Teaching Through Design

2nd RMB Conference 2018

Coimbra // 6th and 7th April

M. Melenhorst, P. Providência, G. Canto Moniz (EDs.)

REUSE OF MODERNIST BUILDINGS V

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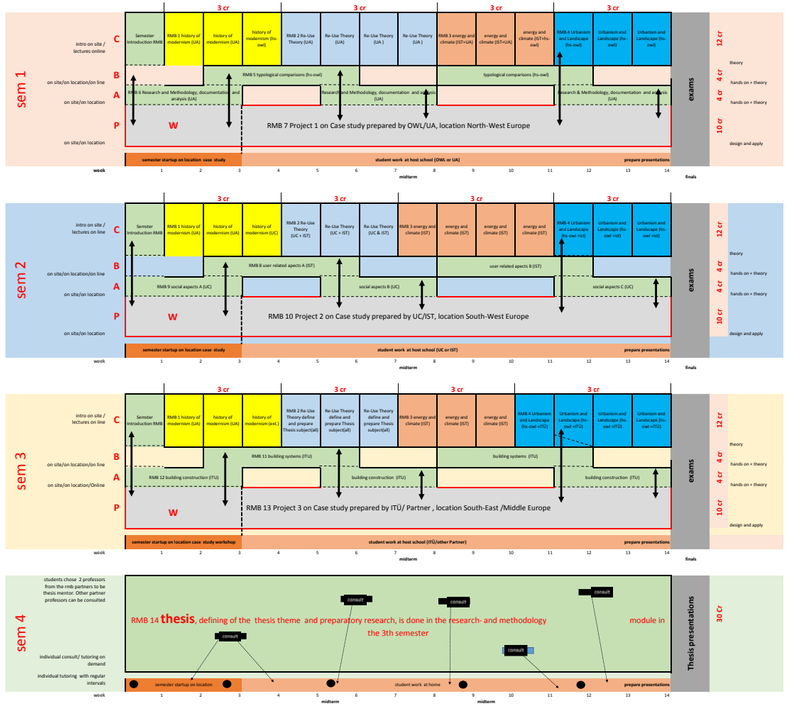

Fig. 1: Marl Hill Houses; new concepts for living.

About: Reuse of Modernist Buildings
Design tools for a sustainable transformation (RMB)

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The project, Re-use of modernist buildings. RMB wants to initiate an educational framework of common definitions, approaches, and methodologies on a European level. It is based on existing research, educational practices and reference projects in the European countries. RMB will develop a Joint master on reuse of modernist buildings. The preparation and development of this master will take form, from Sept 2016 until August 2019.

The Project Partners:

- HS OWL, Detmold School for Architecture and Interior Architecture – Germany (Applicant);
- ITU, Department of Architecture – Turkey;
- ULisboa, Instituto Superior Técnico – Portugal;
- University of Coimbra, Department of Architecture – Portugal;
- University of Antwerp, Faculty of Design Sciences –Belgium;
- DOCOMOMO International – Portugal
- and associate partner ´the energy and resources institute´ (TERI) – New Dehli, India

The project consortium took form by selecting partners according to their complementary experiences and competencies in the field of design methodology, practical adaptive reuse, refurbishment and improvement and policy-making on housing and urban development. Since one of the aims of RMB is to combine a broad spectrum of European practices the partners are geographically chosen accordingly.

Projects cause

Demographic and climate change has resulted in huge qualitative and quantitative challenges and demands for the European building sector. The need for suitable and affordable housing in the city centers and urban agglomerations is increasing and cannot, and should not, be fulfilled with new constructions only. A major task for the building industry should be realized through the refurbishment of the existing housing stock, as well as conversion from other building typologies such as warehouses and offices, with a special focus on the so-called modernist era.

Given the differing vintage of the building stock and its expected development non-OECD countries (OECD = Organisation for Economic Co-operation and Development) face huge growth in expected construction. OECD countries have a large stock of residential buildings, most built before 1970, that is not growing quickly and will be retired slowly. Currently, the rate of residential building refurbishment to improve envelope efficiency is low, estimated to be 1% per year (BPIE, 2011). Urgent policy action is required because energy efficiency refurbishments are potentially expensive and likely to make economic sense during major refurbishments that occur only every 30 or more years
Source: Transition to Sustainable Buildings, OECD/IEA (2013)
RMB is unique in its identification of the main study subject since it focuses on a very specific, oft problematic, very important segment of the building stock; modernist architecture. Neighbourhoods, quarters

and buildings from this era are in danger of being destroyed with the risk of specific cultural elements and environments at loss.

Three aspects in Focus

Modernist architecture can be characterized on the level of modernist technology, modernist architecture concepts and the societal impacts of modernism.

On a technological level, refurbishment shows how difficult modern structures are to adapt to high contemporary standards. Modernist architectures experimental nature, its fragile constructive systems makes its attractiveness but also its vulnerability to non-professional refurbishments.

On a conceptual level, modernist architecture shows a re-definition of the habitat trough new inside- outside relations and open floor plans, supported on innovative urban design goals. This was a major effort to prevent from the excesses caused by the unhealthy, unhygienic industrialized cities. Modernist architects sought for new worldwide solutions for cities and buildings. Once innovative and very adequate, today modernist typologies for housing and other communal facilities such as schools, often don´t meet our contemporary needs.

On a societal level, the global large-scale replication of modernist buildings has led to a critical perception of this huge building stock. This lack of acceptance and appreciation complicates a sustainable reuse and retrofit into energy efficient and user-friendly buildings.

Through the specialised input by the project partners, RMB addresses all three levels in its educational pact.

RMB´s educational methodology

RMB is able to integrate different European approaches and knowledge on conversion and refurbishment of this specific post-war era to meet these professional challenges. The partners in RMB will contribute specific knowledge and input regarding spatial patterns, cultural heritage, climate and construction principles, social and technical evaluation and the monitoring of built spaces. Thus creating a well-balanced adequate curriculum for preparing graduates for this international job market and strengthen the European common ground in this specialized expertise.

RMB´s Innovative aspects and expected outcomes

RMB is innovative in the sense that it will contribute to the urgent speed up of the transformation of our building stock, create better job chances for students in the field, generate more jobs for the building industry as a whole and most of all wants to improve people's lives and build greener and better societies. RMB follows very closely the definition of the EU Commission on innovation.

RMB makes knowledge and existing teaching formats accessible on a European level. Specific parts from the curricula of the partner institutions are inserted into a comprehensive well-balanced educational pack. The combination of these contributions forms a unique program pool.

Fig. 2: Marl Town Hall, construction experiments.

Fig. 3: Marl Hill Houses; new concepts for living

The teaching formats contribute to the execution of the EU targets on Modernisation Agenda's priority areas and the implementation of the 2013 Communication on opening up education. RMB will explore combinations of ´traditional´ e-learning formats, on-site events -such as conferences and workshops- as well as extended very innovative e-learning options in digital fabrication and building integrated management (BIM). It will improve the possibilities of a remote teaching in design education, which is not self-evident. The results are to be disseminated to a wider audience through open courses, open sources, and best practice syllabi.

In an up-to-date adaptation and optimisation of the environmental performance in the construction process, with respect to the modern legacy lies an important task for architects, stakeholders, and future users. The expected results will be valuable to extend the yet very limited database and knowledge on buildings user behaviour, which is currently a restraint to the potential improvement of energy policies and environmental sustainability strategies. Researchers who develop buildings' performance simulation models, can use the conclusions regarding user behaviour.

State of things in the development of RMB

In the first year of RMB the main effort was to compile the curriculum and the accompanying description of content, goals and formats of the modules within the curriculum. Parallel, the role of the partners is further defined, a RMB course statement is produced, and a start is made in collecting case studies. Tests with workshops, projects, and courses started in spring 2016. The development and production of the course materials is the next step, the dissemination of project results and scientific output started in the first year but will become more important in the later phases of RMB.

Methodology
The case study design projects form the spine of the RMB master. Teachers with different professional backgrounds support these case study design projects. Each semester will set specific accents, students work on location for one semester and then move to the next.

First semester:
HS-OWL/Antwerp, Project on the axis Detmold-Antwerp + Document and analyse/Type and Function/History of Modernism

Second semester:
IST/Coimbra: Project in Portugal, + focus on Social aspects/ Assessment of buildings in use/ Environmental design

Third semester:
ITÜ + partner/ Free project location in the southeast of Europe + Building construction /Reporting and writing /preparation of thesis

Fourth semester:
Thesis at one of the partner schools.
The semester starts with workshop (W) on location. Modules (A/B/C) are related to the design projects (P), the intensity of the relation, however, may vary, from direct interaction trough building survey to background information over lectures.

The modules A have the strongest direct connections, the B Modules somewhat more remote, the C Modules on and off.

Input, learning objectives, and graduation skills:
RMB is open for students with a bachelor diploma from different backgrounds such as architecture, heritage or urban planning. Students who already have a master but want to specialise in the field of reuse will also be recruited for RMB.
The students learn to deal with heritage- and reuse issues in a self-conscious, methodological clear and respectful way. They will approach the topic of conservation, transformation and reuse from a broad perspective, have a holistic multidisciplinary view and knowledge on reuse, but will be specialists as well because of the Master´s specific focus on the field of Modernist Architecture.

Output qualities and professional (job) perspectives
After graduating from RMB, Students will be able to further develop their gained knowledge and solve independently and in a responsible manner, complex assignments in the field of heritage and reuse, in design practise as in science and research.
Through the helicopter view on reuse on a European scale and the international collaborations with students and teachers during the master courses, they will be well prepared for the European job market. Through the application of distant-learning and designing skills in the project-based learning during their RMB master,

Fig. 4: Marl large scale Social housing blocks

Fig. 5: Student workshop Marl may 2017

students are very well equipped for contemporary working practices of ´footloose´ offices with collaborators in different geographical locations. They combine a high sensitivity for local conditions with a broad experience and knowledge of international best practises, and cooperative, effective working skills.

RMB targets in Internationalisation in education, job prospects and general benefits
Due to discrepancies in the European job market and employment situations, graduates are well aware of the fact that they may have to leave their country to work in a different country or to be able to work in their countries but in international projects. In several international networks, Bachelor and Master Students already have the opportunity to get familiar with the challenges and requirements of the global job market in the building sector. This experience related to language training, intercultural and interdisciplinary competences is very much appreciated by the students as relevant for their professional future. RMB will add an extra level to this by not only offering a coherent international study program, combining the local and the international but also by inserting in this curriculum cooperation with industry and with other institutions to investigate and solve relevant practical, technical and societal questions. Students get acquainted with industry and with praxis via internships, graduation assignments, conferences, workshops, and guest speakers. This connection between academic education and the practice is perceived as an asset for the future profession of the graduates.
The participating partners are convinced their cooperation will better prepare graduates for the requirements of a European and international job market. So first students will benefit from this, secondly the building industry, as well as authorities, will profit and of course, in the end, the urgent European topics on human habitat will find better solutions.

Fig. 1: Albena Yaneva keynote lecture, RMB Conference, Santa Clara-a-Nova Convent, Coimbra, 2018

About: 2nd RMB Conference: Teaching through Design:

by Michel Melenhorst, Gonçalo Canto Moniz, Paulo Providência, Els de Vos, Francisco Teixeira Bastos, José Fernando Gonçalves, Aslihan Tavil, Ana Tostões, Zara Ferreira

Introduction to 2nd RMB Conference: Teaching through Design
The 2nd RMB Conference 2018 was held in Coimbra, as an activity of the European Erasmus Project "Reuse of Modernist Buildings – Design tools for sustainable transformations", coordinated by Hochschule Ostwestfalen-Lippe (Detmold, Germany), with the University of Coimbra, the University of Antwerp, the Instituto Superior Técnico Lisboa, the Technical University of Istanbul and Docomomo International. The theme of the conference retook the concept of "Teaching through Design", developed in 2012 in a colloquium organized by the Department of Architecture and the Centre for Social Studies of the University of Coimbra and published in the journal Joelho 4. In this framework, the 40 papers presented by scholars from 15 countries were organized in four sessions – tools, research, methods, interdisciplinarity – focusing on the learning fundamentals and on advanced issues of the design process related to the Reuse of Modernist Buildings (RMB).For each session, papers are divided into the ones that are related with professional practices, research on buildings or design process, and into others that reflect on pedagogical experiences that took place in the different educational levels, demonstrating that several schools of architecture are already integrating the Reuse of Modernist Buildings in their curricula.

Architecture education is facing new challenges due to crises of the globalisation and climate change, that has strong impacts on the role of the architect today. These new professional challenges are demanding diverse ways of approaching the design process and therefore are questioning traditional ways of training architects. This question is especially relevant for the renovation of those urban areas where modernist buildings from the second part of the 20th century are waiting for strategic interventions – to be repaired, to be renewed, to be reconstructed or to be demolished. The architect needs new tools because just drawing is not enough anymore to understand neither the building nor the people who live there. The design methodologies are more complex in order to integrate not only the technical and spatial dimensions and programs but also the social impact of design strategies. This inclusive approach demands, on one hand, new design tools and on the other hand the dialogue with other disciplines, promoting effective interdisciplinarity. Considering these topics, the architecture classroom is becoming more laboratory than workshop, where new tools and methods are researched and explored, developing hypotheses to be tested and responding to new demands.

TOOLS for Reuse of Modernist Buildings
Mankind has been very inventive in making all kind of tools to carry out specific tasks, the hammer for the nail, pencil for the paper. Also in architecture, many tools have been invented or just arose, that architects may use to design and to materialise, research and communicate their thoughts and ideas. However, the way architecture is produced changes over time and so are the tools used and needed. The reuse of buildings is a specific task for architects that over the last decades has become increasingly important. The enormous vol-

ume of buildings constructed in the afterward WWII period, from the 50´s until the 70´s, is in its first, sometimes already the second cycle of, conservation, restoration or adaptation for reuse according to contemporary needs. Do we need specific tools for these tasks? Are new tools developed?

The line between what are tools and what are methods is not always strict; a good book cover is a tool for better sales. Therefore perhaps the word 'means' or 'instrument' as an alternative for 'tools' would be more appropriate here, when describing some of the contributions selected for these conference proceedings under the umbrella of Tools.

In their design for the N10 Eiras Indoor Sports Facility, COMOCO arquitetos Luís Miguel Correia, Nelson Mota, and Susana Constantino use the dialectic tool of opposing the new to the old, actually in the sense of Carlo Scarpa. They show convincingly how to use this tool in dialectics with ordinary, plain buildings. The assessment of values of the banal becomes the crucial tool here.

Christian Gänshirt did extensive research on what tools architects use, in his text "Drawing is not enough" he gives a state of the art overview of the research conducted on architects' tools. He subsequently opens-up the exiting notion that everything can become a design tool and in case of reuse, even the building itself can be that tool. In "Requalification of the old bus station of Salvador", Raquel Neimann present us her academic work developed in the Professional Masters in Conservation and Restoration of Monuments and Historical Centres (MP-CECRE), of the Federal University of Bahia. She shows us the importance of following different steps, all with their own tools, to come to an effective proposal for a monument that did not yet receive the societal appreciation one would expect for a listed building. The different fate of the Siza's SAAL housing in Porto by Eduardo Fernandes shows what can happen if in the development over time of a project, including its renovation or the completion of different phases of the project, when the original intentions of an architect are respected or not. By describing the history of Alvaro Siza's S.Victor and Bouça housing projects Eduardo Fernandes convincingly shows the importance to take this original spirit and concepts as a tool for further development.

Marijn van de Wijer and Nikolaas Vande Keere stress the importance of the original use of the building as a tool for finding new uses that are in line with its original religious and communal functions, in fact, its heart and soul. In "Revalorizing Modernist Church Architecture. The Case of the St. Alène Church in Brussels", the authors describe the process of working with this tool in a student design studio on adaptive reuse at the Faculty of Architecture and Arts at the Hasselt University in Belgium.

Besides thinking about the Tools needed for a concrete task, the correct use of the Tools needs further instruction. Think about fishing: to learn to fish is not only a question concerning the correct use of the fishing rod but also evolves learning specific skills that finally allow the fishing rod to fulfill the task. These skills are related with specific perceptions, like the perception of the river current through the tension of the fishing line, the appropriate choice and location of the fishing bait according to the fish and the river current, and other empirical knowledge. The big question concerning teaching and learning the Tools for reuse of modern buildings is not only about the appropriate Tools chosen for reaching a goal, but mainly how to teach and how to learn the skills that foster the appropriate efficiency use of the Tool. Teaching architecture, and especially teaching in the design studio, is an interactive process between teacher and students. The tutor is not the only person with all the knowledge anymore, also the students can contribute to the production of knowledge. It is the task of the teacher to encourage students to observe precisely, to reveal and interpret new knowledge in order to create a project. Experimenting with new tools is part of that task. Proposing and designing with the students the proper tools to reach the subject (such as urban analysis, sociological landscapes, construction surveys), is one of the most important tasks teachers may have on architecture education – highlighting students to get acquainted with identifying new fishes, new techniques and new places for fishing.

In the first contribution of the session on Pedagogical Experience, "New Cartographies of Educational Spatialities" Ferreira and Moniz show how mapping students' voices can identify key themes about spatial aspects of the school, through a survey taken in thirteen secondary schools in Portugal. Starting from a mental map about students daily routines, students were later invited to represent their favourite places inside the school, as well as the ones they dislike. Finally, the students were interviewed about the relationship between several kinds of spaces and their potentiality as learning environments. These resulting new cartographies represented networks in order to describe students' connections with both school building and the urban space surrounding. The authors show how mapping as a Tool allows revealing the physical and social aspects in which education is shaped.

The already mentioned relationship between architecture students and teachers is best studied through concrete cases. In the second paper, we travel back in time and have a closer look at the pedagogical experiences of Raúl Hestnes Ferreira (1931-2018), one of the most influential architects, practitioners and teachers, in Portugal. Saraiva and Pinto explain the assignments Ferreira employed in his course "Introduction to Architecture", held in Coimbra, as a Tool "to confront students with the experimentation of the most recurring situations in architecture". The authors argue that particularly the fact that the exercises were each time twofold was innovative. In a first phase Hestnes Ferreira focused on perceiving and experiencing the environment through various techniques of design and volumetric representation, while in a second phase, the students go over to practice and start to develop their own design method and tools based on their own proposals.

Karakök, Ormecioglu and Sekerci´s paper, "To experience preservation and design of modern architecture by combining original and new functionality: Antalya Memur Evleri example" is a 3 year design studio exercise. Rethinking an urban housing quarter built in the 60ees, raises the problem of teaching urban analysis, and mainly the social context of the design process. Based on analytical tools such as a survey and interviews to inhabitants, the sociological background of the design is incorporated on project strategies, allowing students to bridge their aesthetic and formal approach to the local space use. Ormecioglu and Erbas paper on "Reuse of industrial heritage and ar-

chitectural education", raises the problem of design studio exercises on modern architectural heritage reuse. The importance of student's architectural culture on designing and projecting reuse, renovation or even conservation of heritage buildings is even higher than in projecting expansion areas and new buildings. The paper, based on their experience on a design studio dedicated to the reuse of a 20ees power plant, underlines the diverse perceptions that students and teachers have about their performance.

All the papers in this session have in common a fascination for discussing innovative pedagogical tools, albeit in different periods and different political and cultural contexts. All of them understand the ways of learning and teaching through both an institutional and a human perspective so that they can be reshaped in a more meaningful way, and in general, they are based on specific buildings and their contexts. Christian Gänshirt is right: the ultimate Tool in reuse, is the building itself!

RESEARCH on Reuse of Modernist Buildings

Research is what we do when we don't know the answer for a certain question or problem. The relationship between teaching, learning and researching is intimate. There's even a specific learning method named "Problem Based Learning" (PBL) that postulates learning through problem solving. The application of such method is not consensual in architectural education, because the so called "problem" is not precisely a "problem", it's a constellation of questions for whom there are many possible resolutions. Designing is precisely taking one of those possible solutions, and push it forward for highlighting the initial problem. Thinking so, research in architecture doesn't have the same logical meaning that has in many other practices (scientific, technical or artistic), and that's maybe also the reason why in recent years, research in architecture has become a hot spot in architectural education, both are related to experience, learning and researching by doing. The incorporation of architectural studies within the university has brought up questions about the meaning of research in the architecture field of studies. Some viewed the tradition of educating architects through a design-based practice as a limited way of learning because learning design skills was seen as ways of reproducing un-reflexive design gestures. The important studies of Donald Schön (1985) provided a large contribution to explain to academia the didactic virtues of the design studio, claiming architecture design-based practice as a reflective practice. But in spite of those studies, teaching architects in the schools of architecture could be divided into two categories: those who think that "architecture is architecture" and is not compatible with "research", and those who think that architecture research should seek to develop "scientific" methods like other disciplines (such as sociology, engineering or humanistic studies) to produce its own knowledge. Jeremy Till (2008), in his report to RIBA stated both positions, and asked for research methods appropriate to producing knowledge in the architectural field. Till, quoting Christopher Freyling's (1993) studies on research, pointed three kinds of studies in architecture: research into, for and through architecture. "Research through design" has been debated increasingly in recent times, opening an interesting and specific field of research for architects as it's considered practice-based research. These contributions may be highlighted in the research project "Reuse of Modern Buildings" as they allow to reflect on the role that design studio may have on researching about ways of restoring, rehabilitating and reusing modern movement buildings.

