INTRODUCTION

This article aims examines the renovation of schools in the Lausanne area (Vaud, Switzerland). Incribed within the context of the evolution of school architecture of 19th and 20th centuries, the renovations of schools interact with the existing built reality, while responding to the vision of the contemporary school. Rather than investing in the conception and construction of new schools, it is particularly relevant to assess the adaptability of existing buildings, valuing its consolidated implantation in the urban context. This fact also contributes to the preservation of school heritage, witness of the history of society and the city.

The comparative analysis of seven public schools in the Lausanne area, dedicated to primary and secondary education, allows the identification of common concepts and the study of conceptual strategies that support their execution.

This analysis of school renovations was carried out according to three criteria – urban integration, placement of the collective program and distribution systems –, established in order to ensure a view of the projects at several scales. For each criterion, two conceptual intervention strategies can be distinguished and their implementation is analysed considering each school’s characteristics and constraints.

MOTIVATIONS AND CONSTRAINTS OF THE RENOVATION OF SCHOOL BUILDINGS IN THE 19TH CENTURY

The school, as a continuously evolving entity, reflects the society in which it is integrated, with regard to architectural styles or construction techniques, as well as its implantation into the urban fabric or its relation with the city. Paul Aubert (1951: 31) underlines the dynamic nature of school buildings in stating that «no solution is ever perfect and definitive, as it is life that really constantly brings new factors to be considered».

The diversity of examples of school renovation in the Lausanne region, together with the multiplicity of starting points – i.e. period and characteristics of the original buildings – and of programs requested, attest to the versatility of the solutions presented by renovation projects.

The last decade of the 20th century marks the beginning of the renovation operation in school buildings, aiming to increase their capacity, introduce new programs and comply with new regulations on energy, security and accessibility.

Despite the demographic stagnation forecasted for the beginning of 21st century, Lausanne’s population increased by 10,000 inhabitants between 2001 and 2011 and is expected to rise by another 20,000 to 25,000 inhabitants until 2030, causing the schools to reach their limit in terms of capacity to accommodate more students. Along with population growth, an additional challenge is faced by 21st century schools: the versatility of programs and activities carried out within school spaces.

In parallel, the deterioration of buildings dating from the second half of the 20th century is increasingly notorious. The use of prefabrication, justified by its advantages in terms of speed of construction and cost reduction, results in the use of less durable materials, when compared to 20th century’s stone and mortar. School renovation need to address the buildings’ waterproofing defects and ineffective thermal behaviour. Furthermore, accessibility

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1 This article is based on a final Masters dissertation in architecture, carried out at Instituto Superior Técnico, Universidade de Lisboa, in 2016. This research was carried out in collaboration with the École Polytechnique Fédérale de Lausanne during an exchange programme. The dissertation was supervised by Catarina Wall Gago (EPFL) and co-supervised by Teresa Heitor (IST).

2 «Aucune solution n’est jamais parfaite et définitive, car la vie apporte sans cesse de nouveaux facteurs à considérer» (Aubert, 1951: 31).
regulations of school spaces aim to guarantee access for people with reduced mobility, thus requiring the installation of lifts and the construction of ramps in accordance with the characteristics of each school.

In the programmatic domain, it is important to note the introduction of new spaces within the school as a form of coordination between school and working hours. In other words, the schools of the 21st century are called upon to look after children outside school hours – morning, lunchtime and after classes – ensuring that areas are dedicated to meals, leisure activities and study studios. APEMS’s spaces – Accueil pour les Enfants en Milieu Scolaire – are presented as a community-driven program that establishes new links between the schools and the community.

**METHODOLOGY**

This study is divided into three phases – 1) historic evolution of school architecture in the 19th and 20th centuries, 2) selection and presentation of case studies, 3) comparative analysis – supported by bibliographic research, access to municipal archives, contact with architecture offices and visits to the schools.

The first phase is related to the evolution of pedagogy during the course of the 19th and 20th centuries, in particular the creation and dissemination of the foundations of modern pedagogy and of movements such as the new education, whose principles are spread across the domains of pedagogy, hygiene and architecture.

