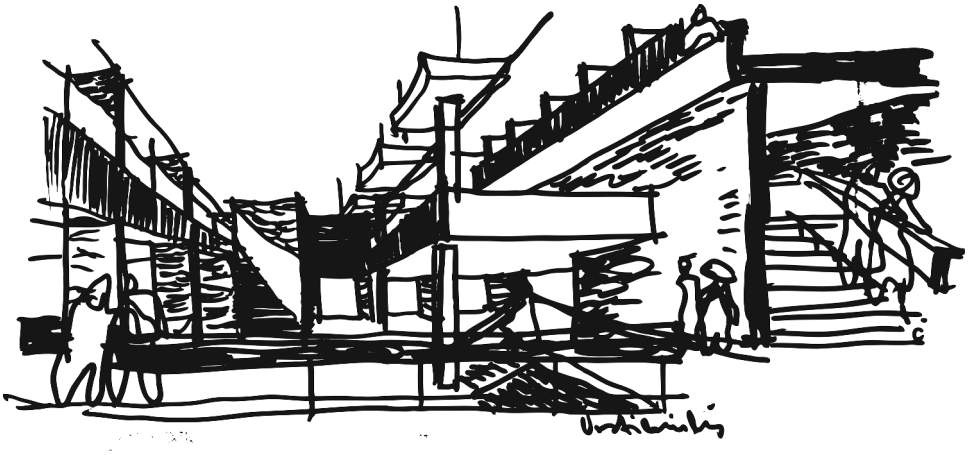

Figure 5. A lobby as a 'town square' at the intersection of communicational corridors or 'streets'. Sketch of the interior space. Secondary School for 1284 students in Lazdynai District, Vilnius, 1972–74, architect Česlovas Mazūras [source: Vilnius Region State Archive].

corresponding to the image of a house and its yard, corridors connecting cubes – like streets with 'a town square' at their intersection (see Figure 5). Later, the author admitted he had lacked experience and his main source of knowledge had been the magazine *Architectural Record* sent to him by his foreign relatives, and the Russian version of *L'architecture d'aujourd'hui*.

Structuralist-like volume composition was based on the two-storey schooling space segments (18 x 18 metres). Three classrooms or study rooms, a special recreation space, sanitary premises and cloakroom, as well as an educational supplies storage area were designed in such segments on each floor. Direct access to a separate yard for each segment was intended from the lobbies of both floors (see Figure 6). Segments were connected by spacious communication corridors (streets) which were illuminated from above. At their intersections, the events hall, gymnasium, canteen and lobby were designed (squares). The premises arranged in this way became easily accessible for everyone, providing possibilities for different applications of the space, such as community meetings, the schooling methodology and its implementation according to specific subjects and students' age groups, and the effectiveness of their training activities. Mazūras' design project featured a community-orientated environment. To commend this design project, the author received a Soviet Komsomol Prize, which was usually given for creative work for children.

Buildings for specialised music, art, and science education were more often designed according to a special permit. Such design projects had to be prepared in compliance with the same technical regulations as were applicable to the standardised projects, but the design assignment was formulated depending on the type of schooling. Nevertheless, while making customised design projects, architects could better apply their creative principles and embody their philosophical or artistic concepts.

In 1986, Gintautas Likša (1943–2009) and Irena Likšienė (b. 1946) prepared a design project for a youth centre (after-school education) in Palanga. According to Likša, the main design idea was a local 'Disneyland' with an observatory so that children could see

Figure 6. School segments with direct accesses to a yard were joined by the communication corridors arranged breadthwise and lengthwise the slope. View from above. Secondary School for 1284 students in Lazdynai District, Vilnius, 1972–74, architect Česlovas Mazūras [photo by Liutauras Nekrošius].

the mountains in the moon through a telescope (Griškevičius, 1993). The building complex was planned, and comprised a schoolchildren's centre, observatory, indoor and outdoor amphitheatre, tourism centre, orchard, winter garden, and decorative outdoor pools. The design featured golden ratio-based proportioning, and artistic interpretations of the astronomic measures of the sun, moon and earth (see Figure 7). The authors believed that architecture both could and must encourage curiosity and inquisitiveness in young people. Just a small part of the project was implemented (1987), and so regretfully the 'astronomical' features of the architecture can be seen in the authors' sketches only. The original building was composed of standardised prefabricated reinforced elements and, very common for that time, silicate bricks. Such a creation method the authors ironically named the 'Lego' approach. As the needs of the town itself had changed, in 1991 a decision was made to locate a primary school in this building. Regardless of its partial implementation, even today the school building is distinguished not only by its original composition, but also by the unconventional structure of spaces – the classroom premises of different configurations are arranged around a spacious lobby intended for community events.