The first research study where the dimension of the modern architectural performance is put to the test is the paper by Carolina Coelho, who studied the adaptability of unanticipated space use in a modern high school in Coimbra. Surveying space usage and confronting teachers and student's perceptions over the school space, Coelho approaches a topological analysis that may allow a better-informed reuse design proposal.

Roberto Silva, reflecting on the modern city centre of São Paulo in Brazil, raises the problem of the ineffectiveness of a building-centered rehabilitation process and the importance of taking care of the urban environment as well. This very interesting problem raises the question that it's not possible to think about modern heritage without thinking more broadly then the single building, and that the reuse of a modern building should be thought about as a strategic action for an entire urban block, quarter or part of a city.

António Carvalho, studies ways of enhancing, through adaptation, the modern buildings of the Alvalade neighbourhood to become age and disabled friendly spaces. Based on taking advantage of the spatial continuity of the apartments and transparency of the public space between urban blocks, Carvalho exemplifies good practices in designing the reuse of active and healthy ageing within this neighbourhood. Design as a practice-based research, allows a better design.
Finally, Oliveira reflects on the processes of rehabilitating a public cinema-theatre, in Minas Gerais, Brazil. The main concern regarding the rehabilitation process, by Mariela Oliveira, is keeping the authenticity of the building, avoiding confusion between the expression of the age and the signs of building pathologies (modernism likes to look young). From a technical point of view, Mariela's paper raises the difficulty on keeping characteristics of modernist buildings like physical transparency, elemental detailing and spatial permeability in the rehabilitation process, while at the same time improving sound insolation, sun protection, and thermal comfort.

There are several ways to conduct a research in architecture with a specific focus on the reuse. There is a difference by taking a purely theoretical and historical approach to the one using the act of design in project activity to base the research. In the first approach, one must take an analytical position to strengthen the proposed changes. By opposition, the designer/ researcher must assume the risk to intervene in a dialectic position of reflecting upon the state of architecture observed, the original purpose of the project and the development of applied methodologies, to create new identities coming out of the existing buildings. In case of modernist buildings, both approaches are very important and necessary. There is enough ground to identify, classify, and catalogue its value as representative pieces of a time, a style, or a current type and to find informed ways to promote changes that re-creates its identity by opening new opportunities to contemporary uses.
The need for understanding the project and its author that is behind the build artefact and to know modern buildings by experience and survey them is imperative to perceive the original goals and proposes and to ground good interventions. Some of the contributions selected for these conference proceedings demonstrate it, as good pedagogical examples, either taken or to take, under the aim of research on

Reuse of Modernist Buildings.
Els de Vos, Marieke Jaenen, Eva Storgaard show in “How to develop a Case Study Handbook on the Re-use of Modernist Buildings?” the importance of involving Master’s students in the systematic, and analytic compilation of knowledge and information, about relevant modernist buildings to form a handbook. It demonstrates that the handbook has a double pedagogical role: acts as a tool for students during courses of the RMB-master, and introduces, support and inspire them in the research of particular international modernist buildings and their suitability for adaptation into housing.

By working with real buildings in a state of demolition, Lamis Behbehani shows in “The Challenges and Opportunities of Access to Existing Modern Building Sites in Kuwait” that there is a pedagogical challenge and opportunity for learning for preservation, renovation and reuse. Through a methodology of case study approach, the authors demonstrate that one can have tangible and intangible access to historic building sites and integrate valuable knowledge in practice on interior architecture studio renovation projects.

In conclusion, research on the reuse of modern buildings may mean three things: the study of these buildings as architectural heritage products, and therefore their specific cultural value embedded in a specific material form, as elaborated by Els, Roberto and Lamis; the design process through which we can assess, value and programme those buildings, as stated by Mariela; and the architectural performance of the buildings, or how society took on those buildings, reinterpreting their use and exploring new unpredicted uses, as examined in the studies of Carolina and António.

In all texts, dealing with the real state of use and decay of a building leads the pedagogical experience of discovery the original spirit and truth of it, either to intervene and find new designs, either to analyse, or simply to learn to understand the cultural modernist legacy.

METHODS for Reuse of Modernist Buildings
Buildings built under modernism where designed for specific functions or under strict purposes. Rethinking ways of preservation of those buildings implies, to design strategies for their reuse. These strategies are like pathways that we go through, for reaching the result. The reflection of the pathways that drive us to the results – the design process implied in reuse design - is what we call Method. The reflection on the design methods is precisely the reflection that modernism started with - giving the highest attention to methods and design processes instead of exploring forms and results. A major example on this reflection is Walter Gropius, that in 1937 wrote “Training the architect”, a text that was his presentation as Chairman of the Department of Architecture at Harvard University. This manifesto integrates the Bauhaus approach in the American university system proposing the architectural education from nursery up to higher education, which grants it a cultural dimension. This continuous education puts the focus on the methods rather than only on knowledge and skills. The modern education curriculum presented by Gropius established 10 methodological criteria instead of the traditional set of disciplines. Among them, we underline that “in an age of specialization method is more important than information”,”students should be trained to work in teams”, “teachers should be appointed after sufficient practical experience”, and ”schools of architecture of small size are more efficient than large size ones (100 to 150)”.

In 1950s, the design methods debate supported the critic to modern architecture claiming for the integration of a social approach, that should assimilate the experience and the every-day life. The mental maps of Kevin Lynch or the identification of patterns by Christopher Alexander transformed radically the design and the research methods on architecture, looking for the local and the traditions.
Today the Reuse of Modern Buildings, either in the professional practice or in the educational programs, need to understand the modern methods, in order to adapt the modern proposals to the contemporary challenges. Authors approach the topic by putting in discussion different design strategies of adaptive reuse, from musealisation and meanwhile use to the radical transformation of the existing modern building.

Marta Peixoto discusses the methodological strategies of reusing three different types of modern buildings in São Paulo, Brazil – a house that became world heritage, a housing block that maintains its use, and a 12-story department store that was radically transformed into a community centre. The reflections on maintenance and renovation of heritage buildings, have conducted Peixoto to raise the problem of the maintenance of lived interiors in architecture as tracings and testimonies of architectural intensions, and the problems that “cleaning” these interiors may have on the reading of the architectural work. The methods of heritage preservation, being maintenance or even worst renovation, look insufficient to take care of these material aspects, that have strong immaterial resonances.

The paper by Tostões and Ferreira, reports the Barbican Listed Building Management Guidelines, a publication concerning the process of creating the guidelines for the preservation of the Barbican Estate in London. A detailed account about the methodology elaborated to produce the document, reports the inclusive process of defining rules on the maintenance of the estate, the creation of a common archive making available all the technical information, the definition of principles concerning new interpretations of the estate, and the creation of a website and magazine dedicated to the subject.

Alegre, Bacharel, Fernandes and Lourenço analyse the modernization of two secondary schools in Lisbon, taking in consideration the design methods used to integrate the current technical structural and infrastructural requirements, without jeopardizing the modern values and spatial identity. The peculiar care taken from the analysis of every specialist project fosters innovative methodological approaches to preserve the modern identity of the schools.

Roque and Santos discuss the conception process of the rehabilitation and extension of the primary School of Figueiró da Granja building, as a modern school building, iconic to its community and central to its urban context. The design strategy for keeping the old school in use, was reached through the addition of a new volume that incorporates contemporary demands like a multipurpose room, allowing to preserve the facility.

After years of self-education on modern adaptive Reuse, the students of architecture and architects have finally access to design stu-

dios or post-graduation courses. In parallel to Design Studio, it's also important to understand the impact of the renovation processes with a Building Performance Evaluation and the Post-Occupancy Evaluation (POE), described in the paper by Teresa Heitor. This course is taught to 5th year students of the Integrated Master in Architecture at Instituto Superior Técnico for over 10 years. A late modern artist studio-building complex in Lisbon built in the late 60ees was selected as the case study. Multiple methods of data collection and analysis, combining archive surveys with field and desk research where applied to provide a better understanding of the performance of the studio-building complex.

Based on the teaching experiments of João Filgueiras Lima at the Faculty of Architecture of the University of Bahia, Brazil, Cardoso and Minho explore didactic methodologies at master's level, concerning the preservation of modern buildings. Moreover, the study with a real case fosters to understand it's constructive modernity. The pre-fabricated structure of a Germano Tabacof Pavilion is analysed with the engineering students, and experimental modules are built to explore solutions for new social problems, through a method named participatory rehabilitation project.

Laiño presents a safeguard project of the School of the Nuestra Señora de los Milagros, a design by the Spanish architect Luis Laorga, of 1965. The methodology Laiño presents is based on her postgraduate studies at Genéve, and starts with a meticulous survey of the building and design interests of the author, available materials and technologies at the time of construction, and even the circumstances in which the commission was taken. Stressing the importance of the economic viability of preservation, Laiño brings the importance of authorship in the process of interpretation and restoration.
Hadhigi and Pinto Duarte studied William Hajjar's single houses using shape grammar as a computational design methodology to analyse the hybridity phenomenon between European modernism and traditional American architecture. Using deductive based logical systems to study objects produced by abductive reasoning, bring rigidity to the description of the creative process of architecture. Ifthis rigidity of logical reasoning is a quality, is what we still need to answer.

Taking in consideration the modern education lesson proposed by Gropius, the pedagogical experiences are also focused in establishing a design or a research methodology to reuse the modern principles – methods are more important than skills.

INTERDISCIPLINARITY on Reuse of Modernist Buildings

Architecture is the art, science and business of building. Within so many different fields of action, varying from furniture to urban and landscape design, architects have the privilege of dealing with a wide range of areas of knowledge: from history and theory of architecture to building design and construction knowledge, from socio-cultural patterns to heating, cooling and lighting systems; from restoration and preservation methods to environmental systems. Connecting them, many tools have been developed: architects draw, write, calculate, design, manage. Between society, clients, engineers, lawyers and many other actors, but mostly acting in a plan somewhere between art and technique, social sciences and engineering, architects have the increased task to foster dialogue and find the balance among these fields, through a holistic understanding of the reality.

Fig. 2: Ana Goes Monteiro, lecture, RMB Conference, Santa Clara-a-Nova Convent, Coimbra, 2018

Fig. 3: Alexandra Alegre, lecture, RMB Conference, Santa Clara-a-Nova Convent, Coimbra, 2018

Modern Movement involved a new approach to architectural design, through adventurous experiments in the use of new materials and techniques, space creation and social transformation. More than five decades after, some of these sites are facing a dangerous state of social, functional and technical obsolescence, while keeping their resilience in so many other aspects. Contemporaneity gives us the increased challenge of reuse. We all know that millions of dwellings lie empty in Europe, and renovation has been proven to be a much more affordable solution than demolition, leading us to the unavoidable conclusion that one should be exploring the possibilities of using existing structures, instead of pursuing the option of expanding indiscriminately; the reuse could be considered as a vehicle for the XXIst century city sustainable development. Education stands as the fundamental key vehicle connecting all these paradigms. In this sense and following Boaventura Sousa Santos (1992, p. 32) analyses of the emergent paradigms, the design process of reusing modernist buildings have to deal with several disciplines or themes, "that are like galleries along which the various kinds of knowledge move, meeting each other".

This session presents four pedagogical experiences developed with the goal of introducing learnings on reuse in the academic field of modern architecture.

Vicenzo Riso explores a work developed in a Design Studio course unit of the Integrated Master in Architecture, at the School of Architecture of University of Minho, Portugal, where students were asked to work on the refurbishment of the Municipal Market of Santa Maria da Feira (Fernando Távora, 1959) that have lost its function. The main goal was to provide students with the skills to understand the relevance of the building within modern Portuguese architecture and the complexity of setting out strategies to bring the market back to

life, in a sustainable way.
Orsola Spada and Fabrizio Civalli present their Master thesis, developed at the University of Ferrara, as a statement of the importance of research within the process of architectural restoration. The thesis presents a deep and wide study of the ONMI (Opera Nazionale Maternità ed Infanzia, National Organization for Maternity and Childhood) buildings (Umberto Nordio, 1925, Trieste, Italy), from the urban development of Trieste to the author's biography, the evolution of the building over time, including all the alterations, presenting possible solutions that take into consideration all the building components. The goal is to provide the study to the municipality that owns the building, as deeply studied recommendations on how to intervene in the building.
Lourenço, Pacheco and Heitor reveal the "architect for three hours" initiative, run in Técnico University of Lisbon since 2014, as part of the wider program "summer at Lisbon University". Devoted to secondary school students, the aim of the project is to raise their awareness on the urban and architectural fields, by "collecting extensive and relevant data on collaborative and problem-solving practices through design", allowing "to better understand the aspirations, habits, values and knowledge of the youngsters regarding the use of space and urban issues", and introducing a collaborative and interdisciplinary approach to architecture.

Alegre paper discusses some historic examples of modern facilities for children, designed from a multidisciplinary perspective. Broadly, the modern movement gave attention to such facilities not only because they were new programs, but also educating childhood through their everyday facilities was the best way to construct new aesthetics. Therefore, such an ambitious project would have to have a multidisciplinary approach to respond to urban, sociological, medical, architectural, economic and other issues. Studying the complex processes of this design of childhood facilities produced during the modern movement, could help design "better urban, educational and recreational spaces for our children to learn, play and live".

Rita Chaves and Larissa Chaves paper discusses the process of rehabilitation of a former slaughterhouse in a program for the Universidade Federal de Pelotas. The importance of historical information on the industrial heritage of the Anglo Slaughterhouse is related to the cultural identity of the City. The interdisciplinary study of the history of the economic cycle that allowed to construct the slaughterhouse allows to correctly prospect the rehabilitation of industrial heritage.
Llaria La Corte reports on the Giancarlo Di Carlo pedagogic project in Urbino – to start a new architectural education based on mass University, and opening it to external urban, architectural and social problems, and bringing a new vision about the tasks architects perform in society. The buildings that De Carlo designed for Urbino University Residential Colleges, translated this openness to the surrounding city, incorporating the urban context and in-forming the huge transformation University was having in those days.

Ana Goes Monteiro reports on her experience at Campinas University - Unicamp, of tutoring graduation projects. The topic is about abandoned buildings in the city centre of São Paulo that are occupied by homeless families, and starts with a minute assessment: the ethnographic record of the use of the building, taking the building occupation as a program for the refurbishment. From a technical point of view, the main objectives are to optimize the natural ventilation and insulation of the building. Taking in consideration the social aspects of the refurbishment through and ethnographic practice, the paper reflects on the architectural implications of this methodological process, based on an urgent interdisciplinary approach.

Carolina Coelho and Maria Catré defend how the close contact with the locus and its individuals provides a unique experience that cannot be replaced. In the framework of a pedagogical exercise conducted at the University of Coimbra, that experience is explored through several tools – questionnaires, interviews, photo voice, photo elicitation, field notes, videos, photographs, and systematic writing and drawing – with the aim to understand the relationships between architecture and the socio-political frameworks, as the basis for a reuse project that answers to everyday needs of inhabitants.
The papers reveal happy examples of how interdisciplinarity and direct contact with the built environment were included in the academic field so that the practice of architecture can be effective in the development of sustainable human environments.

Fig. 4: Tim Peeters, ZUS, keynote lecture, RMB Conference, Santa Clara-a-Nova Convent, Coimbra, 2018

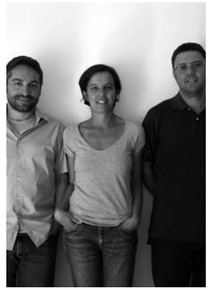
Bibliographic References

Freyling, C. (1993) Research in Art and Design. London: Royal College of Art / Research Papers, vol.1 nº 1, 1993/1994.
Gropius, W. (1937) Walter Gropius archives: Suggestions for the curriculum of an architect's training at Harvard. [n.p., 1937]. http://oasis.lib.harvard.edu/oasis/deliver/~hou00397
Gropius, W. (1951) "In search of better architectural education" in Giedion, Sigfried (ed.), CIAM, A Decade of New Architecture. Zurich.
Santos, B. de S. (1992). A Discourse on the Sciences. Retrieved from https://estudogeral.sib.uc.pt/handle/10316/10836
Schön, D. (1985) The Design Studio: An Exploration of Its Tradition and Potentials. London: Intl Specialized Book Services.
Till, J. (2008) Architectural Research: Three Myths and One Model, https://jeremytill.s3.amazonaws.com/uploads/post/attachment/34/2007_Three_Myths_and_One_Model.pdf

Session 1.0
TOOLS for Reuse of Modernist Buildings

COMOCO

Architecture collaborative practice



COMOCO Arquitectos is an architecture collaborative practice founded in 2001 by Luís Miguel Correia, Nelson Mota and Susana Constantino, all graduated from the Department of Architecture at the University of Coimbra (Portugal). Along with their practice as architects they are also researchers and educators. Luís Miguel Correia is Assistant Professor at the University of Coimbra, Nelson Mota is Assistant Professor at Delft University of Technology, and Susana Constantino is a guest lecturer at the Amsterdam Academy of Architecture.

The work developed by COMOCO explores the creative potential of a dialogue between the situation as found and the transformative potential of a design approach aware of its societal context. The projects for a Hotel in Lisbon (2001-2006), Castelo Novo's Castle (2003-08), Pombal Castle (2004-2013), and N10 Indoor are among their most important works. The latter was awarded the National Prize for Architecture in Wood 2013. Among other distinctions, they were nominated and runners-up in several architecture prizes such as Archdaily Building of the Year 2012 and Archdaily Building of the Year 2014, Construir Award 2012, National Prize for Architecture in Wood 2011, IV Enor Architecture Award 2009 and Diogo de Castilho Award. The work of the office has been widely published and exhibited in individual and collective exhibitions held in Portugal, Brazil, France, and Switzerland.

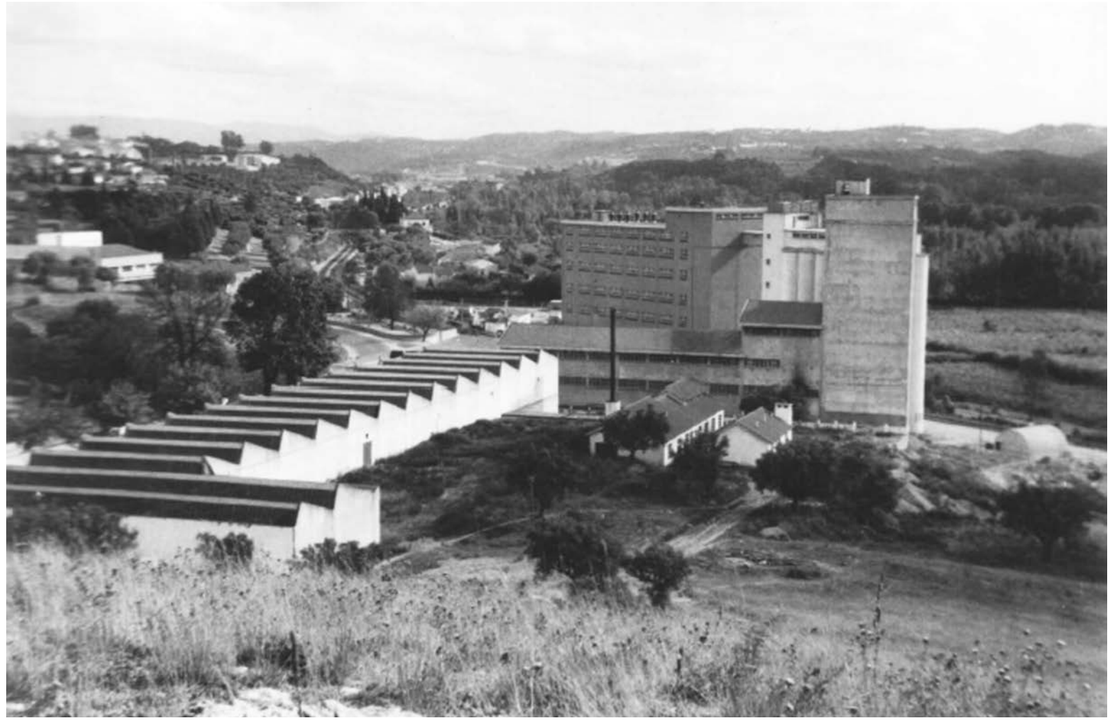


Fig. 1: FIACO Factory, 1st phase, 1967.