The selection of case studies is limited by the study universe: the Lausanne area, which has an important educational dimension, visible in the number and proximity of schools. Furthermore, the accessibility to the architectural records available in the municipal archives is relevant. The option of narrowing the research to public schools arises from the need to establish a relationship between studied projects, aiming to create a global programmatic and conceptual interpretation of Lausanne’s school state. The time frame of case studies proposes the analysis of original buildings dating from the 20th century, whose renovation operation started in 1980 and lasts up to now. This delimitation is linked to the research of multiple types and languages of the original buildings, which were transformed according to similar requirements and programs. Therefore, five case studies were selected among the seven examples of primary and secondary public schools in the Lausanne area:

- **COLLÈGE VERS-CHÉZ-LES-BLANC** | 1841, 1901
- **COLLÈGE DE VILLAMONT** | 1888, 1960
- **COLLÈGE DE L’UNION** | 1986
- **ÉTABLISSEMENT SECONDAIRE DU LÉMAN** | 1973
- **GYMNASE DE BURIER** | 1977

The comparative analysis of case studies reveals the main municipal lines of action common to contemporary interventions. In turn, this allows to understand the school’s role in today’s society, not only in its mission of educating the new generations, but also of opening itself to the local community as a focal point of knowledge, culture and sports.

**HISTORICAL EVOLUTION DURING THE 19TH AND 20TH CENTURIES**

It was during the 19th and 20th centuries that we have seen the genesis and development of school buildings. The awakening of modern pedagogy has brought a new vision concerning children and, consequently, about the appropriate teaching/learning methods. «Children are not miniatures of adults» ³ (Beauté, 2004: 19), they are beings with their own reactions in an ever-evolving process.

Henri Pestalozzi (1746-1827), ideologue of modern education, is considered the pioneer of public instruction in Switzerland, having advocated the idea that the school is a place of freedom and intimacy where all the spaces – built or not – should contribute to child development. Thereafter, other Swiss stakeholders have distinguished themselves in the field of education, cementing the position of Switzerland as a country of reference in terms of education. In fact, one must mention the participation of pedagogues such as Adolphe Ferrière, Edouard Claparède, Piaget or architect Alfred Roth, in the defence of École Active movement and Éducation Nouvelle, both through their work ⁴ and their collaboration in the foundation of education and school construction⁵ related institutions.

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³ «L’enfant n’est pas un adulte en miniature» (Beauté, 2004: 19).
⁴ Adolphe Ferrière – L’école Active (1920); Alfred Roth – La Nouvelle École (1950).
⁵ Bureau International de l’Éducation’s foundation in Geneva (1899) by Ferrière and Piaget; Institut Jean-Jacques Rousseau’s foundation (1912) by Ferrière and Claparède.
School architecture is influenced by pedagogic development and changes in the conception of the school, particularly of its objectives, its functions in the society and its relationship with the city. In the Lausanne region, from the late 19th century and throughout the 20th century, different periods in school construction can be identified. They follow the pedagogic, political, architectural and hygienist trends of each time, which are expressed in school legislation (1834, 1889, 1984) concerning compulsory schooling, curriculum and school constructions.

FROM THE ORIGINS OF SCHOOL CONSTRUCTION TO THE PATRIOTISM OF HEIMATSTIL

By early 20th century, classrooms were usually located in buildings with different functions. When the first school buildings were built in Lausanne, during the second half of 19th century, they were part of a society in transformation. The COLLÈGE VERS-CHEZ-LES-BLANC is built to ensure education of children in a rural and low-density area.

In the city centre, the architects who undertake the implementation of the first school buildings uphold the importance of public instruction through architecture. Therefore, «a new type of school building, with a rationalized area and imposing looks» (Prod’hom, 2012: 44) is mandatory, creating – also by the image of the façade – a monumental setting.

Specific characteristics of high schools of that time contrast with Lausannes’s primary and secondary schools. In fact, the establishment of high schools in distinctive sites, as well as their elaborated architecture enriched with noble decoration elements, make those buildings stand out as exceptions in the urban landscape, assuming the role of town monuments. The COLLÈGE DE VILLAMONT, previously École Supérieure de Jeunes Filles, was built during this period.

By early 20th century, the awareness of the negative consequences of the industrial expansion of towns – to which the Exposition Nationale de 1896, in Geneva, contributes – brings about a trend of «coming back to the “real” Swiss values idealised by the nature and the rural world» (Le Dinh, 1992 cit in Morend, 2012: 60). The Heimatstil proposes the reinterpretation of a traditional regional language, while keeping in mind the hygienist trends. According to Chloë Morend (2012: 64), Heimatstil can be considered as the official vaudoise architecture until the First World War. This is reflected in the construction of casern-schools, such as big monumental school buildings that host the whole school program in a single building. This enabled the reduction of construction costs as services and technical installations usage is optimised through a bigger number of classrooms. The location of the school in the northern part of the building plot allows for the creation of a courtyard facing south as well as a sanitary showers inside the school, thus confirming the influence of the social hygiene movement in school architecture from 1900 to 1920.