In 1982, the architect Irena Likšienė (b. 1946) prepared a design project for a music school for 300 schoolchildren in Palanga, which received her colleagues' acclaim as an original compositional experiment revealing the creative personality of the architect (Staniulytė-Brazaitienė, 1984). The existing urban situation determined the square shape of the site (54 x 54 metres) and angular symmetric planning. The spatial idea of the building had a deeper functional meaning, as the architect wanted to embody function in the form. This was expressed by the geometrical composition and intensive use of the tools of rhythm and balance. One diagonal of the square plan balanced the building volume and outdoor amphitheatre space (see Figure 8); the other diagonal encompassed most a of the important functional parts of the school – entrance, staircase, lobby, hexagonal hall, choir hall and outdoor amphitheatre (see Figure 9). A sense of rhythm was created by the arrangement of

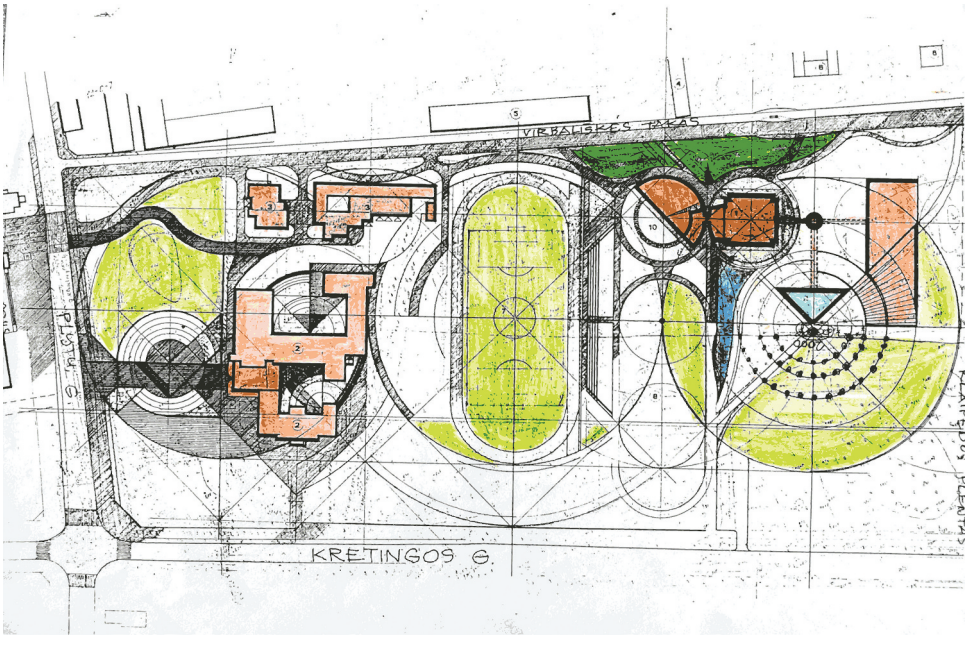

Figure 7. Artistic interpretation of the astronomic sizes of the Sun (biggest circles), Moon (observatory) and Earth (medium circles) was used in the planning of the schoolyard and design of the youth centre building. Sketch of the site. Youth Centre near the existing Secondary School in Palanga, 1987, architects Gintautas Likša and Irena Likšienė [source: personal archive of Irena Likšienė].