Building with Memory: N10 Eiras Indoor Sports Facility

Abstract

This paper discusses the projects designed by COMOCO arquitectos for an indoor sports facility in two different contexts: the first inside a disused cotton-spinning factory that was part of the industrial modernist heritage of Coimbra and the later inside an ordinary industrial storage hangar. In both cases, the project intended the re-use of the buildings, without attempting to change the character of the existing space. The approach of the office was based on strengthening the intrinsic qualities of the existing structures, regardless of their heritage status. These projects demonstrate the importance of using a critical assessment of the qualities of ordinary buildings and landscapes in contemporary processes of adaptive re-use.

architectural design // re-use // N10 Indoor Sports Facility

The grand architectural gesture built over a tabula rasa is now seldom spotted in the ordinary work of a European architectural office. To be sure, an important part of the commissions received by contemporary European architects deal with situations which demand the re-adaptation of all kinds of pre-existing architectural structures and urban infrastructures. The growing trend of adaptive re-use is not only due to economic constraints, though. Rather, it is triggered by a broadening notion of architectural heritage, which still includes singular monuments and highbrow architectural pieces but comprises also more prosaic structures, buildings or ensembles.

The aim of this paper is to present a project designed by comoco arquitects for an indoor sports facility built in an existing industrial storage hangar in the northern outskirts of Coimbra, examining the extent to which adaptive re-use also demands a critical assessment of the existing symbolic and formal qualities of ordinary buildings and landscapes.

The first experience: building in an abandoned factory

The project for the N10 Eiras Indoor Sports Facility, developed in 2012, was designed to establish a strong dialogue with the existing building – a warehouse hangar - where it was built in. Despite the banal architecture of the hangar, the experience of adding another layer to the building aimed to explore the full potential of the special characteristics found at the site.

While this project was installed in an ordinary warehouse, in the middle of a disordered logistic area in the border of the city, some years before comoco arquitects had been commissioned to design a similar project inside an abandoned cotton-spinning factory. This particular building was part of the industrial modernist heritage of Coimbra, built in the second half of the 20th century, after the urbanization plan presented in 1955 by Antão de Almeida Garrett. Some years before, in 1940, a previous plan design by the French urban planner Étienne de Groer had proposed for the first time to remove all the heavy industrial activity from the city centre, namely, from the downtown area, the Arregaça area and the S. Francisco Convent area. Following that first proposal, the Garrett plan presented, within a modernist zoning system, the definition for an industrial area to be developed in Pedrulha.

Between the 1950s and the 1960s several new factories were built in the Pedrulha's industrial area mainly along the railway and the national road that connects Coimbra to Portugal's main cities, Lisbon and Porto. These industrial buildings spread out on what used to be farmland surrounding Coimbra, creating a landscape that would resonate with the image of "machines in the garden" presented by the American critic Leo Marx (1964). After four decades of continuous industrial activity, from the end of the 1990's on, most of these factories were closed, starting a process of progressive decline. Soon the Pedrulha area became populated with the derelicts of Coimbra´s industrial past.

Comoco's first assignment to design a N10 Indoor was located in this context. In 2004 a group of young entrepreneurs commissioned the office to design a facility to support the installation of an indoor football field inside a rented parcel of one of those buildings,

Fig. 2: N10 Pedrulha Sport Facility, 2004.

Fig. 3: N10 Eiras Sports Facility, 2012.

the previous FIACO factory. The space, in an advanced stage of dereliction, was an open space divided by a structural line of columns, which separated two different floor heights and two different types of ceilings. Due to these conditions the architects' initial decision was to design an element that should be temporary and reversible, an installation that could be easily disassembled without consequences for the original structure. To accommodate the program (a reception area, a small cafeteria and an events hall) comoco designed a box to be installed on the edge of the room reinforcing the unity and horizontality of the space. With a metallic structure coated with plasterboard, this new white volume creates an autonomous space inside the existing building.

Moving to the banal

Encouraged by the success of the sports facility and looking for a more permanent solution, the clients of the N10 Pedrulha decided to expand their business and, in 2011, they ventured on another undertaking. Curiously enough, the strategy was somewhat similar to the first initiative but this time they acquired an existing industrial storage facility in Eiras, an area located on the northern outskirts of Coimbra. While in the first case the existing construction was one of the examples of modernist industrial architecture, the building chosen to accommodate the new venue was an inconspicuous warehouse. Moreover, the budget for the new construction was, once more, extremely reduced and the project should be designed and built almost simultaneously. The time factor was a crucial aspect for the commercial success of the operation. Altogether, instead of receiving these constraints as a disappointing prospect for the project, comoco saw them as an opportunity to develop further the creative and transformative potential of the situation "as found".

The space available for the new facility was a completely open hangar, divided in two parts by a row of steel columns. An ordinary metallic

Fig. 4 and 5: N10 Eiras Sports Facility, 2012.

structure supported the vaulted roof, and an intense diffuse light entered from the walls' upper windows and the ceiling's translucent skylights. The emptiness and the austerity of the space was not a symptom of dereliction, as in the previous case, it was rather part of the spatial characterization of the building. The goal of the project was not to repair or to change the character of the existing space, but instead take advantage of its intrinsic characteristics, adding a new element that could activate the dormant space.

The program was similar to the previous commission, though this time in addition to the reception and events room the building should also accommodate locker rooms, toilets and showers. Once again comoco designed a freestanding element, a detached pavilion that organizes the two main areas at both sides of the reception, which was located at the centre next to the entrance.

The project for the amenities block began taking shape after two straightforward decisions: location and materiality. The location resulted from the position of the two indoor football fields, which was itself determined by the physical characteristics of the existing hangar. The new volume occupies the entire width of the hangar, in the space left over by the football fields inside the nave. The design decisions regarding the materials used, were fundamentally based on the definition of an affordable building system that could be built quickly, as per the requirements of the clients.

While in the first project, for the Pedrulha area, the new block was a completely autonomous object, the project for Eiras explores a more ambiguous relation with the space around it. The ceiling of the new element encloses the space inside it, but at the same time lets the light from above come in and reveals glimpses of the hangar's roof.

The starting point for its materialization was a building system that combines these ideas, negotiating the different scales and boundaries and trying to create an intense dialogue between the two structures, the new and the existing. A porticoed frame made of American pine wood beams and columns creates the basic structure. The infill of this structure, both in the roof as in the walls, is done with MDF boards, assembled in such a way as to perform both structural and formal roles in the overall construction. The raw use of standard MDF boards is followed by a plain use of white ceramic tiles in the changing rooms and showers, and by designing the furniture components, which are also made of raw pine wood elements and black lacquered MDF panels. Furthermore, the layout for the illumination - simple bulbs pending from the hangar's ceiling up to the new structure - was designed in order to explore an intense and expressive plasticity out of the volume's formal and material characteristics.

The second added element was a new entrance. The tunnel-like steel element, pierces the existing wall to announce in the outside the entrance to the facility. This self-standing element is the only alteration made to the existing building and the only exterior signal that a renovation of the building was undertaken.

Reassessing the memory of the ordinary architecture

The design approach for the N10-Eiras Indoor Sports Facility was thus

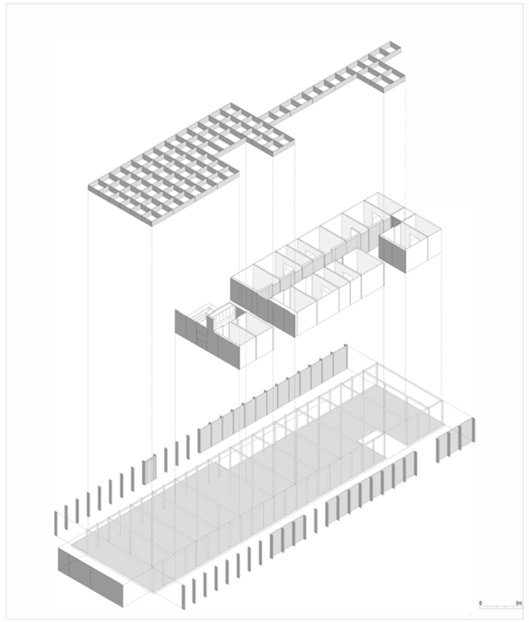


Fig. 6: N10 Eiras Sports Facility. Axonometric.

triggered by a delicate negotiation between physical, budgetary, and material limitations with a strong commitment to creating a symbiotic relation between the new elements and the existing structure.

Despite the apparent simplicity of the context, or the basic elements that made up the final result, the built outcome is the result of a critical design decision-making process. Currently, adaptive re-use is not only a topical notion for monuments or modernist architectural masterpieces but also includes ordinary structures and urban containers. As Javier Monza (2012) puts it , listed monuments are not anymore the only objects of the "re-process", but also any ordinary urban container. In both of them memory can be activated. We believe that, in either case, it is possible to critically explore their symbolic and formal qualities or, as we can call it, the performative role of the derelicts of the past.

Fig. 7: N10 Eiras Sports Facility, 2012.

Fig. 8: N10 Eiras Sports Facility, 2012.

Bibliography

Giovanelli, A. (2013). Esercizi di riuso dell'architectura. Arricia: Edizioni Kappa.

Groer, E.de (1948). Anteprojecto de urbanização, de embelezamento e de extensão da cidade de Coimbra. Coimbra: Coimbra Editora.

Ferreira, B. (2012). Arquitetura Industrial de Coimbra no século XX. A Zona da Pedrulha. Master Dissertation, University of Coimbra.

Marx, L. (1964). The Machine in the Garden: Technology and the Pastoral Ideal in America. New York: Oxford University Press.

Monza, J. (2012). "Remediate, Reuse, Recycle. Re-processes as atonement". A+T, RECLAIM Remediate Reuse Recycle, 39-40, 4-25.

Santos, L. (1983). Planos de Urbanização para a cidade de Coimbra. Coimbra: Museu Nacional de Machado de Castro.

Image Credits

Fig. 1: FIACO Factory, 1st phase, 1967. Source: Bruna Ferreira, Arquitetura Industrial de Coimbra no século XX. A Zona da Pedrulha. Master Dissertation, University of Coimbra, 2012, p.167.

Fig.2: N10 Pedrulha Sport Facility, 2004. Foto: comoco Arquitectos

Figure 3: N10 Eiras Sports Facility, 2012. Foto: FG+SG, Fotografia de Arquitectura

Fig. 4 and 5: N10 Eiras Sports Facility, 2012. Foto: FG+SG, Fotografia de Arquitectura

Fig. 6: N10 Eiras Sports Facility. Axonometric. Source: comoco Arquitectos.

Fig. 7: N10 Eiras Sports Facility, 2012. Foto: FG+SG, Fotografia de Arquitectura

Fig. 8: N10 Eiras Sports Facility, 2012. Foto: FG+SG, Fotografia de Arquitectura

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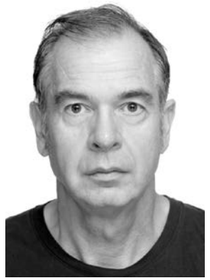

Christian Gänshirt is an Associate Professor at Xi'an Jiaotong-Liverpool University in Suzhou, China. He authored the first monograph on design tools (Tools for Ideas, 2007), which has been translated to English and Chinese, and is being used internationally in architectural education. He has been Visiting Professor at The University of Hong Kong (2017) and at Kassel University (2008/09). He taught at the Virginia Polytechnic Institute & State University (Virginia Tech), the Berlin University of the Arts, Hanover University, and the Brandenburg University of Technology. He worked with José Paulo dos Santos, and was a project architect in the office of Álvaro Siza. He is licensed by and registered with the Berlin Chamber of Architects since 1996, when he set up his own practice. He received his Dr.-Ing. from the Brandenburg University of Technology, was a visiting student at the École Polytechnique Féderale de Lausanne, and graduated from Karlsruhe University.

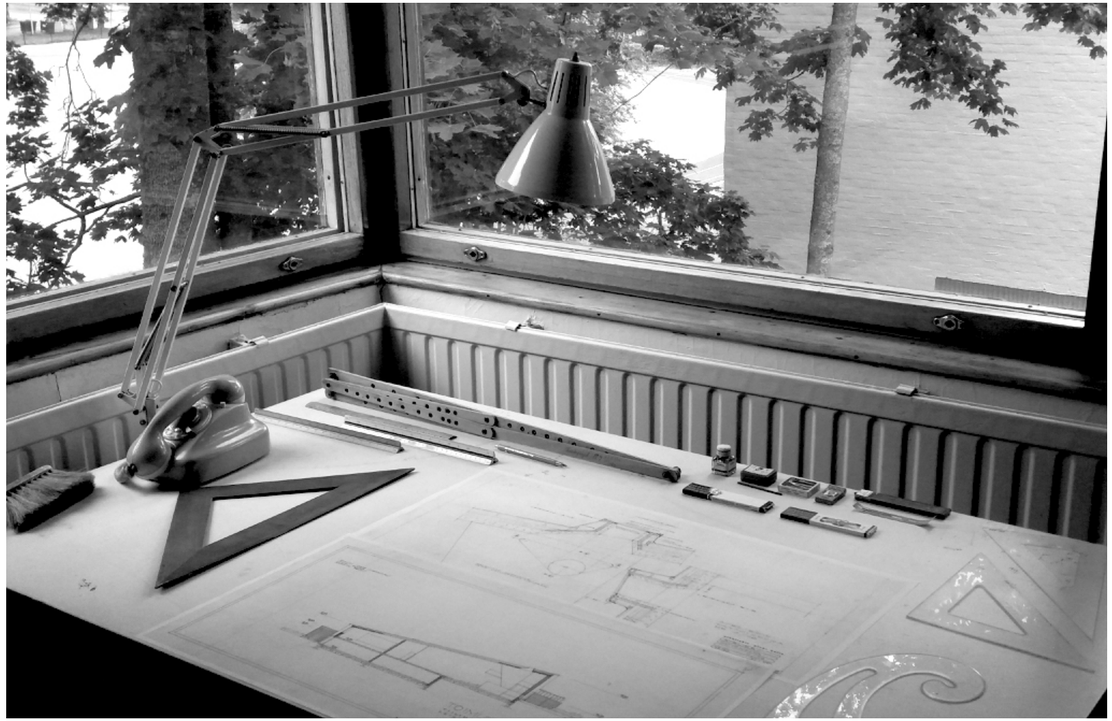

Fig. 1: Architects workplace around the middle of 20th century.

In Search of a Taxonomy. Design Tools for the Reuse of Modernist Buildings

Abstract

This paper[1], which is a short version of a paper published in Joelho #09[2] at almost the same time, re-discusses the question of design tools, a metaphor that lately has been used for different things such as simple objects, media, cultural techniques, computer programs, formal principles or thinking strategies. Reflecting upon a review of recent research on design tools, a taxonomy will be proposed. The key tool for the reuse of modernist buildings though remains the building itself, and its related narratives.

Design Tool // Design Research // Taxonomy // Matrix // Mapping // Building // Narrative

Introduction

The question of what design tools are, how they work and how they can be used for architectural design has become a major research topic over the last decade, at least in German speaking academia. My initial understanding of the term design tools in the sense of media used to express and develop design (Gänshirt, 2007) was challenged in various ways. So much so that it was no longer tenable and it needed to be revised. After reviewing and reflecting upon the body of research published over these years, we now can formulate new answers regarding the initial question.

Main Text

The body of research on design tools, which I have discussed previously[3], represents very different perspectives of design tools; still, all of them are somehow valid. In the end, it seems it is rather the use we make of something, more than the things we use, that defines design tools. The term "design tool" is, linguistically speaking, at times a metaphor without any binding scientific definition, and sometimes it can literally be a physical tool used for design purposes. Its openness emphasizes the potential instrumentality of all things regarding all sorts of design activities. Over the last decade, it has been used for things as different as simple objects, media used for design purposes[4], cultural techniques, materials, artifacts, computer programs, design activities, or more abstractly, formal principles or thinking strategies. With this in mind, does a term still make sense if it can be used for virtually anything? It certainly challenges our understanding of the term if it is used for activities like collecting or hiking. Nevertheless we can maintain that it does make sense, because it provides us with the very specific perspective of someone who is actively engaged in designing. In addition, it implies the challenge to better understand and represent the large range of possible design tools and uses.

Theoretically, we must conclude, anything can become a design tool, and in many different modes. Already a simple piece of stone, picked up from the border of a street, can be used in so many different ways: For sketching, drawing, in a gesture, throwing (to pro-ject…), hammering (i.e. as a medium transmitting an energetic impulse), cutting (depending on it's shape), as a model (or part of), as a symbol, for aesthetic contemplation (like a Chinese scholar's rock, Gōngshí, or a Chinese dream stone from Dali), as a color, material or texture sample, a stepping stone, to combine into a mosaic pattern, a stone garden, a street paving, a wall, an arc, a building, a city, etc. In practice, certainly there is more liberty in the choice and use of design tools than most of us previously imagined, but still many limitations and constraints are to be observed: practical, pragmatic, moral, legal, ethic, aesthetic, economic, intellectual ones.

In Search of a Design Tool Taxonomy

If anything can be used for design, the next question is how the design tools available can be ordered, categorized, or classified, if we can imagine something like a design tool taxonomy. One of the main difficulties of the body of research produced over the last decade is the apparent randomness of themes and topics addressed. Now the only design tools that seem to be missing are the ones "drawn with a very fine camelhair brush", or "that from a long way off look like flies", or those "belonging to the emperor", to quote from the arbitrary taxonomy of animals Jorge Luis Borges referred to an "unknown (or false) Chinese encyclopedia writer", when discussing the ambiguities, redundancies and deficiencies of existing classifications (Borges, 1942). This randomness makes it difficult not only to accept and fully understand the concept of design tools, but also to see which areas might have been overlooked, where contradictions or overlaps occur, and what importance in the larger field of design research should be given to single or groups of design tools, and if there are things currently called tools we should, for the sake of clarity, rather use other terms for.

What this research has demonstrated is that the initial table published in 2007, consisting of two columns, one of visual and one of verbal design tools (see Fig. 1), can be expanded in several ways. The design cycle now becomes the core of a map of design tools, but besides the visual and the verbal ones, other groups should address the other senses: haptic, acoustic, olfactory and even gustatory groups could be defined (the latter being of no relevance for architecture though). Overarching all senses would be the group of synesthetic design tools, addressing the comprehensive architectural and atmospheric experience. The most important synesthetic design tool would be the human body, which carries the organs to perceive a situation simultaneously with the five Aristotelian senses, plus all the others, which have been identified since. Each one of these sensory design media/tool groups (A) can be used in many ways, most importantly the two fundamental modes of design thinking: creative and critical, the outcomes of which can be expressed and perceived. These columns become a matrix when combined with the spectrum of possible design use/tool categories (B), ranging from the immaterial through the medial to the most basic material uses of design tools. Without implying a hierarchy, the continuum would start on the immaterial side with philosophies (including ethics and aesthetics), theories,

Fig. 2: Table of visual and verbal design tools (Gänshirt 2007, p. 102).

concepts, ideas and narratives, producing or influencing, next ways of design thinking like creative and critical, visual and verbal thinking. Then there would be the ways of design acting, on a more abstract level the cultural techniques and more concretely the media uses those are based on, which always are means of perception as much as means of expression, then all sorts of apparatuses, machines and physical tools. The works and artworks produced by these means

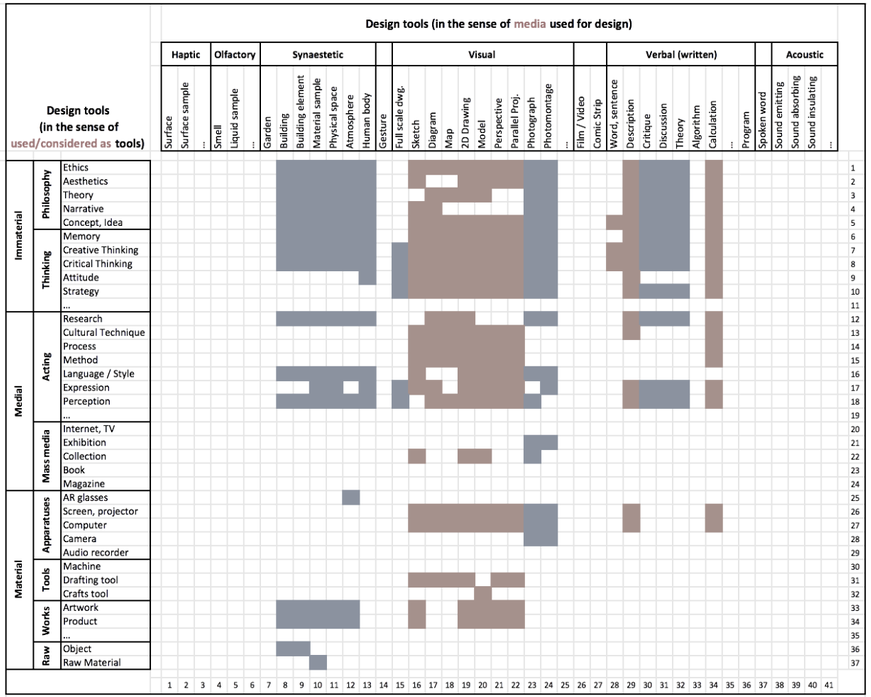

Fig. 3: Open Matrix of Design Tools. Red: design tools use/media combinations which are conventionally used in architecture practice; Blue: combinations which are of additional/special interest for the reuse of modernist buildings (cg, 2018).

would be the next category, followed by the simple objects (like for example bricks, boards or beams) and raw materials available for design uses.