THE REVOLUTION OF PAVILLON SCHOOL ARCHITECTURE

The end of the First World War announces a transition period of school architecture in the Lausanne area, consisting of the spread of avant-garde movements that stand up for a modern architecture capable of exploring the different possibilities of new building materials, such as reinforced concrete.

Le Corbusier’s worldwide influence called into question the conception of architecture and of its elements conception. In fact, everything is questioned following Le Corbusier’s 5 points pour une nouvelle architecture (Five points of a New Architecture), namely the windows position and form, the flat roof introduction – a controversial matter since the roofs are a central element of the Swiss traditional architectural identity – or even rhythmic and decorative façades issues. From a programmatic point of view, the school also shelters new spaces for concierge functions: the infirmary and the refectory. The modern pedagogical developments lead to the adoption of furniture that is adapted to the child’s size and to the versatility imposed by the activities carried out in the classroom. For instance, it is the first time that individual chairs and tables are chosen.

The pedagogical way of thinking after the Second World War of professionals of different fields – pedagogues, architects, urbanists – resulted in the definition of clear objectives for the schools, which were summarized by Paul Aubert (1951: 22) as «the
contribution of the school to the child’s social, moral and aesthetic education, keeping in mind its nervous wellness safeguard».

Concerning this subject, Alfred Roth’s work – La Nouvelle École (1950) – is essential to the definition of school architecture dating from the second half of the 20th century, serving mainly as a medium of diffusion of Anglo-Saxon models. The emphasis is placed on the need to offer a full education to children, going beyond the strict intellectual domain. The aim of adapting schools to the children’ interests and needs calls into question the pertinence of a large school building and raises the possibility of its division into smaller buildings. This solution also enables the construction of the school in multiple phases, which would be more tailored to the needs of the community.

The pavilion typology is implemented in Switzerland through different types. The semi-pavilion system and the compartmentalized system are the most implemented examples in the Lausanne area. The former puts forward «a hybrid formula that matches the pavilion's modular unity principle with a compact building block» (Aubert, 1951: 287, cit in Birke von Graevenitz, 2012: 88). The partition system explores the main building division into several aisles with independent accesses and courtyards, thus avoiding a big concentration of pupils. The two systems enable an organic relation with both the ground and its topography.

During the 1960s, the pavilion typology was developed following several examples from England, the Netherlands and Germany. The improvement of the referred pavilion systems led to the creation of School Groups. It consisted of taking cubic or parallelepiped volumes to shape heterogeneous plans, which are adapted to the site. This allows for the distinction of spaces planned for different age groups and subjects. Furthermore, the schoolroom shape changes, becoming more and more square, underlining the diversity of the activities carried out. The influence of Le Corbusier’s principles may be observed in the raising of the ground floor – therefore creating a covered courtyard at the ground floor level –, the choice of long windows or flat roofs, as well as general use of concrete and the frequent installation of pre-manufactured elements in the school buildings.

CROCS OPERATION: THE SINGULARITY OF THE LAUSANNE EXPERIENCE

In 1965, the Lausanne municipality undertook a study to identify the needs of primary and secondary public schools during the following ten years. This initiative opens the way to the creation of CROCS - Centre de Rationalisation et d’Organisation des Constructions Scolaires – in which architects, engineers, school representatives and the Direction des Travaux de la Ville collaborate. The construction of the ÉTABLISSEMENT SECONDAIRE DU LÉMAN and of the GYMNASÉ DE BURIER are inscribed in this initiative.

The objectives of the three phases of the CROCS action concern the evaluation of the school community needs, the definition of the functional and technical directives that allow the regulation of new edifications and the building and analysis of the action’s pilot projects. The school plan was designed according to a modular grid, which determined the location of the building blocks. This system explored the advantages of prefabrication of standardized elements. «The whole building is made of a metallic grid (pillars and beams) and of pre-manufactured floors in reinforced concrete » (Suillot. 2012: 116). The buildings usually have rectangular plans and simple volumes. The lightness of the façades made of pre-manufactured panels attached to the slab of each floor give the buildings an unimposing look.