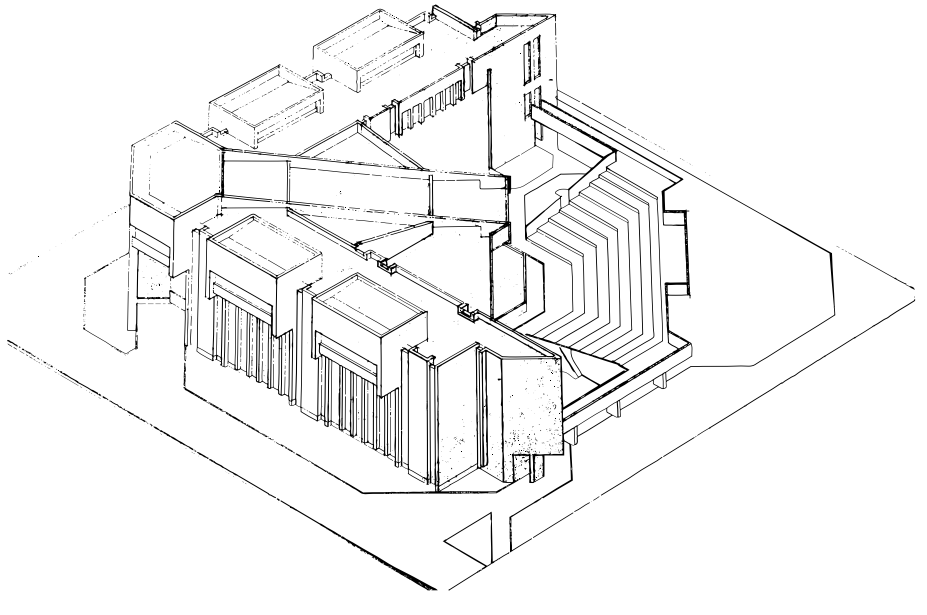

Figure 8. Spatial composition of the building is based on mirror symmetry and binary contradiction of space and volume. Axonometry. Music School in Palanga, 1982, architect Irena Likšienė [source: personal archive of Irena Likšienė].

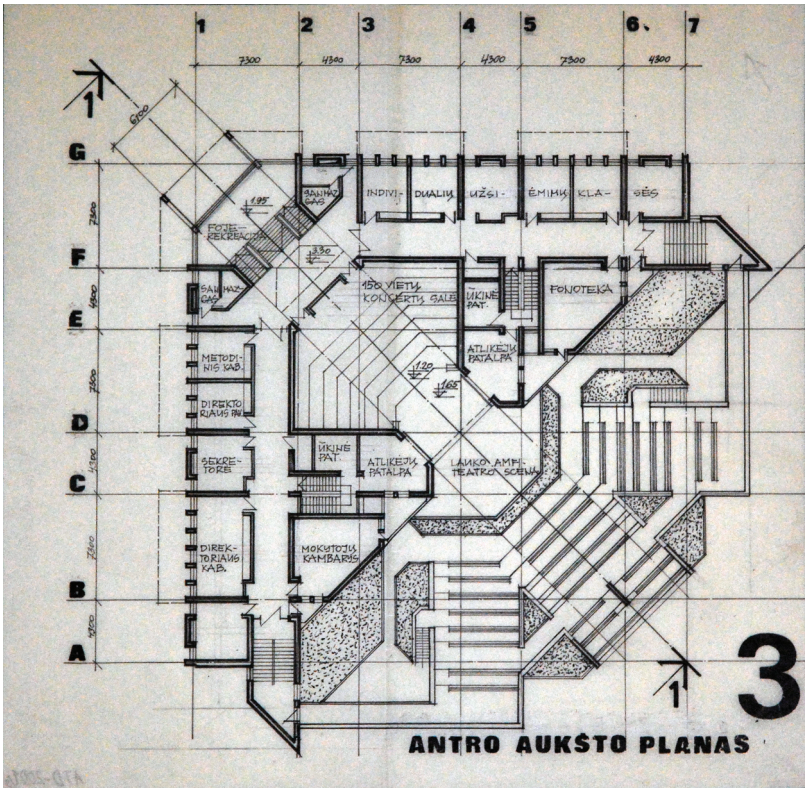

Figure 9. Interaction of indoor and outdoor spaces was realised by implementing a common stage for the hall and open-air amphitheatre. Ground level plan. Music School in Palanga, 1982, architect Irena Likšienė [source: personal archive of Irena Likšienė].

the schooling spaces corresponding to a semantic code of music. The architect's empathy for younger persons is revealed through the creation of a cosy space of subtle scale, and the clever modelling of natural lighting. To commend this successful design for children and youth, the author received a Soviet Komsomol Prize.