In conclusion, we can propose to order design tools in a matrix where the columns are defined by groups of design media/tools (group A), grouped regarding the senses they address, and the rows by design use/tool categories (group B), according to the possible, observed or imagined uses we can make of them (Fig. 2). The media/tools (group A) are mostly the ones closer to the project and the manifold ways of representing it, the use/tools (group B) are nearer to the designing individuals and the things available to them. Theoretically, each design medium/tool has the potential to address all senses (but would have a tendency towards one or two of them) and to be used or reflected in all the different design use/tool categories mentioned above, from the most basic material ones to the most philosophical. Addressing these ambiguities might help us to be a little clearer and more explicit in the many ways design tools are currently discussed. Even though this matrix needs to be considered as an open one, and one that theoretically has infinite numbers of columns and rows, and each column could also become a row and vice versa, the grouping of design tools according to (A) the senses they address and (B) the uses we make of them would allow us to better understand the structure of the research field and it's inherent ambiguities.

Design Tools for the Reuse of Modernist Buildings

Even though some still maintain that, "the drawing is the architect's tool,"[5] it is obvious that the complexity of contemporary architecture practice requires more design tools than just one. Even nowadays, the way the term drawing is used encompasses everything from sketch, scale drawing, axonometric or perspective views to photorealistic renderings created by the latest software. Besides that, architects produce different types of scale models and write all sorts of texts, ranging from project descriptions to entire books, to develop and convey their ideas. They routinely rely on the calculations of engineers and the work of professional photographers. Discussing the use of drawings, models, sketches and computers, Álvaro Siza for example explains that those design tools have to be used in complementary ways, because each of them can be misleading (Couto Duarte, 2016, Anexos p. 34, 36)[6]. The contents of his archive at the Serralves Foundation in Porto reveal the instrumentality of "correspondence with his clients, the photographic record of the places where the works are to be built, relations with regulatory authorities and the opinions of the multiple actors involved in the construction processes, the models that support the perception of the proposals, the minutes of meetings and reports of the tensions arising at the building sites"[7] for Siza's architectural production (Tavares, 2017).

The research discussed above reveals a broad, at times confusing, range of design tools and practices used today. Here an important question comes up: How can we find the right design tool for a given task?8 The open matrix described above might be useful for that purpose, besides from providing a more coherent way of ordering and categorizing design tools (Fig.2). Mapping the spectrum of tools/uses on the categories of tools/media and vice versa allows one to search systematically for the most promising combinations. Showing only the larger or more general categories of tools, the matrix already adds up to 36 rows for tools/uses and 40 columns for tools/media, which combined result in more than a thousand different possibilities. Rows and columns left without text are indicating the openness of

the matrix; they can be filled in as needed. The matrix would endlessly expand by going deeper into detail within the categories (for example the category of 2D drawing would then split up into plan, section, elevation, details, in different scales…).
Now we can use this matrix to tentatively map those combinations of design tools/media with design tools/uses we consider most interesting or especially useful for design tasks related to the reuse of modernist buildings. In the matrix diagram (Fig. 3), those are marked with blue color. Red areas indicate combinations that are more conventionally used in architecture practice. Because of their availability, the habits and conventions of our profession they are often the first choice. Those "standard tools" are mostly in the group of visual design tools, used in many different ways, plus verbal descriptions and calculations. They represent a mindset that usually develops ideas for structures that do not exist yet, because of that it has to rely on rather abstract and reduced ways of representation. On the other hand, with a design for the reuse of an existing building, a whole range of other design media and uses comes into reach, which is much more concrete, complex, and closer to multidimensional reality. Obviously, the existing building itself is not only a challenge but also a great opportunity. It represents both, a wealth of information and possibilities, to be explored in combination with a series other than "standard" design tools. The most unavoidable constraints are represented by the existing structure, it's history and pretended future uses.
To understand an existing building as a design tool requires adopting a different mindset, one that embraces the experience of immersing oneself in the built space and the atmosphere it creates, using one's own body with all its senses as an exploratory device for synesthetic data collection. The existing building, which at the same time is the representation of an architectural project (awaiting improvement) and the project itself (demanding respect), invites the practice of design in close contact to a given spatial reality. A building also is an invaluable source of information, to be experienced, discussed, criticized, sketched, drawn, photographed, or 3D-Laser-scanned and transferred into BIM software. What is specific in modernist buildings are the modern, and sometimes problematic materials used (often in minimalized dimensions), a design narrowly conditioned by previously given functions, which makes a change of functions more difficult, and aesthetics that at times can be perceived as problematic.
On top of that, the existing building comes with a history, with (maybe forgotten) narratives based on it's creation, and initial uses, which later on became obsolete. Because it is modernist, the building must also have some kind of relation (which might be strong of weak, positive or negative) to the architectural theory of the time it was created. This immaterial part of the building can become an important resource for the reuse-project to develop. It offers the possibility to use the verbal design tools in order to create a narrative based not only on it's history and previous uses, but on the discussion, critique and theory of modernist architecture itself. A narrative, which then could become instrumental to establish the direction and the meaning of the reuse project.

Conclusion

Over the last decade, the question of what design tools are, how they work and how they can be used for architectural design has been responded to in many ways. Research on design tools since 2007 sums up to more than 25 books published, most of them doctoral dissertations, conference proceedings or exhibition catalogues (individual papers were not considered here)[9]. An evaluation of these publications led to the conclusion that the term design tool is mainly understood in two ways: Firstly, the visual, verbal, combined and synesthetic media used for design, and secondly the broad range of material, medial and immaterial uses made of them. An open matrix based on these categories has been proposed which can now be used to map, and identify promising combinations of design media and uses. Applied to a reflection on tools for the reuse of modernist buildings, the matrix shows that besides the usual visual and verbal design tools, synesthetic media like the building itself, the atmosphere it produces, and the human body exploring it are additional design tools to utilize, as much as critique, discussion and theory of modernist architecture. A narrative rising from the buildings history set in relation to modernist theory could become a strong conceptual basis for a design process.
For further research, the proposed matrix still needs to be tested, refined, and probably expanded[10]. It can be used to map and compare existing design tools, or to identify areas for future research. Used within a design process, it may help to map the ongoing activities, and to identify the next steps to take. The matrix will hopefully raise the awareness for and facilitate positioning within the large range of available possibilities of design.

References

Ammon, S.; Froschauer, E. (eds.)(2013). Wissenschaft Entwerfen ("The Science of Design"), (Conference proceedings), München: Fink
Ammon, S.; Hinterwaldner, I. (eds.)(2017). Bildlichkeit im Zeitalter der Modellierung. Operative Artefakte in Entwurfsprozessen der Architektur und des Ingenieurwesens, (Conference proceedings), München: Fink
Borges, J. L. (1942). El idioma analítico de John Wilkins, in: La Nación, Argentina, 8 February 1942, quoted after "The Analytical Language of John Wilkins", available on http://www.alamut.com/subj/artiface/language/johnWilkins.html, accessed July 15, 2018
Brillhart, A. (2018). The Boundless Workshop: Tools and the Representational Framework of Construction. Doctoral dissertation, Hangzhou: China Academy of Arts
Buchert, M. (ed.) (2014). Reflexives Entwerfen. Entwerfen und Forschen in der Architektur. (Conference proceedings), Berlin: Jovis
Couto Duarte, J. M. (2016). Para uma Definição de Maqueta: Representação e Projecto de Objectos Arquiectónicos. Doctoral dissertation, Lisbon: Universidade de Lisboa
DeKay, M.; Brown, G. Z. (1985, 2000, 2014). Sun Wind and Light, architectural design strategies. Hoboken: Wiley
Dillenburger, B. (2016). Raumindex. Ein datenbasiertes Entwurfsinstrument. [Space Index. A data-based design instrument] Doctoral dissertation no. ETH 23596, Zürich: ETH
Ehrlich, C. (1999). Die Konstruktion der Idee und ihre Werkzeuge. In: Cloud-Cuckoo-Land – International Journal of Architec-tural Theory, No. 1/1999, available on http://www.cloud-cuckoo.net/openarchive/wolke/deu/Themen/991/Ehrlich/ehrlich.html, accessed July 2018
Fischer, T. (2008). Designing (tools (for designing (tools (for ...)))). Doctoral dissertation, Melbourne: Royal Melbourne Institute of Technology (RMIT) University, available on https://researchbank.rmit.edu.au/view/rmit:9761, accessed July 2018
Fitz, A.; Lenz, G. (eds) (2015). Vom Nutzen der Architekturfotografie / Architectural Photography and Its Uses. Basel, Berlin: Birkhäuser

Froschauer, E. M. (2019). Entwurfsdinge. Vom Sammeln als Werkzeug moderner Architektur. Berlin, Birkhäuser (forthcoming)
Gänshirt, C. (1999). Sechs Werkzeuge des Entwerfens. In: Cloud-Cuckoo-Land – International Journal of Architec¬tural Theory, No. 1/1999, available on http://www.cloud-cuckoo.net/openarchive/wolke/deu/Themen/991/Gaenshirt/gaenshirt.html, accessed July 2018
Gänshirt, C. (2007, 2011). Tools for Ideas, Introduction to Architectural Design. Basel; Boston: Birkhäuser, 2nd ed. Basel: Birkhäuser; Chinese ed. Beijing: China Architecture and Building Press
Gänshirt, C. (2008). Werkzeuge des Entwerfens. Untersuchungen zu Praxis und Theorie entwurflichen Handelns. Doctoral dissertation, Cottbus: Brandenburgische Technische Universität
Gethmann, D.; Hauser, S. (eds.) (2009). Kulturtechnik Entwerfen. Praktiken, Konzepte und Medien in Architektur und Design Science. (Conference proceedings), Bielefeld: Transcript
Gethmann, D.; Eckhard, P.; Wagner, A. (eds.) (2015). Archiscripts. GAM Graz Architecture Magazine 11, Basel: Birkhäuser
Gerber, A.; Patterson, B. (eds.) (2013). Metaphors in Architecture and Urbanism. An Introduction. (Conference proceedings), Bielefeld: Transcript
Gerber, A. (2012). Theorie der Städtebaumetaphern. Peter Eisenman und Stadt als Text, Doctoral dissertation, Zürich: Chronos
Hartmann, J. (2016). Wiederkehr und Mehrdeutigkeit, Entwurfswerkzeuge der Architektur. Doctoral dissertation, Wiesbaden: Springer Vieweg
Hillnhütter, S. (ed.)(2015). Planbilder: Medien der Architekturgestaltung. Kunsthistorisches Jahrbuch für Bildkritik, Bildwelten des Wissens Bd. 11, Berlin: De Gruyter
Hnilica, S.; Sonne, W.; Wittmann, R. (eds.) (2007). Die Medien der Architektur. Eine Ausstellung des A:AI Archiv für Architektur und Ingenieurbaukunst NRW, Dortmund: A:AI
Hnilica, S. (2012). Metaphern für die Stadt. Zur Bedeutung von Denkmodellen für die Architekturtheorie. Bielefeld: Transcript
Krasny, E. (2008). The Force Is in the Mind. The Making of Architecture. (Exhibition catalogue), Basel, Boston, Berlin: Birkhäuser
Locher, H.; Sachsse, R. (eds.) (2016). Architektur Fotografie. Darstellung – Verwendung – Gestaltung. Transformationen des Visuellen Band 3. Berlin, München: Deutscher Kunstverlag
LU, C. (2014). Carpentry in Southern China. Documentary Film.
Moutinho, N. A. (2016). A Cor no Processo Criativo - O espaço da cor no desenho de arquitetura. Doctoral dissertation, Lisbon: U. Lisboa
Morrison, J. (2017). The Hard Life. Zürich: Lars Müller
Peichl, G. (2013): Die Zeichnung ist die Sprache der Architekten. [The Drawing is the Architect's Language], edited by Eva-Maria Barkhofen, Berlin: Akademie der Künste
Reichle, I.; Siegel, S.; Spelten, A. (eds.)(2008). Visuelle Modelle. München: Fink
Schmal, P. C.; Elser, O. (eds.) (2012). Das Architekturmodell: Werkzeug, Fetisch, kleine Utopie. (Exhibition catalogue Deutsches Architektur Museum Frankfurt am Main), Zürich: Scheidegger & Spiess
Schmitz, T. H.; Groninger, H. (eds.) (2012). Werkzeug – Denkzeug. Manuelle Intelligenz und Transmedialität kreativer Prozesse. (Conference proceedings), Bielefeld: Transcript
Schmitz, T. H.; Häußling, R.; Mareis, C.; Groninger, H. (eds.) (2016). Manifestationen im Entwurf. Design – Architektur – Ingenieurwesen. Bielefeld: Transcript
Sonne, W. (ed.) (2011). Die Medien der Architektur. (Conference proceedings), Berlin, München: Deutscher Kunstverlag
Stapenhorst, C. (2016): Concept. A Dialogic Instrument in Architectural Design. Doctoral dissertation, Berlin: Jovis
Schultz, H.(2014). Landschaften auf den Grund gehen. Wandern als Erkenntnismethode beim großräumigen Landschaftsentwerfen. Doctoral dissertation, Berlin: Jovis
Tavares, A. (2017). Matéria-prima: Um olhar sobre o arquivo de Álvaro Siza. [Raw Material: A View of the Archive of Álvaro Siza.] 'From the Collection' series vol. 7, Porto: Serralves
Vrachliotis, G.; Kleinmanns, J.; Kunz, M.; Kurz, P. (eds.)(2017). Frei Otto: Denken in Modellen. (Exhibition catalogue), Leipzig: Spector
Wendler, R. (2013). Das Modell zwischen Kunst und Wissenschaft. München: Fink
Wittmann, B. (ed.) (2018). Werkzeuge des Entwerfens. Schriften des IKKM - Internationalen Kollegs für Kulturtechnikforschung und Medienphilosophie Band 30, Zürich, Diaphanes

Notes

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[2] See Gänshirt 2018
[3] For the liturature used, please see the list of references below. For the discussion, please see the full version of this paper, Gänshirt 2018, pp. 103-109
[4] The author would like to thank Shayne Jones for this clarification.
[5] See for example Peichel, 2013
[6] Anexo B, Interview with Álvaro Siza Vieira, 2012, p. 34: "João Miguel Couto Duarte: Ao longo de um projecto, há fases em que utiliza mais a maqueta, outras em que utiliza mais o desenho, ou é indiferenciado? Álvaro Siza Vieira: Têm de ser complementares, assim como o esquisso tem de ser acompanhado, muito rapidamente, pelos primeiros esquemas [desenhados] à escala. Tem de haver um diálogo. Todos os meios que nós usamos são também meios de enganar, enganam muito." P. 36: "ASV: Têm de ser utilizados muitos meios. JMCD: No fundo, trabalha com o cruzamento de todos esses meios. ASV: É. E também com o computador (...) é imprescindível. (…) Alterou muito o trabalho de arquitectura."
[7] Quoted from: https://www.domusweb.it/en/news/2016/06/14/serralves_museum_raw_material.html, accessed August 22, 2018
[8] Question raised by Professor Gonçalo Canto Moniz during a discussion at the the RMB conference in Coimbra, April 2018
[9] Please see the references listed below.
[10] In case you would be interested in working with the matrix, please contact the author for a free copy of the Excel file.

Image Credits

Fig. 1: Architects workplace around the middle of 20th century,
Fig. 2: Table of visual and verbal design tools (Gänshirt 2007, p. 102)
Fig. 3: Open Matrix of Design Tools. Red: design tools use/media combinations which are conventionally used in architecture practice; Blue: combinations which are of additional/special interest for the reuse of modernist buildings (cg, 2018)

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Fig. 1: The first Salvador' Road Station, newly built.

Requalification of the old bus station of Salvador

Abstract

This article aims to present the academic work developed in the Professional Masters in Conservation and Restoration of Monuments and Historical Centers (MP-CECRE), of Federal University of Bahia. Entitled "Requalification of the Old Bus Station of Salvador", our research includes surveys, diagnoses, and the proposition of a project for the aforementioned monument, one of the first modernist buildings of its category in Brazil and the first one prestressed concrete in our State.

Restoration and Conservation // First Bus Station // Modern architecture // Salvador da Bahia

Introduction

(...) even the contemporary and ephemeral of the fifties have become old: we must equip ourselves to conserve them and destine them to a new compatible use. It is necessary to give a new meaning to this building and from here to the urban requalification of the entire area. (Philippe Daverio apud BARDESCHI, 2010: 7-8)

The Armando Viana de Castro Bus Station was not our first choice as the object of study at MP-CECRE. Since our first proposal had already been worked on at CECRE (Specialization Course on Conservation and Restoration of Monuments and Historical Centers - when it was not yet a Professional Master's Degree), we were challenged to choose a new object. Knowing this, our advisor, who had been coordinator of the Working Group on Modern Architecture, developed at the Institute of National Historical and Artistic Heritage (IPHAN) between 2008 and 2009 (in which we worked as a trainee until 2010), suggested us to work with an example of modern architecture. Among the goods we had inventoried, countless were those who were scrapped, deprived of their features and functions - a weakened patrimony and, in many cases, not valued by the population in general - perhaps because it is still very current, both in time and in technique; perhaps because we live in the culture of the disposable, where we are "those who build and then slaughter", and "architecture is a mere instrumental and thus financial" (Philippe Daverio apud DEZZI BARDESCHI, 2010: 2). However, for us who believe that architecture must be eternal, the question is much more complex, it is a fundamental theme of our identity and as such we dislike seeing the unstoppable degrade" (Philippe Daverio apud DEZZI BARDESCHI, 2010: 2), whose speed of deterioration asks

(...) a new future for the great abandoned Cathedrals of industry that constitute the recognized physical testimonies of our Modern culture. Two are, in substance, the essential points of this interdisciplinary commitment: respect (and care) for the physical-material authenticity of the singularity, uniqueness and irreproducibility of our material patrimony; the commitment to extend as much as possible the concrete durability in the time of the original, through a respectful use of the performance, with the minimum of the minimum consumption of the existing resources. (DEZZI BARDESCHI, 2010: 9, emphasis in original)

Would specific protective measures be required or the elaboration of interventive norms especially focused on modern heritage? In Brazil, the creation of the Patrimony Service, current IPHAN, within the Secretariat of Education and Health, took place in strengthening modernity, said as the first genuine and legitimately Brazilian manifestation. As a symbol of this "Brazilianness", modern architecture was proclaimed as the direct heir of colonial culture and, as such, instruments for the construction of the state's equipment and apparatus, instituting and disseminating the "true face of Brazil" and aiming at integrating the country as a single national identity.

As a reflection of this policy, there is a significant part of modern buildings that is already born a "patrimony", which means that it is already a reason for protection in the immediate sequence of its construction. This is the case of the Brasilia Cathedral (inaugurated in 1970, after being registered by IPHAN in 1967) and Catetinho (1956 and 1959) in the Federal District; the Gustavo Capanema Palace (1947 and 1948) and the Aterro do Flamengo Park (1965 and 1965) in Rio de Janeiro. In Bahia, however, such a thing does not occur: the great majority of modern monuments does not have any kind of protection or caution. Thus, the modern architecture of Bahia not only fails to be the object of measurement for a better conservation of iconic buildings, but forgets the existence of the first unique Bus Station of the capital.

Fig. 2: The current disfigured image of the Bus Station.

Analyze, understand and propose

Although not well remembered, the first passenger station in the city of Salvador is one of the most important works of the 20th century in the State of Bahia, being responsible to articulate the capital of Bahia with other municipalities of the country and the main capitals. A remarkable event in an important point of inflection in the city history, innovative in technique, form and volumetry; in function, in space and in resonance with its cleverly chosen location.