During the CROCS action – a pioneer program in what concerns modular and rationalized construction methods – more than twenty schools were built, most of them in the city of Lausanne. This action has allowed for the rationalization of school construction by establishing programmatic and technical rules that guarantee the functional quality and the economic balance of buildings, independently of which professionals – architects, engineers, school managers – involved in each project.

The demographic growth in the Lausanne region, as well as the lengthening of compulsory education paved the way for the creation of new schools. In 1986 the school community of Lausanne consisted of five secondary schools, as well as more than sixty kindergartens and primary schools. The scholar amendment approved that year mandated the construction of seven new secondary schools responsible for providing special and collective programs consistent with this schooling cycle studying plan. At Prilly, the construction of Collège de l’Union ensures that the needs of compulsory secondary school education are met.
SCHOOL BUILDING RENOVATION: MULTIPLE STRATEGIES TO IMPLEMENT ARCHITECTURAL CONCEPTS

The comparative analysis of different school renovations in the Lausanne region is based on the study of the pedagogical, legal and patrimonial context, without which it would be difficult to understand the motivations and options associated to those projects. These aspects are a similar starting point for the school renovation projects, adding to each school’s specific characteristics and objectives.

The renewal operations studied lead to several levels of spatial and functional changes. Thus, the development of this analysis follows four criteria that provide a global perspective on the effects of school renovations over the relation between the school and the city, the school organization and, finally, the inner school circulation systems.

For these analysis criteria – urban integration, collective program introduction, circulation systems – two different strategies are identified, which are at least present for two schools. To better understand the strategic choices taken, a school example will be provided for each of the intervention options.

URBAN INTEGRATION

SHAPING OF AN EXISTING CENTRAL SPACE

The schools examined in the Lausanne region are included in a more or less dense urban grid, and they establish relations with other different city building blocks: the circulation paths, the public equipments, the outside spaces, etc. Often, the central school spaces are located outside, sometimes integrating the network of public communal spaces.

On the urban scale, two school space transformation types can be identified (concerning its interpretation inside and outside the school): shaping of an existing private space and creating a new public space.

SHAPING OF AN EXISTING CENTRAL SPACE

The renovation and extension of school buildings may allow the shaping of an existing central space, by further closing it through building construction. This space is therefore permeable both in visual and in physical terms. However, this permeability varies from one project to another, due to its respective specifications.

The renovation and extension project of the Collège Vers-chez-les-Blanc planned for the construction of a new building with classrooms in a school that already had two buildings: the Premier Collège (1841) and the Petit Collège (1901). Both are at the edge of the school site, creating the Route du Jorat façade. The existing courtyard, located in the inner part of the school grounds, is open to the public. The division between the school and the street is made through sober fences that become urban furniture, making it harder to access the school and guarantying that children stay in a private space, while ensuring the visual permeability between the inside and the outside of the school.

The new building is located at a distance from the street and is placed in the middle of the plot, thus reinforcing the unifying and distributive function of the existing central space. The three languages express the time at which they were built, finding harmony through the adoption of similar heights, adapting the new building volume to the scale of its surroundings. The role played by the central outside space of the College is underlined by the Direction des Travaux de la ville in the project presentation: «The non-contiguous building order makes the relation between traditional and modern architecture feasible and avoids any mimicry» (Direction des Travaux de Lausanne, 2009: 4).

- «L’ordre non contigu rend possible le rapport entre architecture traditionnelle et moderne et permet d’éviter toute tentation de mimétisme» (Direction des Travaux de Lausanne, 2009: 4).
NEW PUBLIC SPACE CREATION

The renovation and extension of the school buildings also allow the creation of new versatile spaces, enabling school and community functions to be provided. These may be used to solve specific city problems or simply contribute to its enrichment through the increase in space diversity and accessibility.

At COLLEGE DE L'UNION, in Prilly, the extension of the main classroom building by adding a cantilever volume enabled the creation of a covered entrance space on the ground floor. Taking advantage of its sufficiently high and lake oriented implantation, this space became a public belvedere as well as a place of school reception. This space with a remarkable view results from the building of a new gymnasium on the underground floor.

COLLECTIVE PROGRAM
NEW COLLECTIVE PROGRAM IN AN INDEPENDENT VOLUME | OCCUPATION OF THE GROUND FLOOR AND UNDERGROUND FLOOR OF SEVERAL BUILDINGS

Schools are built up of traditional classroom spaces as well as spaces for group activities, often related to culture, arts or sports. One of the challenges that a 21st century school has to face is to offer the necessary conditions to the child’s global development. It concerns the addition of bigger, polyvalent spaces, whose usage is often open to the non-scholar community: library, performance hall, gymnasium, among others. These «border-programs» between the school and the city play an important role in the involvement of schools in community life.