The postmodernist tendencies that prevailed in the late 1980s promoted not only a variety of forms and irony, but also a new approach to historical styles in architecture. Gražina Janulytė-Bernotienė (b. 1951), the author of the art school in Alytus (1985), followed the principle that a form of architecture can influence its content; therefore, the school building volume obtained the recognisable image of a three-nave sanctuary. According to the architect, 'back then, the ideas of Postmodernism flourished and were based on the possibility to openly quote all kinds of historic ideas' (. . .), and a school had to bear 'a clearly revealed concept of a special-purpose building'. So, in order to express solemnity and luxury, the school was formed around the main space with a centrally emphasised staircase containing a niche for a sculpture, and circularly arranged classrooms. The architect's creative approach became clear in quite a comic situation during her talk with a minister of the time: when he asked about the main façade of the building 'why its curvy part is finished with a rectangular' she responded: 'a house has always to have a secret, it cannot be absolutely open and direct' (Diržys & Stasionytė, 2013). In the architect's work, postmodern architectural intentions could

be seen, especially the inclination to quote historic ideas. The ideas of antiquity were interpreted as a typological value by carrying the solemnity of the sanctuary structure into the space for children's training in the arts.

In the reflective designing of schools, the architects' creative ideas covered a broad spectrum of different values. The values representing aesthetic quality were generated most often, but while analysing different aspects – artistic, self-expression, functionality and simplicity values – representation of 'the spirit of the time' and aspirations for traditionalism and regionalism could also be perceived. It is important to recognise that the architects' striving for innovation to implement progressive solutions in schools was manifested through the designing of fluid spaces, democratic environments, and transformability. The architects also paid a great deal of attention to social values by emphasising specific educational needs and arranging the physical environment favourably for the school community.

Conclusions

In architecture in general, two ultimate practices can be relatively identified: that of the technicist (rational) and that of the reflective (irrational) design. The first is often associated with a priority to generate economic value (mass production), while the second is associated with aesthetic value (unique, customised). In the most general sense we can state that the technicist design paradigm based on economic criteria is closely related to architectural standardisation and typified designing. The results of reflective design based on aesthetic value criteria are easier to identify in customised projects.

The purpose of the reforms in the architectural sector in the USSR launched in 1955 was to supply the residents of the huge country with a sufficient number of residential and service buildings by making the construction of such housing faster and cheaper. Therefore, attempts were made to build as many buildings as possible with the use of as small a number as possible of design projects (typified architectural design). The requirements were to use only standardised prefabricated components (e.g. prefabricated slabs) for the construction of buildings. Due to the shortage of a qualified labour force, it was decided to develop reinforced concrete technologies as they required lower competences for their assembly. In such a political context, the preparation of customised projects was allowed only in exceptional cases (special purpose objects) or on special territories (model mass construction districts, historical environment or complicated terrain). Even after obtaining a permit for the preparation of a customised design project, compliance with the strict rules for the use of standardised and prefabricated components, and the criteria of economic frugality had to be ensured in the construction of such a building. The use of different materials for finishing and customised products were allowed only in exceptional cases.

The requirements of architectural quality, compliance with educational needs, efficiency of use, and integration of innovative scientific and technological achievements had to be met in the process of school designing, whereas most of the attention was given to solving economic problems (reduction of capital investments, and labour and time costs).

The prevailing rational approach and priorities of frugality resulted in typification when only a limited number of architectural projects could be used for construction. Schools were built according to typified projects only; the driving force for transformation and renewal of typified school projects had to meet the changing needs of education and the permanent

need of the economic norms. Customised projects for schools were prepared only in exceptional cases, but after realising the negative impact of standardisation and unification on the quality of architecture, on its artistic value and the identity of the formed space, construction according to customised projects became more frequent in the 1970s and 1980s.

The analysis has shown that all projects had to comply with the standardised industrial construction criteria and meet the requirement of thrift. It has been shown that the intentions of all the architects while designing the schools covered certain aesthetic, social and economic values, but they were articulated with different levels of intensity and from different perspectives as the architects worked under unequal conditions (see Figure 10).