Very naturally, our passenger terminal was among the suggestions of buildings of great importance to the State that would merit to be our object of study. Observing the unknown photographs of the beautiful newly-inaugurated building (Fig. 1), and failing to associate it with its current disfigured image (Fig. 2), awaked the desire to recover in spatiality, grandeur, beauty and significance, that good made obscure by the years. Bringing to light that architecture that remains unrecognizable, present in the daily life of the region of Sete Portas, would mean rescuing the "relation of scale ... with its observer", of this urban architecture, which fortunately we witnessed persisting in time, although atrophied:

It should be pointed out, however, in our line of reflection that one should not fall into the temptation to believe that the image can satisfactorily replace the artifact representative of our memory. It would be to accept that a photograph could take the place of the

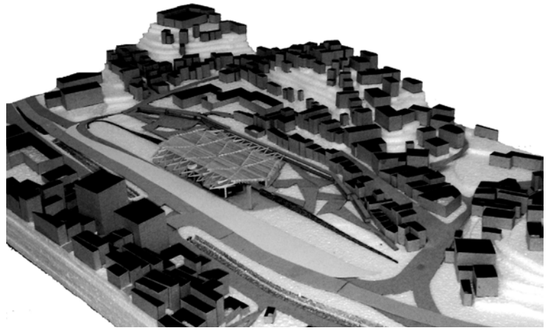

Fig. 3: Physical model for studies and proposition.

person or object of our affection. In the case of architecture, the gap of difficulties widens even more, because nothing, but nothing at all, can replace the relation of scale of the building with its observer, nothing can replace the concrete reality of stone, cement, iron, of the physical laws that govern the static organism, and of the pre-eminent demands that emanate from them. In fact, this difficulty of representation has already been brilliantly clarified by Zevi in Saber ver la arquitetctura[1]. (OLIVEIRA, 2008:13)

It also incited us to participate in this contemporary and controversial debate that involves the discussion of the criteria, methods, principles and techniques for intervention in the modern patrimony, so close in temporality, so fragile in the durability of materials and whose constructive system still does part of our compositional and uplifting modus operandi, an

(...) occasion to demand attention on the need to meditate on the criteria of valuation of the works in armed cement that must be saved to transmit to the future the inheritance of a century of construction art. A large number of buildings and infrastructure (I would like to call the latter "works of art", as it has been for centuries) was built from reinforced cement from the 19th century. (...) Many of these buildings were, however, demolished or replaced. Others, in turn, became a universally known reference point. Engineers and architects are today famous for their concrete works. That is why the scientific community has the task of preserving those, among such works, which are precious testimony to an epoch of our civilization and must therefore be transmitted "in the full richness of their authenticity." Such a mission of conservation agencies has two aspects: to introduce criteria to establish the "value" of such works and guide the choice; to define the conservation technique that does not risk the loss of authenticity (taking into account the difficulties encountered in combating concrete degradation and the corrosion processes of the reinforcement). (DEZZI BARDESCHI, 2010: 33-34)

In such a complex element, field visits, researches, data collections and surveys of historical, geomorphological, economic and socio-cultural information became essential for its understanding, beginning with the logic inherent in the original project, transcending their successive occupations and uses, encompassing materials, techniques and constructive systems. The identification of pathologies was also prioritized, with analysis of the building materials degradation degree. Texts, drawings, photographs, physical models (Fig. 3), virtual models and direct experience in the area also helped to determine the use, analysis of the needs, problems and potentialities identified in the good and its surroundings. The intervention project aimed to answer the maximum of questions raised in order to guarantee the safeguard of the monument, here understood as the adoption of "the necessary measures for their protection, conservation and restoration, as well as their coherent development and harmonious adaptation to contemporary life "(ICOMOS, 1986).

Our theoretical basis, with reference in recognized theories and postures of preservation, conservation, valorization and restoration of built heritage, assisted in the justification on the requalificative intervention design choices, explaining the sensitivity with which our patrimony should be treated. Issues regarding accessibility were also contemplated, thinking about this monument in the city of Salvador of the 21st century.

From these premises, the work is developed in three volumes, where Volume II (iconographic and photographic registers) and Volume III (graphic pieces) organize the iconographies and drawings respectively, serving as a subsidy and foundation for the contents and ideas presented in the Volume I. This brings the whole textual part, divided into four chapters, with three structuring axis: survey (Chapters 1 and 2), diagnosis (Chapter 3) and project (Chapter 4).

Chapter 1 - The Context - locates geographically and temporarily our object. In the first part - Sete Portas and Adjacencies - we began the regional characterization in which the building was constructed, locating it in the city of Salvador. Between the EPUCS and the new center: the urban modifications linked to the first Salvador Bus Station continues the work in which not only the place is analyzed with

Fig. 4: Register of the variation of height of the beams in relation to the floor.

Fig. 5: Assay in the laboratory: qualitative test of soluble salts.

greater approximation, but also the urban transformations resulting from the construction of the equipment, placing it between important periods of determination of the route, the direction of growth and development of the capital of Bahia, recovering its relevant role in the process between the achievements of the Urban Planning Office of the City of Salvador (EPUCS, 1942/47) and the Bahia Administrative Center (CAB, 1970).

Divided into three parts, the Chapter 2 - The Building – begins with clarifications on the Methodology of Survey and Registration of the Building, where we explain the procedures (Fig. 4) adopted for the approximation, identification and understanding of the good, essential in the construction of its physical and chronological documentation, until then insufficient, fragmented, dispersed and rarefied. At Armando Viana de Castro Bus Station, the second fraction of this chapter, we construct the critical narration of the Station's history, which has been unveiled and systematized by us. In Techniques and Constructive Systems in the Structural Poetic, we deal with architectural and constructive issues, discussing space, form and structure.
Chapter 3 is the Diagnosis, the link between the survey and the project, where the deficiencies and possibilities of the object and its immediate surroundings are observed, as premises for the project intervention proposal. Subdivided into issues of: Urban Scope (the building in the city's dynamics today); Architectural scope (implantation in the landscape / construction of the image); Physical and environmental analysis; Laboratory tests and analyzes (Fig. 5); our calculations for Stability Check of the roof structure; and the identification of the pathological manifestations, indicating their probable agents and causes in the Damage Mapping (Fig. 6). The Diagnostic Considerations point to our conclusions, listing the issues that will be dealt with sequentially in the design proposal.

In response to the diagnosis, the Project Proposal of Chapter 4 is divided into three essential parts: Theoretical basis, Project from the new to the old: the restoration of the first Bus Station of Salvador and Guide of preventive conservation. We began by emphasizing, with the consecrated theories of restoration, the ambience of the building, the contemporaneity of the restorative act and the importance of its proper use. In the second moment, we present and defend our proposal of intervention in the monument (Fig. 7), describing, illustrating and justifying the design gestures, from the redesign of its limits, the adequacy of the program's use and distribution, the restoration of spatiality, the logic of access and circulation, and the detail of the proposed solutions. Lastly, the third and last part refers to the procedures and routines that would be necessary for the prevention

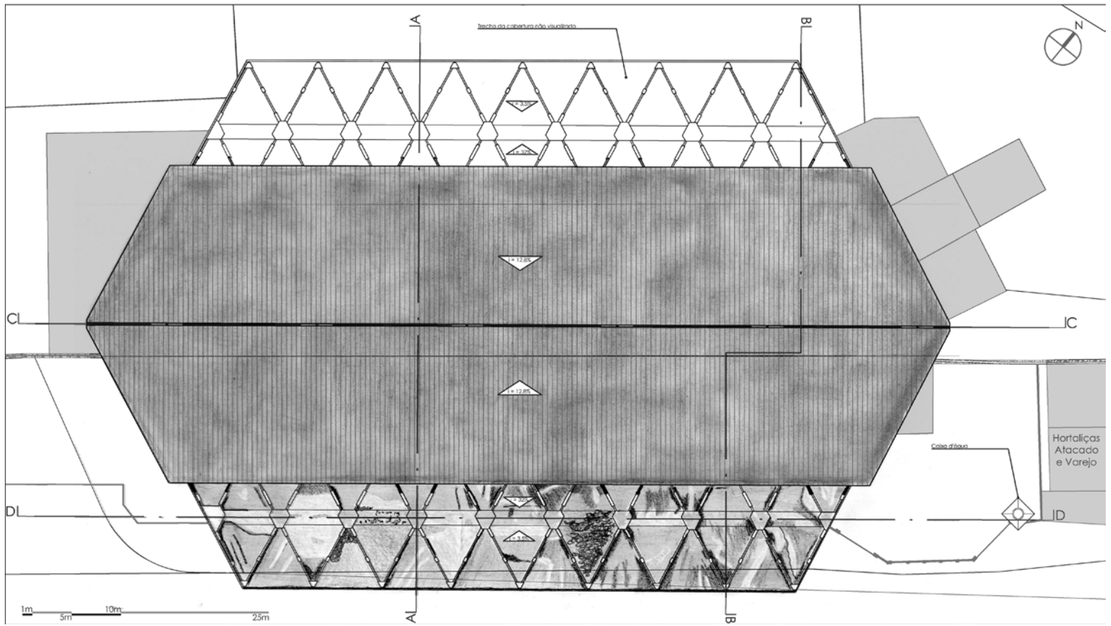

Fig. 6: Coverage Damage Mapping.

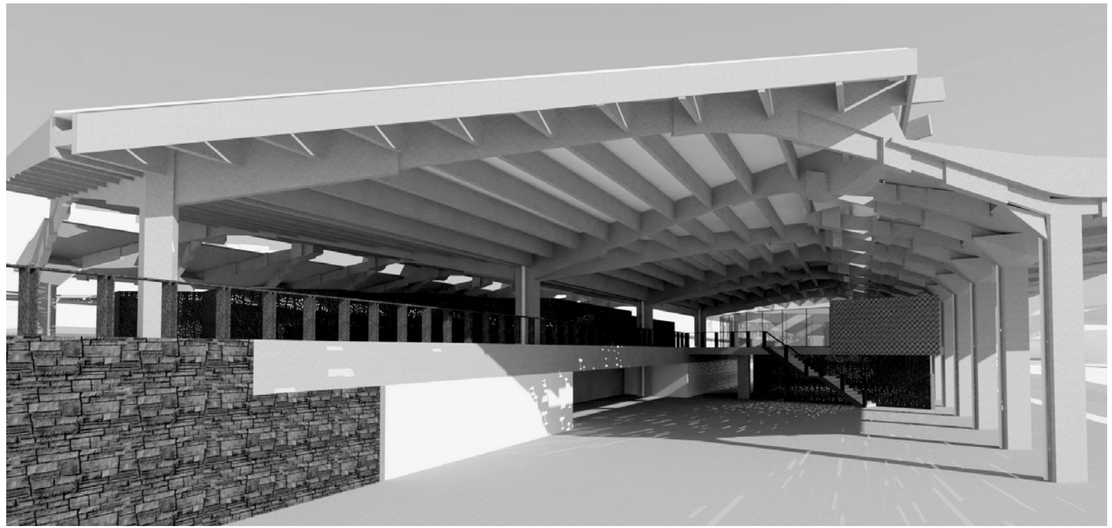

Fig. 7: Image of our proposal, with the recovered spatial permeability.

and conservation of the first already recovered Bus Station, thus guaranteeing the maintenance and the integrity of its restored state.

Conclusion

Our work presents the steps of a requalification proposal for the old Salvador Bus Station, in search of its urban, architectural, economic and social qualities. In order to do this, we raised and investigated the processes that led from construction to its current depredates state, diagnosing its various pathologies and identifying the potentialities of interaction with the environment, in participation in the daily cultural life of the population. Taking into account the contemporary debate on intervention in a work of modern architecture, we try to recover its memory, its art, its spatiality and its condition of public use equipment, valuing its peculiar qualities and revealing it as a worthy heritage of zeal and attention. As a result of the master's degree developed at MP-CECRE, we can attest the importance of the research in the universe of modern built heritage, where tools, methods and interaction with other disciplines, should facilitate the understanding of the good in its current state and its adequate reproduction in view of the possibilities that it offers for interaction with the place in which it is and with the contemporary society.

Bibliography

DEZZI BARDESCHI, M.; CARRERA, M.; DEZZI BARDESCHI, C.; RIBOLDI, E. (Org.). (2010) La Conservazione del Calcestruzzo Armato nella architettura moderna e contemporanea – monumenti a confronto. Milano: Quaderni di ANANKE 2.

ICOMOS. Carta de Washington. Washington, 1986. Retrived from http://portal.iphan.gov.br/uploads/ckfinder/arquivos/Carta%20de%20Washington%201986.pdf. Acessed in 14/07/2014.

OLIVEIRA, M. M. (2008). A documentação como ferramenta de preservação da memória. Brasília, DF: IPHAN / Programa Monumenta.

Notes

[1] ZEVI, Bruno. Saber ver la arquitectura. Buenos Aires: Ed. Poseidon, 1951.

Image Credits

Fig. 1: The first Salvador' Road Station, newly built. Odebrecht Documentation and Reference Center.

Fig. 2: The current disfigured image of the Bus Station. Maria Emília Regina, August / 2014.

Fig. 3: Physical model for studies and proposition. Developed by the author.

Fig. 4: Register of the variation of height of the beams in relation to the floor. Paulo Veiga, August/2014.

Fig. 5: Assay in the laboratory: qualitative test of soluble salts. Photo by the author.

Fig. 6: Coverage Damage Mapping. Developed by the author.

Fig. 7: Image of our proposal, with the recovered spatial permeability. Developed by the author.

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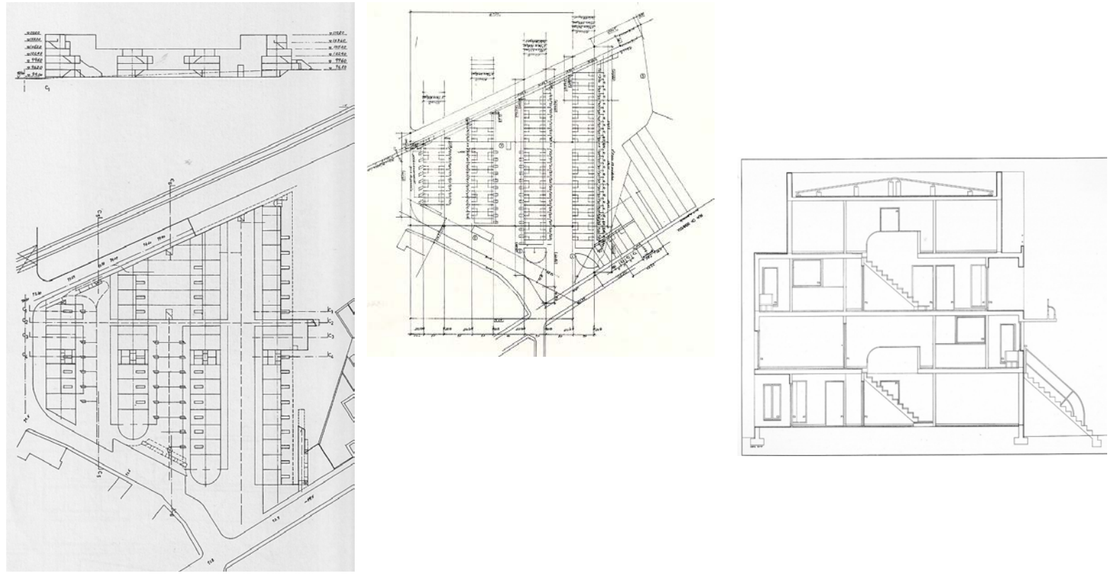

Fig. 1: Plan and schematic section of Bouça housing, 1973; plan and section of Bouça SAAL housing, 1976.

The different fate of the Siza's SAAL housing in Porto

Abstract

This paper will focus on the two works that Álvaro Siza designed in Porto in the context of the SAAL program. Conceived in two different situations, they share the same initial assumptions but their fate was diverse: in Bouça, the 2006 rehabilitation and expansion process allowed Siza to complete his vision for the site; otherwise, the Sra. das Dores block was affected by a recent intervention that exposed the decay problems that affects the building.

SAAL Process // School of Porto // Álvaro Siza // S. Victor, Bouça

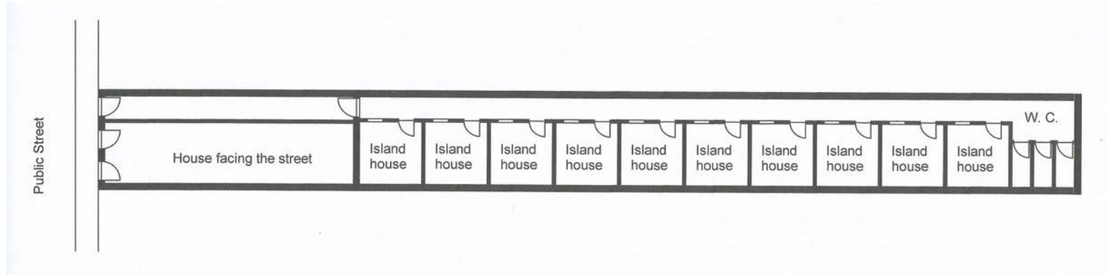

Fig. 2: Schematic plan of a Porto 'island'.

Introduction

The SAAL (Ambulatory Service of Local Support) was an ambitious housing program that occurred in Portugal, created by Nuno Portas (Secretary of State of Housing and Urban Development after the revolution) in June 1974 (Bandeirinha, 2007, p. 13); in October 1976 its coordination was handed over to the municipal authorities, causing the end of the development of SAAL projects in Porto, where the city council was very critical of the program (Bandeirinha, 2007, p. 177-218).

The diferent fate of the two SAAL operations that Álvaro Siza conducted in Porto is a perfect case study on the topic of reuse, mainly because of the confrontation between the original asumptions and the recent rehabilitation processes that affected them.

Bouça: the victory of the "proletarian Island".

The first project for the Bouça housing was designed in 1973, supported by the Portuguese Fund for the Promotion of Housing (FFH). The solution developed by Álvaro Siza presented four parallel bands, forming a non-orthogonal angle both with the train line (in the north) and the street of Boavista (in the south); the two outer bands were designed with six floors (three duplex houses overlapped) while the inner bands presented only four (corresponding to the superposition of two duplex houses).

After the revolution of 1974 the project was included in the SAAL program; the project that was partly built in 1977 was designed by a technical team headed by Álvaro Siza, which also included Anni Gunther Nonell, Maria José Castro, Sérgio Gamelas and Jorge Moreira (Bandeirinha, 2007, p. 416). The design was very similar to the 1973 plan, whith the same four parallel bands in the same position; the main difference was that all the four bands presented four floors, with two duplex houses overlapped (Fig. 1).

The set was clearly exceptional in the context of the SAAL Program in Porto, not only for its relative high density but also for its typological originality. Although it presents a scheme of parallel bands, similar to other interventions of smaller scale, it achieved a higher density without assuming the character of a collective housing block: the access to the front door of the dwellings located in the upper floors was arranged in a set of galleries that extended the public space, creating a sense of community in the neighbourhood.

The design shows evident influences of modern economic housing of the twenties and thirties, namely of the Alvar Aalto project for the Sunila Factory (Kotka, Finland, 1936-54) or the Bruno Taut "Horseshoe Estate" Siedlung (Berlin, 1925), famous for the meaningful use of the colour red.

However, Siza crosses these modern models with the memory of the 'islands' of Porto, creating, in this process of acculturation, an original typology.

The so called 'islands' are a particular kind of slums which were the main housing problem of the city at the time, well-known by teachers and students of the Architetural course of the Beaux-Arts School of Porto.

The eighteenth and nineteenth-century expansion of the city was structured in narrow and deep allotments, in which the house faced the street and left a considerable empty space in the back, initially used as a garden. With the growth of industrialization and the consequent need for low cost housing in the city, most of these interior spaces were occupied by rows of small houses (around sixteen square meters each, in a 4 by 4 meter plan), constructed side by side, opening to a narrow outdoor passage that organized the access to the dwellings and communicated with the public street.

These 'islands' formed small neighborhoods where the dwellers could develop a good social atmosphere, but it lacked every aspect of basic sanitary conditions: it didn't have water distribution or public sewage, and the numerous families had to share small and insufficient common sanitary facilities (Fig. 2).

It seems evident that the Bouça housing projects were based on the idea of considering the traditional 'island' a formal model, while

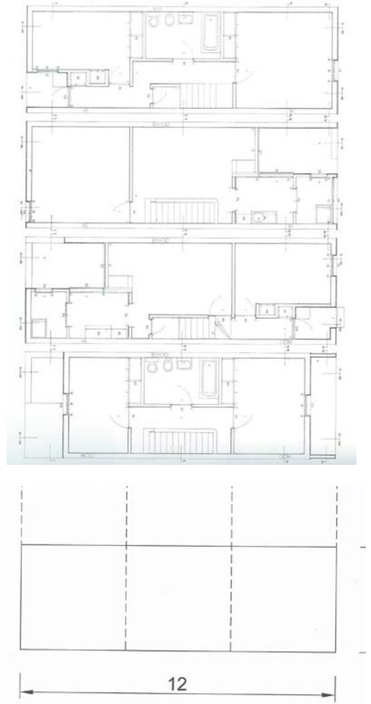

Fig. 3: Plan of the dwellings of Bouça SAAL housing, 1976.

Fig. 4: Bouça SAAL housing, after the 2006 renewal operation

Fig. 5: Sra. das Dores block, SAAL housing, 1976.

improving it with new meaning, dignity and comfort. In Siza's plans, we find the consideration of the community qualities of this scheme, but also its typological structure: they present a linear development based on the simple aggregation of dwellings with a narrow front, using the rhythmic repetition of the doors and windows as a composition theme. The plan of the dwellings presents an aggregation of modules with approximately 4 by 4 meters (comparable to the ancient 'islands' – Figure 3). The public space created between the four bands, closed to the railway line and open to the city, conforms a succession of suitably dimensioned courtyards which enhances the interaction between the residents.

Even though only the two central blocks were actually built in the seventies, it is clear that the scale of the Bouça housing implied a social and political message intentionally proposed before the revolution and reinforced by the new political context. The 'new island' assumes proudly the strong impact of its image and disrupts the urban fabric, showing itself to the city, proclaiming a new urban order that simultaneously rejects the traditional morphology of the urban space and the 'Athens Charter' doctrine (Fernandes, 2015, p. 137).

The set remained incomplete until the end of the century; then, after almost thirty years, the construction was completed according to a new version of the initial project. This recent rehabilitation process (2001-06) allowed Siza to complete his vision for the site, with slight upgrades, namely the introduction of a covered car parking.