Similarly, school services that take care of children beyond school hours and subjects defined in the scholar plan are also part of the schools’ collective program, promoting group activities that are partially open to the community: the APEMS, the catering area or the PPLS office.

In school renovations or extensions, some conclusions can be drawn concerning the functional and spatial organisation of schools from the introduction of collective programs. The actors involved in the project must thus insure different public or public accesses and space uses.

Therefore, departing from the studied examples, there are two strategies to introduce the collective program in schools: placing the collective program in an independent volume or the occupation of both the ground floor and the underground floor of several school volumes.

NEW COLLECTIVE PROGRAM IN AN INDEPENDENT VOLUME

One of the architectural options guarantying the autonomy of the collective program from the other school spaces consists of including it in an independent volume, preferably on the site border. This option allows the collective program to function independently, nonetheless safeguarding its integration within the school area. The acoustic requests of these spaces are different according to the program, implying either calm and quiet atmospheres – as is the case of the library –, or the removal of noisy programs away from the other school programs.
Four buildings that have different school functions form the **Gymnase de Burier**, built in 1977 at La-Tour-de-Peilz. The main building (A) receives the classrooms and the special rooms (physics and biology laboratories, teachers’ rooms, etc.). Similarly, in the Enogone building (E) one can find theoretical classrooms and PPLS offices. Building B, at the western area, and the remaining buildings C and D, are meant to shelter the cafeteria or the refectory (B) as well as the gymnasiuems and the dressing rooms (C and D).

The renovation and extension of school buildings stresses the importance of the collective program to the reorganization of the school. It concerns the heightening of the Enogone building through the creation of a new floor including classrooms, music rooms and administrative offices. Moreover, the extension of the refectory is carried out by keeping both the refectory and the cafeteria in building B. This action, undertaken by the architects Nord-Sud Vevey atelier, ensures that school capacity is increased, as required by the city’s demographic growth.

Outside school hours, the collective program – gymnasiuems, performance rooms and refectory/cafeteria – is used by the community, requiring each building to have an independent access from the public space and thus allowing for the security of the school spaces.

**GROUND FLOOR AND UNDERGROUND FLOOR OCCUPATION OF SEVERAL BUILDINGS IN THE SCHOOL AREA**

The project strategy for the introduction of public programs in schools sometimes requires the location of these spaces on the ground floor and on the underground floor. If this is the case, the autonomy of the collective program in relation to the core central spaces of the school area – classrooms and special rooms – is guaranteed by the vertical circulations.

The occupation of the ground floor allows the creation of direct accesses from each outside space. Furthermore, gymnasiuems are usually located on the underground floors due to their large surfaces and ceiling heights. Often, its access is enabled through an independent vertical circulation.

This is the case of **Collège de Villamont** – former École Supérieure de Jeunes Filles – in Lausanne. Originally, the school consisted of a 3-floor building (A) built in 1888 whose classrooms were placed in the northern part of the school ground area. Later, the outbuilding (A), where nowadays one can find the refectory, was added to the school, as well as another building in the eastern part, which was demolished in the recent school building renovation and extension. The south-facing building dating from 1960 only has two floors underground, which include the sports program as well as the special rooms intended for science and arts classrooms. The year of 2006 marks the starting point of the construction of a new building in the eastern part of the school site. The library and the performance hall located on the ground floor and the classrooms included on another floor – in a cantilever volume – illustrate the implantation principle of the collective program.
The school program stimulates the usage of different spaces during school hours, thus enabling the creation of new multiple circulation and distribution spaces. Be it at the building level or at the school area level, the circulation spaces play an important role in the functional and social aspects of day-to-day school life. Some spaces are dedicated to leisure, while some others are intended for discussion or even as informal work places.

The renovation and extension of school building often imply that existing buildings have to abide by the accessibility regulations presently in force. Updating the circulation systems – inside and outside – is often the opportunity to make the school spaces accessible to all its users.

In the scope of the studied schools, it is possible to identify the shape of the school building organisation concept: a rectangular plan where the programme is placed in the building’s peripheral border, shaping a central space of circulation. This organisation may be found either in the new buildings or in the initial ones.