School design projects			Architectural design values
General goals for typological group	Architects' ideas and aspirations		
	typified projects	customised projects	
to improve the architectural features of the building	harmonious proportions, matching of sizes and shapes; aestheticized joints and junctions	**artistic aspects and self-expression**: spatial analogy of the school with the city structure:streets, squares, blocks, courtyards; an ever-changing, unpredictable interior view (Mazūras); golden ratio proportions, analogies with astronomical quantities (Likša & Likšienė)	**aesthetic**
		spirit of the time: spatial transformability, adaptability (Bučiūtė); possibility to apply different space scenarios (Mazūras); postmodernism, the ability to quote	
		structural, functional, and material honesty: expression of a function in a form (Mazūras), (Likšienė)	
		simplicity and minimalism: rationality, clarity, symmetry, spatial coziness, rhythm of forms, balance	
		natural and organic: priority to the natural light (Bučiūtė)	
		classical, traditional, and vernacular: to use local, traditional materials, regionalistic approach (Bučiūtė), (Mazūras), (Janulytė-Bernotienė), perimetric urban design (Bučiūtė),	
to satify the design program established in accordance with the general education curriculum	convenience; consistent and logical connections of spaces; easy to reach and to use (Geibūnas)	consistent and logical connections of spaces, (Mazūras)	**social**
	functionality, reduction and separation of circulation flow (Geibūnas)	reduction and separation of circulation flow, proper space scaling (Mazūras)	
	linking of indoor and outdoor spaces, applying to learning (Mardosas), (Plyčiuraitis)	linking of indoor and outdoor spaces (Bučiūtė), (Mazūras), (Likšienė)	
	grouping and spacious autonomy by the age of the students and by the educational program elements (Mardosas), (Geibūnas)	grouping and spaciuos autonomy by the age of the students and by the learning program elements (Mazūras)	
	pleasant, cozy, and bright recreational spaces (Kuncevičius)	a free environment for the society change (Mazūras)	
to improve the performance characteristics of the building	insolation, ventilation; quick access to outdoor space (Mardosas), (Plyčiuraitis)	insolation, ventilation; outdoor space accessibility (Mazūras); urban gardening (Bučiūtė)	**environmental**
to use the unified industrial products, and to choose the least number of options	compactness, space compression	compactness (Bučiūtė), (Likšienė)	**economic**
	use as little plot area as possible for construction		
to reduce capital investment	as few building structures as possible		
to reduce labor costs	versatility, easy adaptability		
to provide the latest scientific and technological achievements;	new construction system UK1, UK2.	new, different kind of school than ever before have been (Mazūras), space transformability, different scenarios for the use of space (Bučiūtė), (Mazūras)	**novel**

Figure 10. The correlation of design values (according Bianco, 2018; Lera, 1980; Ukabi, 2015), goals and architects' ideas and aspirations for the typified and customised school designs in Lithuania in 1955–1990.

This research has shown that the social values manifested in all the projects (typified, as well as customised) were generally expressed by the architects' empathetic approach towards the school community, educational processes, and aspirations to create a functional, comfortable, and cosy schooling environment, and to create the spaces by considering the specifics of the schoolchildren's age and the character of the education process. Exclusive attention was paid to the connection of the interior and outdoor spaces. This was in line with the educational and health needs of students, and articulated one of the basic principles of Modernist architecture.

The imperative of economic frugality dominant in typified projects marginalised their aesthetic values. Yet under such conditions, the architects' striving for the creation of a harmonious environment could be identified: the initiated development of structural systems of appropriate scale, matched architectural forms, their sizes and the aesthetic links of different elements. In customised projects, however, the architects' approach was mostly revealed through their aesthetic values. Most intensely articulated were the aspects of artistic expression, spirit of the time, and traditionalism; the values of functionality, simplicity and naturalness were manifested more reservedly. In the majority of the customised projects that were researched, the trends of structuralism, regionalism, and postmodern architecture have been identified.

To the authors of typified projects, novelty meant innovative structures. The authors of customised projects experimented with the transformability of spaces and their expressive composition. According to these authors, more liberated, overlapping spaces without clear boundaries affect the feelings and behaviour of the school community and encourage social changes in the future.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This work was supported by the Lithuanian Council for Culture [Individual grant for artistic activities of culture].

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