Destined primarily to be inhabited by the former members of the Bouça committee of residents, the houses had little demand by this group. However, they were "attractive to other sectors of the population: students, young professionals, newly formed families" (Siza, 2006, p. 362); hence, some critics have mentioned that the houses were bought, very cheaply, by people without any economic problems (Nadais, 2009). Nevertheless, the result is that today we find different classes living side by side with the first residents or their descendants, in the same type of houses. So, this neighbourhood has a true inter-class community spirit and is perhaps the closest approach built in Porto to an idea that Siza has always advocated in his writings on the SAAL Program: «a physical world created for and by a society that wants to be classless» (Siza, 1976, p. 87).

The fate of S. Victor.

Unfortunately, the fate of S. Victor, the second intervention of Siza in the SAAL Process, was very different.

The operation began in November 1974, instigated by the mobilization of a group of students (Eduardo Souto Moura, Adalberto Dias, Graça Nieto, Manuel Sambade and Paula Cabral) impressed by the precarious social situation of the area, which they had studied on previous schoolwork; they invited Siza to lead the technical team, which also included Domingos Tavares and Francisco Guedes. The construction of phase one started in 1975 and the Sra. das Dores block (Figure 5), the best known intervention of Álvaro Siza in S. Victor, was completed in 1977 (Bandeirinha, 2015, p. 28-29).

However, this construction was a small part of Siza's vision for the S. Victor area, which was composed of two sectors: the Sra. das Dores quarter and the S. Victor quarter.

In the Sra. das Dores block the organization of each single house seems to be the rule that generates the global form, by a simple process of repetition. Unlike what happens in the Bouça housing, the 'new island' appears in its traditional place, the interior of the block, invisible from the city; however, in terms of composition, we find here

a similar approach, especially in the organization of the dwellings: equally narrow and long (approximately 4 x 12 meters), with the central staircase organized in the longitudinal direction of the lot and a similar internal distribution of spaces.
Although it is located in a precarious urban situation, the Sra. das Dores block shows a concern in relating to everything that surrounds it; the new building was organised in a perpendicular alignment which crosses the ruins of the old organizational structure of the neighbourhood, leaving the remains of the ancient walls as a memory. This urban gesture is also a political statment, marking the domination of the new reality over the traces of the past.
Unfortunately, this opposition between the new housing and the pre-existing walls is no longer possible to perceive today. Over the years, the site was profoundly altered by a serious of interventions which demolished the ancient walls; in the end of the nineties, the building was already "in an outrageous state of dilapidation, while the completion of the scheme was not only ignored but mutilated" (Barata, 1997, p. 186). Between 1996 and 2007, along with the construction of new social housing within this block ("Conjunto de Habitação Social nas Fontainhas", by Helder Casal Ribeiro and Ana Sousa da Costa), a reordering of the area was conducted, which gave the Sra. das Dores building a visibility that contradicts the initial intentions of Álvaro Siza: nowadays, the housing bands face a large free area and are almost monumentalized, which makes the bad conditions of its present state even more evident.
Nevertheless, the sad story of Senhora das Dores does not end in this block. The projected intervention comprised four types of work: "a) on completely free land inside the courtyards; b) on outlying land never built on previously; c) reconstruction, exploiting foundations and walls of semi-destroyed buildings around the courtyards; d) recovery and adaptation of outlying buildings already uninhabited." (Siza, 1976, p. 89).
According to this strategy, Siza designed the reconstruction of several houses in the same quarter. Some were never built, in this first phase, and those that were actually constructed were never inhabited: some were later demolished and the others are in ruins, today (Fig. 7).
In a second phase, the SAAL team of S. Victor considered the "possibility of recovering the island as a basic element in the urban fabric" (Siza, 1976, p. 87; Costa, 2002). This project was abandoned at an early stage; however, the approaches presented in Siza's sketches can be a relevant subject for the contemporary debate on the intervention in the 'islands' in Porto, because this is still a problem in the city, today: according to a recent survey there are still 957 remaining, where more than 10.000 people live, often in very poor conditions (Vázquez; Conceição, 2015, p. 27).
However, today, 'islands' are not seen only as a problem; in a city that is under great tourist pressure, which increases the prices of housing in the center, they represent an opportunity to find alternative housing spaces at low cost, outside the usual logics of the real estate market (Lage, 2016, p. 109).
During the second half of the twentieth century, some island rehabilitation experiments were carried out, based on the obvious idea of the demolition of some units and the assemblage of the remaining ones in groups of two or three, allowing to double or triple the initial area. It is still possible to duplicate the area obtained, adding a second floor, if the conditions of the site allow. With this method it is possible to obtain houses with acceptable areas and the possibility of opening windows on three facades (Fig. 8).

Fig. 6: Senhora das Dores block after the reordering of the interior of the quarter.

In the last years, a new wave of recovery of islands has appeared, that followed these principles; for example, see the renewal plan for an island located in S. Victor street 113 (Bernardo Amaral, 2015 – Fig. 8). But all these rehabilitation experiences consider the island individually, regardless of the potential relationships that exists within a block.
Siza's idea for S. Victor was different. Not only because he proposed a more dense organization of the dwellings, maintaining the typology of the ancient "island", with a single facade, but also because he considered the block in its whole, interconnecting the semipublic space of the different islands in order to create an internal spatial articulation.
Usually, the external space of the traditional "island" is a blind alley, a dead end, a path that does not contribute to the accessibility dynamics of the city. However, in areas like S. Victor, where the block has a large number of 'islands', it is possible to think of connecting these spaces, creating an internal structure of pedestrian circulation that crosses the block. A semiprivate circulation structure, alternative to the traditional street and open to public use, which would allow the concept of 'islands' to gain a new identity; no longer a ghetto, it could become part of a new urban structure (Siza, 1976; Costa, 2002; Pereira, 2010; Laje, 2016).

Conclusion

After the conclusion of Sra. das Dores block, in 1977, it could be seen as a perfect symbol of the initial intentions of the SAAL program in Porto. The black and white photographs showing the contrast

Fig. 7: Houses recovered by Siza in the SAAL operation of S. Victor, present state .

between the dark ruined walls of the ancient islands and the shining white facades of the new dwellings appeared all over the world, in the pages of the most famous architectural journals (Siza, 1976).

On the other hand, the two incomplete and isolated blocks build in Bouça, constructed in the same year, transmitted a very different message, symbolizing the partial unsuccessfulness of the SAAL process in Porto.

Today, this two-sided coin maintains the two contrasting faces, but they have changed places.

In Bouça, the story had a happy ending: the housing was rehabilitated and completed by the architect that initially projected it, with the concern of preserving the integrity of the original project while updating the program. And the result is a masterpeace of architecture and urban design. Otherwise, looking at Sra. das Dores block, one can't help to feel the defeat of Siza's intentions.

However, it is still possible to realize the full potential of the unbuilt plan began in the second phase of the S. Victor operation. At a time when the 'islands' are beginning to be seen as a contribution to minimize the lack of affordable housing in the city, the ideas presented in Siza's sketches can be very useful to coordinate the current dynamics of rehabilitation in those areas

Acknowledgments

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References

Bandeirinha, J. A. (2007). O Processo SAAL e a Arquitectura no 25 de Abril de 1974. Coimbra: e|d|arq.

Bandeirinha, J. A. (2015). A debate on the future of a future-making process. Round table with Raúl Hestnes Ferreira, Eduardo Souto Moura and Álvaro Siza. In J. A. Bandeirinha; D. Sardo; G. C. Moniz (Eds.), 74-14 SAAL AND ARCHITECTURE (19-40). Coimbra: e|d|arq, University of Coimbra, Centre for Social Studies / Fundação de Serralves.

Barata, P. M. (1997). SAAL São Victor Renovation. Oporto, 1974-77. In L. Trigueiros (Ed.) Álvaro Siza, 1954-76 (184-187). Lisboa: Ed. Blau.

Costa, A. A. (2002). A Ilha Proletária como Elemento Base do Tecido Urbano. In A. A. Costa, Candidatura ao Prémio Jean Tschumi – Prize Nominee – UIA 2005 (30-37). Lisboa: AO / Caleidoscópio.

Fernandes, E. (2015). The Language of the SAAL Program. Similarities and variations in the work of the SAAL Teams in Porto. In J. A. Bandeirinha; D. Sardo; G. C. Moniz (Eds.), 74-14 SAAL AND ARCHITECTURE (135-142). Coimbra: e|d|arq, University of Coimbra, Centre for Social Studies / Fundação de Serralves.

Lage, J. A. (2017). Reabilitação de Bairros e Arquitectura – Estratégias de Processo; Práticas de Projecto. (SAAL/NORTE:1974-1976 / 1997, 2012). Dissertação de Doutoramento. Porto: FAUP.

Nadais, I. (2009). Foi bonita a festa do SAAL, pá. Accessed April 22, 2018, in https://www.publico.pt/2009/05/07/culturaipsilon/noticia/foi-bonita-a-festa-do-saal-pa-230547.

Pereira, E. R. (2010). O despertar do sonho possível: reflexões sobre a viabilidade e actualidade do projecto SAAL para S. Victor. Tese de Mestrado Integrado. Guimarães: Escola de Arquitectura da Universidade do Minho.

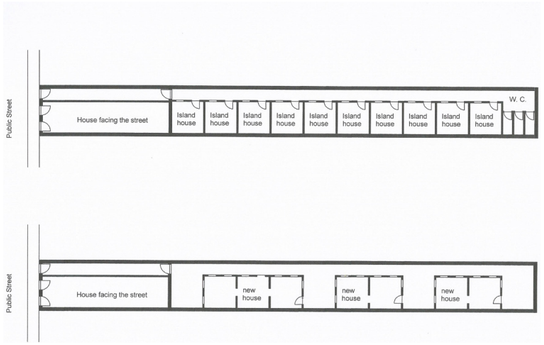

Fig. 8: Scheme of the usual processes of recovery of the islands, similar to the one used by Bernardo Amaral in S. Victor street.

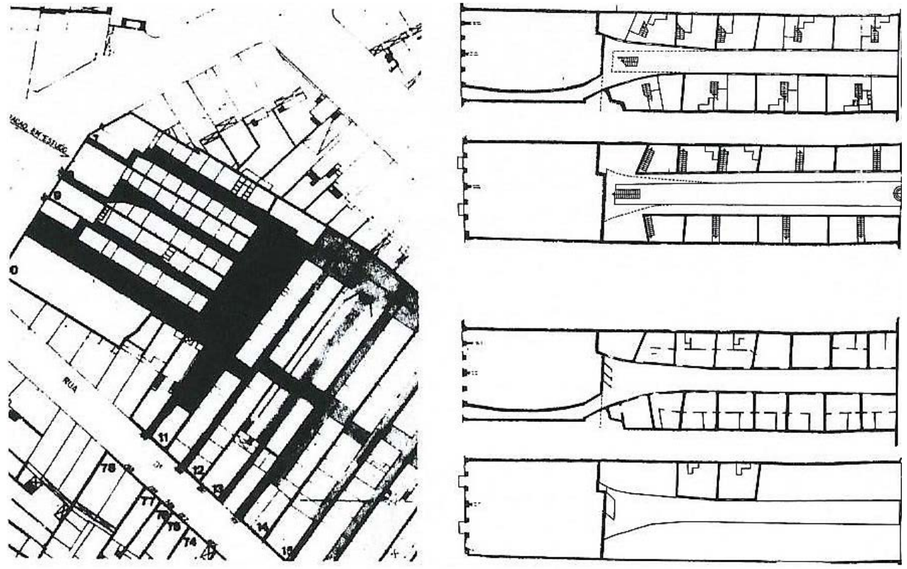

Fig. 9: S. Victor SAAL housing, squetches of the proposal for the second phase.

Siza, A. (1976). L'isola proletaria come elemento base del tessuto urbano. / The proletarian island as a base element of the urban fabric. Lotus International (13), 80-90.
Siza, A. (2006). Conjunto habitacional da Bouça. In C. C. MORAIS, Carlos Campos, Ed. (2009) 01 textos: Álvaro Siza (361-2). Porto: Civilização Editora.
Vázquez, I. B.; Conceição, P. (2015). «Ilhas» do Porto, levantamento e caraterização. Porto: FEUP / CMP.

Image Credits

Fig. 1: Plan and schematic section of Bouça housing, 1973; plan and section of Bouça SAAL housing, 1976 (drawings by Álvaro Siza).
Fig. 2: Schematic plan of a Porto 'island' (E. F.).
Fig. 3: Plan of the dwellings of Bouça SAAL housing, 1976 (drawings by Álvaro Siza; composition scheme E. F.).
Fig. 4: Bouça SAAL housing, after the 2006 renewal operation (E. F., 2006).
Fig. 5: Sra. das Dores block, SAAL housing, 1976 (drawings by Álvaro Siza; composition squeme E. F.).
Fig. 6: Senhora das Dores block after the reordering of the interior of the quarter (E. F. 2006).
Fig. 7: Houses recovered by Siza in the SAAL operation of S. Victor, present state (E. F., 2018).
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Fig. 9: S. Victor SAAL housing, squetches of the proposal for the second phase (drawings by Álvaro Siza).

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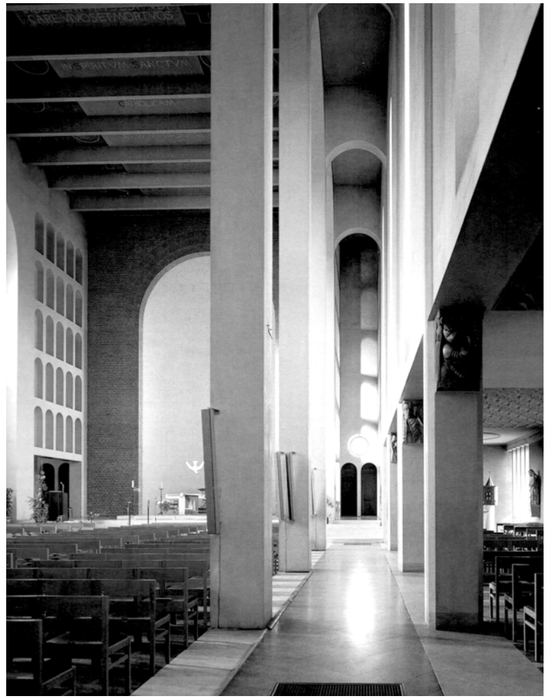

Fig. 1

Fig. 2: Anonymous photo of the front facade of the St. Alène church, approximately 1955. .section of Bouça SAAL housing, 1976.

Revalorizing Modernist Church Architecture. The Case of the St. Alène Church in Brussels.

Abstract

The St. Alène church by Belgian architects Bastin and Dupuis in Brussels demonstrates multiple layers of modernity, related to modernization in the Catholic Church, modernist architecture, and displacement. In the context of a design studio on adaptive reuse, students were assigned to investigate the use and meaning of the church and to design new layers in coherence with the existing ones. The studio delivered insight in the revalorization of sacred architecture in face of social diversity.

sacred architecture // shared usage // programmatic research // design studio

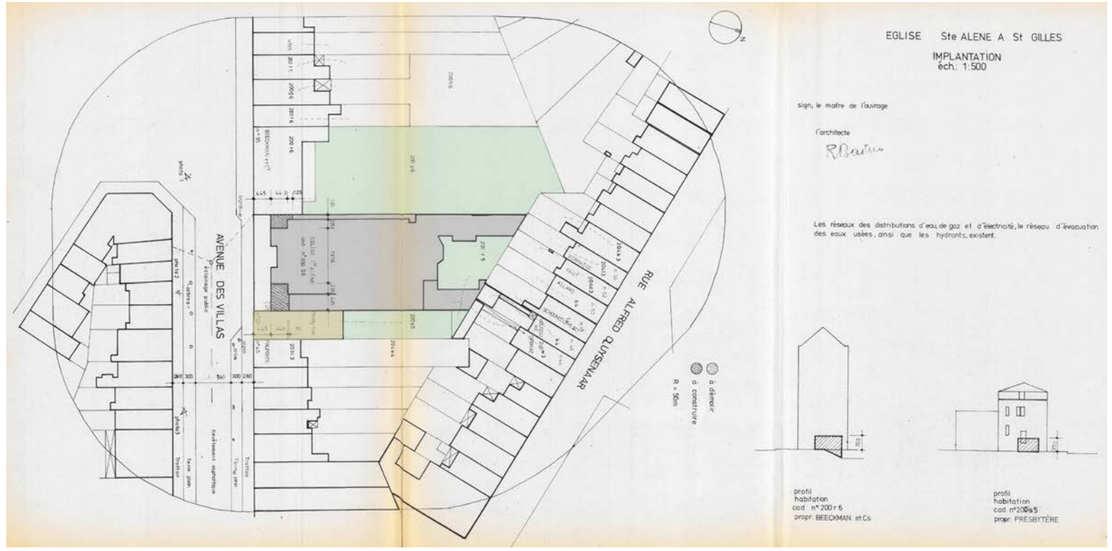

Fig. 3: The St. Alène Church in its urban block, drawn by Roger Bastin (1940).
The church and its annexes are hatched in grey, the presbytery in brown. The buildings divide the lot into three garden spaces, hatched in green.

Introduction

This contribution presents the context, the methodology and selected results of a design studio addressing the shared usage of the Roman Catholic St. Alène church in the St. Gillis district in Brussels, Belgium. This is a modernist church with a complex building history starting at the beginning of the 20th century that demonstrates transitional ideas about ecclesiastical architecture in face of modernity. The building was a studio subject in the fall semester 2017-18 of the International master of adaptive reuse at Hasselt University. This studio explored aspects of modernity and how it relates to tradition on different levels. Firstly, this church building was designed and built over an extended period in a time of major transitions in Roman Catholic liturgy, and came to face church modernization as it was being realized. Secondly, the principal design proposals of an eclectic architecture were, during an extended development trajectory, replaced with modernist architectural concepts and artwork. Lastly, the building demonstrates modernity on a socio-cultural level, because it has a history of usage by people in displacement.

While it is in use, St. Alène is underused and underappreciated, because it is surrounded by dilapidated secondary structures and unmaintained, inaccessible gardens. This studio was based on the hypothesis that architectural quality, meaning and societal relevance could be (re)constructed and reinforced by seeking answers in the sociocultural and art historical values of the St. Alène church. Capitalizing on these values, its role within society is made more secure by adding new layers of usage in addition to the sacral one. This infers that profound study is conducted about the history of the building, of its wider architectural and religious context, and of potential programs which could fit the spirit and use of the existing building. In this contribution, primarily these values are outlined. Secondly, the results of addressing these by means of a design project are explained.

Problem statement

Belgium is an increasingly secular country where a longstanding Roman Catholic tradition has a diminishing influence on public life. While a significant part of the Belgian population still indicates to be Catholic, participation and involvement in religion is changing, and only an ageing minority continues to attend Sunday masses on a regular basis (Billiet 2017; Halman & Draulans 2006). The consequence is that parish churches, traditionally forming the spatial and public center of a parish, are increasingly facing obsolescence. Vacancy incites the search for new purposes for religious buildings. Looking at transformation projects of obsoleted churches in Europe, one encounters churches that are removed from the public domain, stripped of their spiritual meaning and retrofitted by means of iconoclast design interventions. This happens when secularized churches are privatized (e.g. they are reused for residential or commercial purposes). Churches however, represent community values and collective memories which lose significance as a consequence of such an approach.

Because parish churches in Belgium are owned not by the Catholic church but by local governments – which is a historic result of overturning religious authority during the French revolution – maintenance of church heritage is a public matter. For example, adaptive reuse of churches in the Belgian region of Flanders has been taken up by the regional government (Flemish State Architect 2018), bringing local communities in contact with selected design

teams. In many cases, the option of shared usage is put forward so that a church retains its spiritual significance, but its exploitation and maintenance are facilitated by additional occupancy. This public approach and local participation have the advantage that churches for the major part remain part of the public realm. The design studio reported of here adhered to this perspective, raising the question what kind of new programs could be inscribed in a church, the St Alène, that remains in usage. It questioned which spatial interventions could bring about synergy between programs and raise architectural quality.

St. Alène: aspects of modernity

The extensive planning and design phase of the St. Alena church started in 1913. The initial designer, Louis Pepermans, proposed a building in eclectic style. Of his plan, only the crypt and adjacent buildings (e.g. the presbytery) were built. The plans to complete the church were taken up again in the 1930s with a design competition won by Roger Bastin, who collaborated with Jacques Dupuis for designing the interior of the church, the side chapel and the front façade (n/a 1978; Cohen & Thomaes 2000; Lanotte 2001; Vande Keere & Plevoets 2018). Having started construction works in 1940, the advent of World War II and a lack of funding once again delayed completion. Only in 1951, the main body of the church was realized, while it took another 21 years to complete the street façade in 1972. The church has a semicircular apse and a deep nave aligned with high arches. In the side and rear walls, segments are tectonically defined by a grid of man-sized arches (Fig. 1). On the northeast side, next to the nave lies a parallel side chapel of lower height. The architects shifted the axis of the nave to one side in order to allow space for a side chapel. Consequentially, the axis of the church apse is shifted from the axis of its foundation. The front façade show an architectural struggle to fit the church in its urban context, which to this day results in an inefficient access to the open spaces on the rear of the lot. The dilapidated secondary structures used by local youth movements divide the unbuilt spaces into two unconnected areas, one privatized and the other semi-public.