When renovating these buildings, architects generally keep these distributive and circulation principles. Nevertheless, they do not forget the present accessible needs and include them in the strategies of renovation.

The extension of the main building of the Collège de L’Union (A) introduces a new classroom aisle in the southern portion of the school area. The building’s south façade is moved to increase the number of classrooms per floor and, consequently, enlarge the central circulation space.

On the 4th floor, the southern aisle is presently separated from the initial part by the new passerelle installation which connects the three buildings belonging to the school area. The passerelle, has a slight slope, enables an easy access between buildings. Furthermore, the intervention on building A has comprised the renovation of the large hall circulation, namely through the installation of ramps allowing access to different levels on the same floor.

CIRCULATION SYSTEM BETWEEN BUILDINGS

When the school area is made of more than one building, the outside spaces acquire distributive functions, adding to the courtyard a social, meeting or leisure character.

According to the program established for each building, the outside routes may be more or less used. The transition between classroom buildings was examined, since they are the most common routes used every day by the school community.

The renovation and extension of the Collège Sécondaire du Léman, in Renens, includes the construction of a new building in the southern part of the school area, the Collège du Vaudaire. If in previous times school life revolved around the Collège du Joran building, this intervention by architects Esposito & Javet creates new routes between the two classroom and collective program buildings. However, the central space of the school is on the outside where games, discussions and meetings take place due to the circulation routes.

In this way, the outside reorganisation of the school site is a central point concerning the renovation and extension project of the Collège Sécondaire du Léman. The courtyard, initially turned inwards and disconnected from the city’s mobility network, is reconnected to the urban routes, playing a decisive role in the management of different route levels that border the site. The slope system «makes the route between Rue du Léman and Rue du Caudray more fluid and allows the connection of Censuy’s sportive equipments to the new residential neighbourhood » (Della Casa, 2009). It is a concept of reorganisation of outdoor spaces created by a new building, capable of answering accessibility issues by means of site evaluation at an urban level.
TODAY’S SCHOOL CHALLENGES: AN EVALUATION OF THE SCHOOL BUILDINGS IN THE LAUSANNE REGION

The examination of the renovation and extension of primary and secondary school buildings in the Lausanne region carried out in this research allows for a global vision of the region’s schools, as well as an individual interpretation of each school. In spite of the specific characteristics of each case study, related to the programmatic requests and to its inclusion in the urban grid, it is possible to identify strategies common to interventions carried out today. The main goal of this study was to examine these strategies, by carrying out an analysis according to three criteria: urban integration, introduction of a collective program, circulation systems.

It is important to note that the conceptual strategies identified are not only confined to the Lausanne region. On the contrary, the diversity of starting points reinforced the universal scope of those conceptual options, making this study a witness of the multiple possible routes for school renovation.

The motivations and transversal constraints related to several schools studied are related to their inclusion in consolidated urban fabrics. This leads, on one hand, to the extension of the school functions that surpass the transmission of knowledge generally defined in the study plans. The Service d’Accueil de Jour de l’Enfance – as APEMS or UAPE – program promotes the integration of the school in the family policy. The use of school programs by the community – libraries, gymnasiums, performance halls – increasingly includes schools in the city’s public equipments.

Christophe Allenspach states that «nowadays it is no longer necessary for the school to recognise itself as a school. It is sufficient to know that it is a public building» (Forster, 2004: 27). The school buildings must ensure their polyvalence, as a way to answer the permanent evolution of the school conception.

On the other hand, certain problems can arise from the inclusion of schools in the consolidated urban areas at the moment of increasing the school capacity. Architects often face the need to introduce new spaces in the school site without the necessary construction space availability. To solving for this constraint, they adopt alternative strategies as is the case of the heightening of buildings, indoor space reorganization, volumes in cantilever construction or the creation of underground spaces.

Also important to the renovation process of primary and secondary schools in the Lausanne region is the conformation with the thermal, acoustic, and fire security regulations. The requirements imposed by these regulations constrain the interventions, given that a balance between the implementation of regulations and the safeguard of the buildings’ initial image and identity must be found. These technical aspects – that are often materialized by replacing the façade of buildings – were not analysed in this study. Notwithstanding, this duality is one of the biggest challenges concerning the renovation of school buildings; further studies could better contribute to its understanding in the future.

\[\text{«Aujourd'hui il n'est plus nécessaire que l'école se reconnaîsse en tant qu'école. Il suffit que l'on sache qu'il s'agit d'un bâtiment public.» (Forster, 2004: 27).}\]