The formal appearance of the church has inferred comparisons to the modernist architecture of fascist Italy (Bekaert & Strauven 1971), but this doesn't do justice to the layered architecture of St. Alène. Changing the design course to a more modern approach, this trajectory coincided with crucial phase of the history of the Roman Catholic Church. Important reforms of Catholic liturgy, aimed at closer involvement of the community in the celebration, were established during the Second Vatican Council (Vaticanum II, 1962-65). Preceding Vaticanum II, experiments by the 'liturgical movement' before World War II had their influence on church architecture in the wider region (Forty 2012; Grafe 1997). The renewed interest in the rich history of (early) Christian iconography and liturgy inspired the design of St. Alène, which is seen in the stations of the cross and in a more central positioning of the altar, allowing close involvement of the community. Moreover, modernity relates to past and contemporary usage of the church. St. Alena has in the past housed a parish of Italian migrants, and is currently in use by a Brazilian Catholic community. The Italians migrated after the war, and formed a community settled in the neighborhood, which over time integrated in Belgian society. The Brazilians are more recent migrants, and members of their parish come from the wider region – they do not form a geographically concentrated community like their Italian forerunners. Both are (or have been) communities in displacement, of people who have left their ancestral community and under influence of globalization face the transitory character of modernity (Heynen 1999). In establishing their community abroad, they contribute to the religious and ethnic diversification of Western European (urban) societies. There are many new flourishing religious denominations in Western Europe as a result of immigration (Kippenberg 2008). Hence the notion of religion as a system providing meaning to an entire society, what Berger (1967) called a 'sacred canopy', has been replaced with a system of 'sacred archipelagos' of diverse denominations (Wilford 2010), in addition to secular worldviews, which calls for an intercultural dialogue vis-à-vis the usage of public places in the city.

Fig. 4

Immersive study, programmatic research and design

To discover new futures and a feasible connection between spirit and place for this modernist church, students were immersed in a studio program which stimulated them to seek input from diverse fields and disciplines in their design. Through this study, they engaged with all outlined aspects of modernity. Cultural and programmatic concerns

formed the foundation for architectural interventions in response prominent problems encountered in the design process. Key issues are the complex circulation, the building degradation and the lack of natural lighting.

The significance of the church to architectural history was studied by means of comparison to other churches built in this epoch in Belgium, which revealed inspiring interrelations between architects and buildings. The oeuvre of Roger Bastin shows multiple religious and religiously inspired buildings which were subject to comparison as part of the studio. His churches in Wallonia equally show mediations between traditional and modernist concepts. Revealing architectural cross-references, the students were trained in assigning value and meaning to architectural typologies, details and implemented iconography. Students sought to understand the significance of church modernization and the reconnection with early Christianity by looking at the history of church architecture. A study visit to Rome and its churches strongly impacted the conceptualization, as it allowed them to study variations on spatial sequences as applied in church buildings throughout the centuries. Before engaging with design, students were explicitly assigned to investigate programs which may be combined with continued celebration of Catholic liturgy and the presence of the Brazilian community. Students were challenged to seek a social program fitting the spirit of the church, which could bring from the hidden, underused spaces in service of local community development.

In response, several projects reorganized the tectonics of the front façade, and the circulation system organized by this façade, intending to establish a proper connection through the entire complex. One project (by Tijl Beelen) sought to reconcile the design of Pepermans with the intervention of Bastin and Dupuis. Seeking inspiration in early Christian architecture, The designer proposed a new narthex as a connector between street, church and crypt. This main intervention took shape as an atrium with staircases and an elevator in the entrance zone of the church. It allows better access to the rear of the building (designed by Pepermans) where a hostel for pilgrims was implemented. This program capitalizes on the fact that the building is on one of the pilgrimage routes through the Low Countries towards Santiago De Compostella in Spain.

Also, several projects sought to make the large garden space on the side more accessible and useable, which inferred that the route alongside the building through the garden space was reconceived. One proposal (by Emilie Raquet) introduces a ‘corridor of silence’ between the church and the garden. This concept refers to the time when only the crypt had been built, and was used to celebrate mass. According to parishioners, the corridor leading to the crypt evocated an atmosphere of contemplation and quietness. The formal language of the new corridor, determined by a rhythm of vertical concrete elements and semi-transparent glazing, refers to Le Corbusier’s La Tourette monastery. This project had equally inspired Bastin and Dupuis in the design for the connection between the high volume of the church and its neighboring buildings (Fig. 2). The corridor of silence redefines the usage of the garden and gives access to a new wing. This new wing replaces the dilapidated scouts rooms, and gives back into the church, where the rear part of the nave is used as an exposition room in combination with the liturgical function. Hence, the design reinforces the architectural quality of the building by selective reuse and demolition of the oldest (and most degraded) building parts.

Conclusion

What this studio illustrates, is that rich layers of meaning and references in between these layers are at the foundation of interesting design projects. By giving attention to several aspects of modernity – in relation to the history of the church, the history of architecture, and the contemporary sociocultural context – they drew forward rich narratives underlying their design projects. Their narratives are strongly funded on reciprocity between functions, spaces, and meanings. To attain these results, students needed to train relevant skills supporting design: programmatic study, historical research, and neighborhood analysis. Following this path, the studio found a proper position with regard to the contemporary societal discourse on continued usage and maintenance of sacral architecture. St. Alène strongly reflects divergence in the urban condition induced by globalization, and the design exercise on this building underscores the public relevance of churches in an urban tissue. In architectural publications, the common good tends to come secondary to architectural aesthetics and ingenuity. This exercise challenges the deconsecration, privatization and proverbial new ‘iconoclasm’ applied to some of Europe’s obsoleted churches. Rather than replacing its senses of spirituality or community, we have sought to reactivate and strengthen these by rereading and rewriting narratives and immaterial values, thus informing architectural design. .

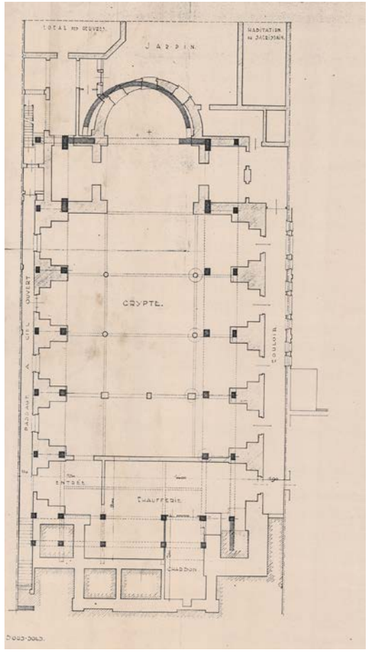

Fig. 5: Drawing of the Crypt of the St. Alène Church by Roger Bastin (1940). The drawing shows the crypt built according to the plan by Pepermans (in grey) and the structure of the church imposed on these foundations by Bastin, shifting the axis and the apsis (in black).

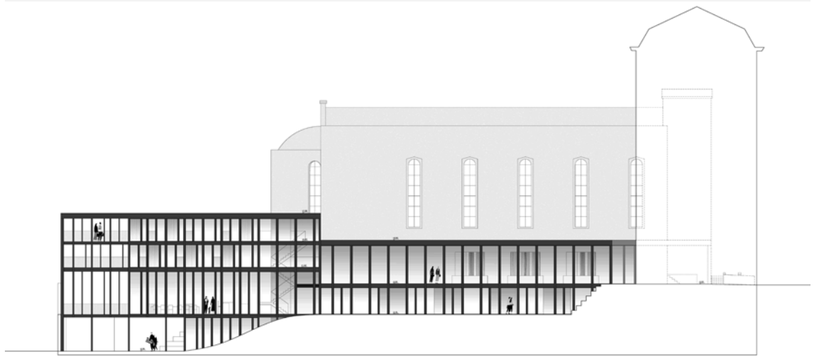

Fig. 7

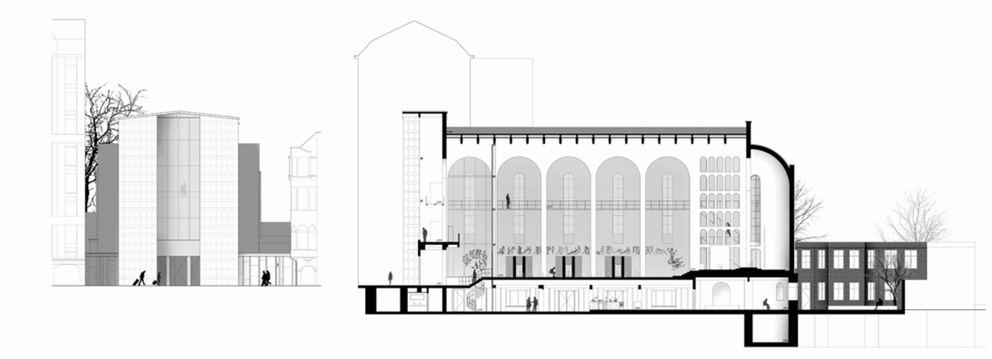

Fig. 6

Acknowledgements:
This contribution is based on the design Studio Adaptive Reuse (2017-18), international MA of Adaptive Reuse, Faculty of architecture and Arts, Hasselt University, Belgium. Students: Saeed Afshar, Tijl Beelen, Kobe Garmyn, Naveed Iqbal, Emilie Raquet and Hamid Syed.

Bibliography

n/a (1978). Sainte Alène, petit coin de ciel bleu! Etude architecturale et artistique de l'église paroissiale Sainte Alène. Brussels: St. Alène parish.
Bekaert, G., & Strauven, F. (1971). Bouwen in België 1945-1970. Brussels: Nationale Confederatie van het Bouwbedrijf.
Berger, P. L. (1967). The Sacred Canopy: Elements of a Sociological Theory of Religion. Garden City, NY: Doubleday.
Billiet, J. (2017). De evolutie van de betrokkenheid bij de katholieke kerk in Vlaanderen 1996-2015. In: A. Carton, J. Pickery, and D. Verlet (eds.) 20 Jaar Peilen in Vlaanderen! De survey 'Sociaal-culturele verschuivingen in Vlaanderen' (pp.125–150). Brussels: Studiedienst Vlaamse Regering.
Cohen, M., & Thomaes, J. (2000) Jacques Dupuis l'architecte. Brussels: La Lettre volée - Communauté Française de Belgique.
Flemish State Architect (2018) Het projectbureau herbestemming kerken. Online: https://www.vlaamsbouwmeester.be/nl/kerken (accessed 18 April 2018).
Forty, A. (2012). Concrete and Culture. A Material History. London: Reaktion Books ltd.
Grafe, C. (1997). Barren truth. Physical experience and essence in the work of Rudolph Schwarz. OASE Essential Architecture, (45/46), 2–27.
Halman, L., & Draulans, V. (2006). How secular is Europe? The British Journal of Sociology 57(2), 263–288.
Heynen, H. (1999). Architecture and Modernity. A Critique. Cambridge, MA: MIT Press.
Kippenberg, H. G. (2008). Europe: Arena of pluralization and diversification of religions. Journal of Religion in Europe 1(2), 133–155.
Lanotte, A. (Ed.) (2001). Roger Bastin Architecte 1913-1986. Sprimont: Mardaga.
Vande Keere, N. & Plevoets, B. (2018) Heritage without heirs? Reconnecting church and community through adaptive reuse. In: Banks, M. (ed.) Proceedings of the Interpret Europe Conference 2018, Köszeg: Köme, 195-207.
Wilford, J. (2010). Sacred archipelagos: geographies of secularization. Progress in Human Geography 34(3), 328–348.

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Fig.5: St. Alène parish archives. Reproduced with permission from the parish and from the heirs of Roger Bastin.
Fig. 6: Drawing by Tijl Beelen, Studio Adaptive Reuse 2017-18.
Fig. 7: Drawing by Emilie Raquet, Studio Adaptive Reuse 2017-18.

Session 1.0
TOOLS for Reuse of Modernist Buildings

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Carolina Ferreira is graduated in Architecture at the Department of Architecture, Faculty of Sciences and Technology, University of Coimbra, in Portugal, in 2007, where she attends the PhD program Architectural Urban Culture, with the support of FCT. She also collaborates with the project "ATLAS of School Architecture in Portugal – Education Heritage and Challenges" and with the multidisciplinary research group "DRAPES – Design, Research and Practice in Educational Spaces European Network."
As a researcher she is working on the concept of Educational Spatialities by analyzing how school buildings encounters and reassembles the educational and urban territory, in central region of Portugal, from a cross-disciplinary approach. She is developing cartographic analysis and exploring mapping representations. She is mainly interested in the way architecture research can improve the design of school buildings and urban space as well, bases on a complex network where school buildings, urban space, educational policies, technologies and people shape each other.

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Gonçalo Canto Moniz is graduated on Architecture of the Department of Architecture of Faculty of Sciences and Technology of the University of Coimbra in 1995, where he is Assistant Professor and editor of e l d l arq editions and JOELHO, journal of Architectural Culture. Obtained his PhD degree in Architecture at the University of Coimbra in 2011, based on his academic thesis: "Modern Architectural Education".
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Fig. 1: Activity with students in Infanta Dona Maria Secondary School, Coimbra, Portugal, March 2018.

New Cartographies of Educational Spatialities: The inclusion of students' views.

Abstract

This paper presents a research work on Portuguese educational spatialities based on students' participatory methods in light of a cartographic analysis. Activities with students have been developed in several Portuguese schools in which they sketched out their use of school and city spaces on maps and critically presented their own school. The results inform about school and city environments nowadays through graphic representations that offer invaluable insights into both school and city design.

Cartographic Analysis // Educational Spatialities // Participatory Methods // School and Urban Design

	Year of establishment	Year of renewal SSMP	School district	Type of Building	Number of students per session	Age of students per session
SCHOOL (A): GUIMARÃES *Francisco de Holanda's School*	1958	2009/11	City Centre	Pavilion: Commercial & Industrial	25	17-18
SCHOOL (B): S. JOÃO DA MADEIRA *Oliveira Júnior's School*	1983	2009/11	Town Suburb	Pavilion: Technical Basis	17	17-18
SCHOOL (C): OLIVEIRA DE AZEMÉIS *Soares de Basto's School*	1948/78	2011/16	Town Centre	Pavilion: Commercial & Industrial	28	12-13
SCHOOL (D): AVANCA *Egas Moniz's School*	1987	–	Village	Pavilion: Standard project	20	12-13
SCHOOL (E): ESTARREJA *Estarreja Secondary's School*	1985	2010/12	Town Suburb	Pavilion: Standard project	20+20	12-13 14-15
SCHOOL (F): AVEIRO *Mário Sacramento's School*	1956	2011/14	City Centre	Pavilion: Commercial & Industrial	28+28	16-17
SCHOOL (G): ÁGUEDA *Marques de Castilho's School*	1964	2010/13	Town Centre	Pavilion: Commercial & Industrial	24	16-18
SCHOOL (H): SANTA COMBA DÃO *Santa Comba Dão Secondary's School*	1976	–	Town Suburb	Pavilion: Standard project	20	17-18
SCHOOL (I): COIMBRA *Infanta D. Maria Secondary's School*	1948	2008/2009	City Centre	Lyceum	27	12-13
SCHOOL (J): COIMBRA *Avelar Brotero Secondary's School*	1960	2007/2008	City Centre	Pavilion: Commercial & Industrial	13	17-18
SCHOOL (J): COIMBRA *José Falcão Secondary's School*	1936	–	City Centre	Lyceum	13	17-18
SCHOOL (K): CONDEIXA *Nº2 Secondary's School*	2000	–	Town Centre	Pavilion: Standard project	19	12-13
SCHOOL (L): LEIRIA *José Saraiva's School*	1999	–	City Suburb	Pavilion: Standard project	10	12-13

Fig. 2: Schools' Profile

Introduction

Rethinking and redesigning educational environments is becoming increasingly fundamental nowadays. In Portugal, the existing school network was built mostly over the dictatorship period, together with the urban space sprawl, to face the increasing population and to implement a public education system. Through the 40 years of "Estado Novo", standard projects were designed and schools were organized into classrooms, laboratories, workshops, libraries and gymnasiums to provide technical and scientific instruction. Moreover, urban plans integrated the new school buildings together with other State programs, such as courts, prisons, and hospitals, all of which resulted in the hierarchical physical structure of the current public system.

As cities were organized into separate environments and facilities, schools were also conceived by a sequential and hierarchical set of exclusive spaces to fulfil a standard curriculum activity, based on the transmission of knowledge. However, technological and social evolution have widened the understanding of educational environments, opening the door to more diverse and varied learning pathways. For instance, informal spaces – the spaces of everyday life - disclose great learning opportunities, playing the same important role in education as the formal ones. Under those circumstances, we strongly believe that a new understanding of students' relationships with their physical environment is important to re-examine traditional typologies and to bring new topics that will support the redesign of school buildings.

By using a cartographic analysis methodology, this study aims at presenting an understanding of the actual education environment in Portuguese schools through students' voices and mapping activities, seeking new spatialities that could be shaped differently in the future, towards an alternative conception of school: more urban, more inclusive and more communitarian.

Cartographic analysis: an overview

This kind of experiments with cartographic analysis belongs to a field called critical cartography, which came out in the late 1980s. Similar to other critical fields, they all react against traditional practices and ways of thinking. In the field of architecture, for example, some groups of architects emerged after World War II to react against the generalizations of CIAM (International Congress of Modern Architecture) about city planning. CIAM conceived a division of the urban space into four functional zones: dwelling, labour, recreation and transportation zones. In the post-war ages, this way of space-thinking was considered too abstract and insensitive to human needs. Kevin Lynch, in 1960, was one of the first architect to influence city planning and space analysis through his work on city shape theory, exploring how people perceive their cities and its consequences for city design. He was an early proponent of mental-mapping, which covered the 1960s. Mental map-mapping has become a challenge because it tries to represent the individual and social world beyond the rules and the principles that have guided architectural and urban design throughout history.

Critical cartography challenges historical and theoretical assumptions, asking questions and raising issues. It is a dynamic method of analysis that seeks better representations of the existing reality that involves people and their connection with space (Crampton & Krygier, 2006). The particular aspect of critical cartography is its focus on how humans establish relationships with each other and with the world,

namely their physical and social surroundings. It focuses both on individual and social values, as well as on affects and politics (Duarte, 2017). Several authors have influenced and developed new ideas on space and human relations as, for example, Henry Lefebvre's (1901-1990), whose work on space as a social and political construction argues that society is organized according to a production system purpose. Along with Lefebvre's ideas of space, schools can be viewed as a machine conceived to train people more capable of contributing to a society based on labour. Michel Foucault's (1926-1984), in his turn, perceives state institutions, such as schools, prisons and hospitals, as state devices used to control society through unequal power relations, having identified shapes of oppression, vigilance and training in both prisons and schools.

Both ideas show different dimensions in which space organization can be perceived, one based on labour and production, and the other on power relations. However, cartography deals also with complexity and contradiction. This means that most of the time, space is not a static object, but a continuous project where people are part of it, always tracing new associations and designing their assemblages (Latour, 2005, p.7). The comprehension of this complexity cannot be achieved through a linear process explanation, but by a network of matters that have some influence on it. This will give us not just a sense of what a space is about and why it is designed in a specific way, allowing us as well to know what it does; how it is used; its limitations or potentialities (Yaneva, 2009).

Cartography uses maps and charts as a graphic and visual representation of space. The design of maps and charts helps us to understand, inform and negotiate complex and contradictory information about space. In this sense, Bruno Latour (2008), among others, has explored this cartographic potential by creating a research methodology tool based on his Actor-Network Theory (ANT), namely Mapping Controversies. This tool enables mapping different concepts in a network figure to create a new figure. It is an intertextual process that can be applied to several fields of knowledge, from technology to humanities. Furthermore, it is a tool that contributes to participatory methods of research, decision-making, political negotiation, among others. Following this line, cartography is also a participatory method of space analysis, recently enhanced by the production of digital maps where the interaction between people and space can be systematically analysed by using spatial tools in a Geographical Information System (GIS), such as the 'public' platform Google Earth (Taylor, 2009, p.134).

This overview about cartographic analysis presents some of the main features of space analysis. Overall, cartography is a critical and participatory method of research that deals with contradictory and controversial perspectives, trying to answer Jacques Lévy's question: "If maps represent the social world, they have to represent their actors. (…) Can we put the actors on (the account of) maps?" (2012, p.3). In this study, some of these cartographic potentialities were experimented.

Mapping outcomes: visual representations of students' spatialities

In the frame of our research project, we developed an activity called Learning from Space integrated in a program called CES Goes to the School, promoted by the Centre for Social Studies of the University of Coimbra, which aims at taking different research subjects to students.[1] Thus, activities with students aged between 12 and 18 years old have been carried out from 2015 to the present moment in 13 Portuguese schools (Fig. 1). Each activity took approximately an hour and a half

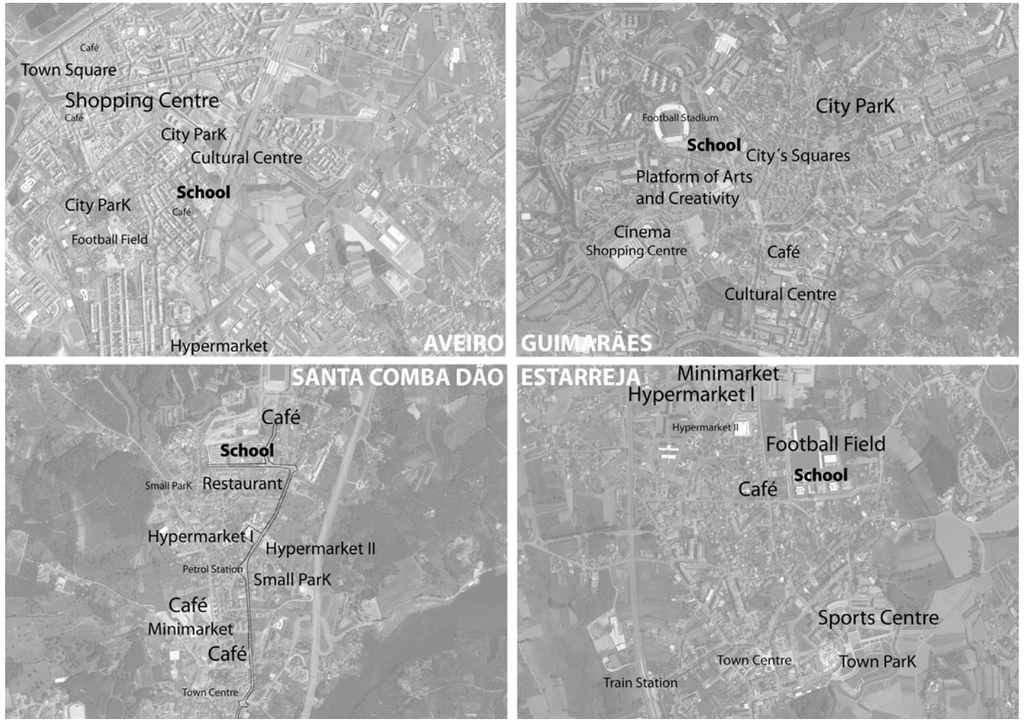

Fig. 3: City Mapping: Comparing Different City Networks, First Experiments.

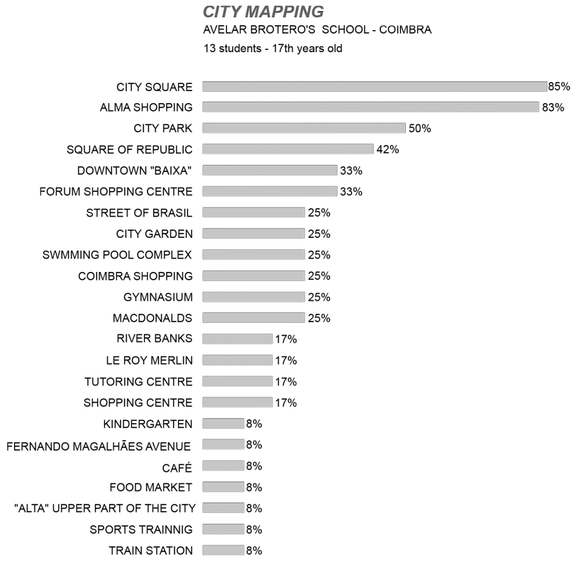

Fig. 4: City Mapping: Graphic representing the percentage and the uses by students outside school Avelar Brotero Secondary School in Coimbra.

and was organized into two parts. First, a debate on educational spaces is promoted in the classroom. The debate encompasses important ideas about architecture, territory and schools. Generally, the main point is that schools have always been part of the design of cities and the territory organization. Some historical and illustrative explanations inform students about three dimensions in which educational spaces can be understood: territorial, urban and building. Nevertheless, we aim to add a human and social understanding of educational spaces by analysing the relationship between people and territory, as well as their desires and idealizations of a school space.

Representing those relationships in a visual Figure is very important. Thus, while still in the classroom, students are asked to represent their uses of the city on a map. Then, they represent on the school plan the spaces that they like and dislike the most, as well as the path they usually take inside the school. In the second part, students are invited to do a guided-tour to critically present their own school. Data is collected by recording all the sessions, as well as by observing and photographing each group of students in the school.

Methodologically, we believe that a more empathic analysis discloses other space dimensions that are not usually considered in the space design practice. In other words, this study is based on to the idea that the understanding of school environment in situ through students' voices is essential to deepening the way educational space is designed. Thus, physical and mental spaces of students, as individuals or as a group, are analysed together in order to further comprehend the real problems that educational spatialities have to face. This way we are able to understand how space reflects pedagogical aspects and what we can learn from space through the eyes of the students.

City Mapping

Our first experiment seeks to show some aspects of students' daily routines and understand how students and places are interconnected in cities. From this point of view, we gathered maps drawn by students and analysed them in order to develop specific maps that give us an image of learning spaces as an extension of the school. As argued by Innerarity (2010), among others, cities are privileged places, where it is possible to find the best and greatest variety of opportunities to acquire knowledge, to debate and promote significant interactions. Thus, identifying the students' closest places "foregrounds a narrative of local and regional politics that is attuned to the particularities of where people actually live, and that is connected to global development trends that impact local places" (Gruenewald, 2008, p.3). In this sense, these maps reveal how the social use network extracted from the students can help us to better understand the educational roles played by urban spaces, and how they can integrate the educational curriculum in a more tangible and holistic way of learning.

The network figures highlight a political orientation in each city, town or village. As we can see in Fig. 2 (in our first design experiments to compare different city networks), Guimarães and Aveiro have made a strong investment in urban public-spaces and cultural facilities, while Estarreja is more sports and commercially oriented. The map of Santa Comba Dão, in its turn, shows the importance of a particular street to connect the school with the town centre. This street gathers students' different uses beyond the school and connects them with the rest of the urban community. For this reason, the street is like a continuation of the school learning space of the school. Redesigning and modernizing this school should therefore be connected with the renewal of this particular street. Thus, the redesign of both school and urban spaces together gives educational spatialities a communitarian sense and opens the traditional and standard school models to more diverse and appealing ones. In this sense, school shapes become closer to each local place, and local people and architectural (or urban) design become a collaborative space of learning.

The same way streets could integrate the redesign of school buildings, "city squares", "city parks", "river banks", and "sport fields" are some urban structures that students identified the most with, besides "Shopping Centres". For example, the city network drawn

from a secondary school in Coimbra (Fig. 3 and 4) informs us about the way students use the urban space. The idea is that the urban space surrounding the school completes the social, cultural and sportive needs beyond the school.
Each network differs from the other because of the kind and number of uses students identify, the variety of activities they can access and their extension. These aspects give us an insight into the quality and accessibility of urban spaces and facilities. Thus, we argue that these cartographic images contribute to orienting the design of the city spaces, as well as of political decisions. They allow decision-makers and urban designers to analyse, question and transform these networks so as to foster educational opportunities. In each city, physical urban spaces should meet requirements such as diversity, variety and accessibility, providing places to bring citizens together and improving relationships, play and leisure (IAEC, 2010; CEC, 2000).

School Mapping

The second experiment aims to represent the places students like and dislike the most inside the school complex. In the first diagram (Fig. 6), we represent the places they like the most closer to the centre and the places they dislike the most farther from it. The dimension of each bubble represents the number of students that have referred that particular place. The second diagram represents the same data, but related with the location in the school plan (Fig. 7). The result is a map with two pathways: one for the likes and another for the dislikes. Formal areas of education are further way from the core of students' preferences, reinforcing the idea that exploring informal spaces fosters opportunities to make educational spaces more pleasant and tangible than they do nowadays. In other words, educational spaces, such as schools, should provide spaces where students understand learning as a natural and motivating aspect of life. For this to happen they should, on the one hand, feel comfortable and, on the other hand understand the learning process in a meaningful way. In this sense, the organization of physical school and urban spaces should put students in the centre. This means, quite simply, that spaces should encourage and adapt to students' needs and demands, rather than the other way around (CEC, 2000).

Students' voices[2]

The third part of the cartographic analysis focuses on the findings obtained from the students' discourses. Over this process, students became critical thinkers by presenting their own points of view about the relationship between school spaces and the pedagogical curriculum. Several topics were raised: (1) the problem of traditional classrooms, versus the idea of the classroom as a workshop or laboratory of experimentation; (2) the importance of learning in "in-between" formal spaces; (3) the importance of environment diversity; (4) the importance of social and inclusive spaces against segregation; (5) the idea of the city as an extension of the school and, conversely, of the school as more like the city.
First, about classrooms, students said that:

(…) classrooms could be more attractive. They're very dull. We get in and there's no relation between the room and the subject, one teacher stands there lecturing on Geometry, another one on Drawing and it's always the same thing. Subjects could be more open to each other; teachers and students should connect and interact more. (…) Come to think of it, we've already spent 10, 11 years in a room that's always the same. We always get the same environment. Clearly, they can't change this a whole lot, but when they fail to provide somewhat different rooms that could motivate us, they don't give us much to hold on to.

(Avelar Brotero Secondary School, Coimbra)

Classrooms are described as neutral spaces lacking identity, without any feeling that links students with real life and real motivations. Moreover, they suggest that each classroom should have its own environment and it should provide diversity. They imagined the classroom as a space not only for studying and having lectures, but also for experimentation, which includes all kind of training and team work. For this reason, classrooms should be more like laboratories of experimentation connected with tangible subjects. This is a more holistic approach to learning that requires particular spatial features that should be developed.
Outside classrooms, in the school buildings with long corridors, here is what students have to say about them:

> The corridors are tedious, it looks like a hospital.
> (Francisco de Holanda Secondary School, Guimarães)

> These new corridors to the labs seem like a prison. (…)

The corridors are too dark and too narrow for these many students. It gets really packed, with so many classes sharing a single corridor. There are some benches, but not enough for a lot of us to sit on. Also, while we're waiting for the teacher to come, we tend to make a circle

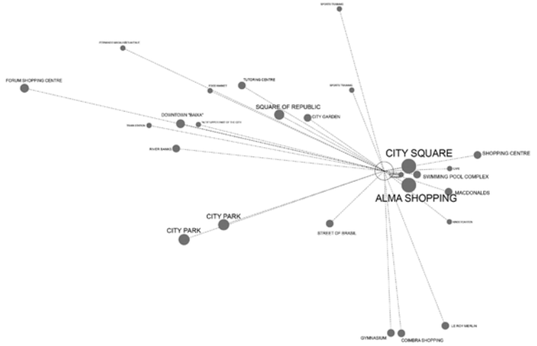

Fig. 5: City Mapping: Students' uses outside school, Coimbra network Avelar Brotero Secondary School in Coimbra.

outside the classroom, which leaves very little space for everybody else to cross the corridor. In conclusion, the corridor is too small for so many people. (…) There should be intermediate spaces to the corridor. There could be spaces with couches. We could use that exhibition area nobody cares about, bring in some couches, and that would make it really pleasant. The space itself is very pleasant, it has lots of windows, there's a lot of sunshine coming in, and we could see the teachers passing by, meaning we'd see them arriving and would get to class.

(Avelar Brotero Secondary School, Coimbra)

Corridors traditionally play a functional role of circulation. However, from the students' perspective, they are now a problem in the social functioning of school space. They are the first social space students

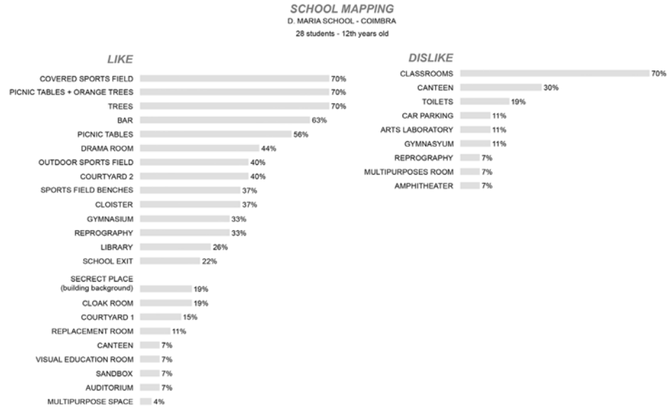

Fig. 6: School Mapping: Graphic representing the percentage of "Likes" and "Dislikes" students have pointed out in their school space analysis. Infanta D. Maria Secondary School in Coimbra; 28 students of 12-years-old.

enter after classrooms. It is a kind of release area that should foster social relationships beyond workspaces. For that reason, it is important to rethink the shapes of corridors in order to provide environments where students could stay in-between worktimes. Students suggest intermediate spaces, not as large as a cafeteria or a library, but with enough space and comfort to be appropriated whenever they need them and whatever they need them for. These informal spaces not only improve the opportunities for work, but also enable non-intentional learning, providing variety and a sense of belonging or familiarity with space.
Schools should encompass different kinds of both work and social environments towards a more diverse and stimulating learning process, offering new environments that could help with motivational needs. As some students have pointed out:

We're lacking a place to socialize, as well as places outside the classrooms where we can be in.
(Mário Sacramento Secondary School, Aveiro)

We don't have a place to be during recess. There's not much to do inside the school grounds, it's not enough to make us prefer to stay in instead of going outside. Almost all the spaces are places to pass through, except for the classrooms. When we go to recess we can't interact with a big group of people because we don't have a good space to be in. If it's raining we have to leave the school grounds, otherwise we risk being told off in the corridors for cluttering the passageways and have to head to the cafeteria, where it gets really crowded.
(Francisco de Holanda Secondary School, Guimarães)

Furthermore, in some schools, students talk about segregation between students and teachers:
The school is too divided between spaces for teachers and spaces for students. It was built for teachers and not for students. Students can't use the main entrance. That one is for teachers and clerks alone. We have to get in through a place further away and sometimes we have to walk in the rain to get there. We lack a common place for teachers and students to socialize.
(Francisco de Holanda Secondary School, Guimarães)

Reacting to these situations, students choose to go outside the school:

We always go outside; the school is really well located. It would be a different story if it were in the middle of the woods…and we have lots of cafes nearby, we hang out in cafes a lot.
(Francisco de Holanda Secondary School, Guimarães)

Summing up these ideas, one 16-year-old girl in Aveiro school explains:

This school is very hung up on the concept of studying. But when we want to get together and hang out we don't stay at school, we

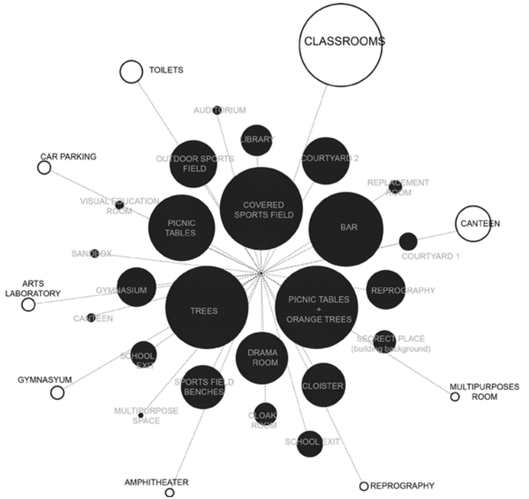

Fig. 7: School Mapping: Graphic representing the "Likes" and "Dislikes". We represent the places they like the most closer to the centre and the places they dislike the most farther from it. Infanta D. Maria Secondary School in Coimbra; 28 students of 12-years-old; March 2018.

go outside school. When we're at school, we'd like to feel as we do when we're outside of it. For that to happen, there would have to be more relaxed zones with couches, where we could hang out and play cards. For us, school is more than just studying. We have our friends here. (…) Even in a working environment, like a school, it's important to feel a little warmth, being together. Having a good relationship with our schoolmates.
(Mário Sacramento Secondary School, Aveiro)
This student's quote summarizes this debate in one single idea: on the one hand, a school as a city is a strong cartographic metaphor to guide future educational spaces and, on the other hand, a city as a school is another strong image to rethink urban design, as well as city management. A diagram based on the students' insights presents the idea of the school environment closer to the city, because according to students, the city is the place of socialization and experimentation. Furthermore, it elucidates us on the necessity to rethink the school space with more urban characteristics.

Conclusion

In the end, students could have their own voice about schools nowadays. Generally, existing schools (renewed or not) present the same structural space characteristics: they are all classroom- centred, the programs have a rigid compartmentation and there is a lack of informal learning spaces and of environments that foster socialization. In Portugal, educational spatialities are still strongly connected with traditional schools' facilities, which hinders their transformation. For this reason, it is useful to understand educational spatialities as every place, space, environment and territory that has an effective educational role in everyone's life, where everyone could have their own voice. Thus, it is important to break the fences that divide the school and the city educational possibilities.
Understanding how students relate with both school and urban spaces in situ has allowed us to develop participatory methods in light of a cartographic analysis. This way, the process of research become not only a moment of reasoning, but also an emphatic moment of understanding with learners. By connecting uses, perceptions, theories and places in a figure network, the tool we propose here can guide architecture and urban design, as well as the process of decision making in multidisciplinary fields. Furthermore, this tool has possible applications in both academic and social, political and architectural contexts, because visual representations are able to evidence a political and an educational orientation of each city and school. Consequently, it enables us to question and transform their relations. In other words, this approach has a potential impact in terms of generating change by acting on our own context and on our educational network, connecting people, space, places and regions.

Acknowledgements

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Bibliography

Canadell, À & Vicens, J. (2010). Habitar la Ciudad. Madrid: Miraguano Ediciones.
CEC Commission of the European Communities (2000). A Memorandum on Lifelong Learning. Brussels. Retrieved from: http://tvu.acs.si/dokumenti/LLLmemorandum_Oct2000.pdf
Crampton, K. & Krygier, J. (2006). "An Introduction to Critical Cartography". ACME: An International E-Journal for Critical Geographies, 4(1), 11-33. Retrieved from: https://www.acme-journal.org/index.php/acme/article/view/723.
Duarte, A.; Veloso, L.; Marques, J.; Sebastião, J. (2014) "Site-specific focus groups: analysing learning spaces in situ", International Journal of Social Research Methodology, London: Routledge, 1-18. Retrieved from: http://dx.doi.org/10.1080/13645579.2014.910743
Duarte, F. (2017) Space, Place and Territory. A Critical Review on Spatialities. London: Routledge.
Freire, P. (1993) Pedagogy of the City, Translated by Donaldo Macedo, Continuum: New York. (1991, 1st Ed)
Gruenewald, D. A. (2008). "The Best of Both Worlds: A critical pedagogy of place", Environmental Education Research, 14(3), 308-324. Retrieved from: https://www.jstor.org/stable/3700002
Hertzberger, H. (2008) Space and Learning Lessons in Architecture 3, Rotterdam:010 Publishers.
IAEC International Association of Educating Cities (2010). Charter of Educating Cities. Barcelona. Retrieved from: www.edcities.org
Innerarity, D. (2010). O Novo Espaço Público. Lisboa: Editorial Teorema.
Latour, B. (2005) Reassembling the Social: An Introduction to Actor-Network-Theory. Oxford: Oxford University Press.
Latour, B. (2008) "The Space of Controversies: An Interview with Bruno Latour". New Geographies, Design, Territory. 1(1), p. 122– 136.
Lévy, J. (2012) "A Cartographic Turn? Bridging the Gap between Sciences and Technologies of the Inhabited Space. ", EspacesTemps.net, Travaux. Retrieved from: http://www.espacestemps.net/articles/a-cartographic-turn/
Lynch, K. (1960) The Image of The City. Boston: The MIT Press
Pedrick, C. (Ed.) (2016) The Power of Maps. Bringing third dimension to the negotiation table. Netherlands: Proud Press
Taylor, C. (2009). "Toward a Geography of Education",

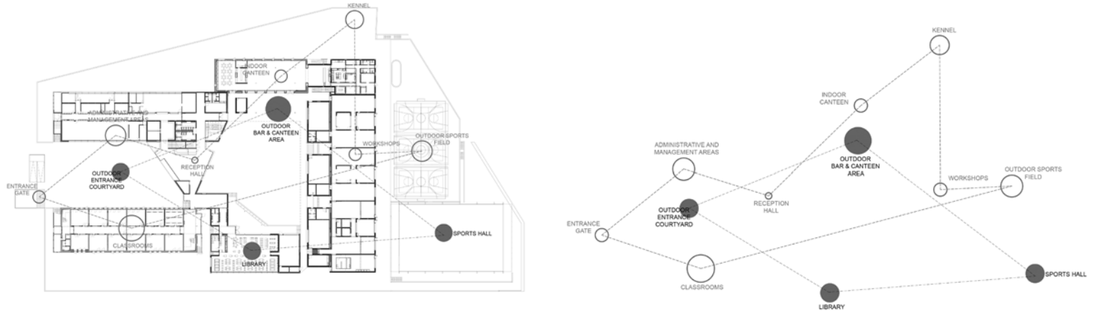

Fig. 8: School Mapping: Graphic representing two pathways, one for the likes (full circles), and another one for the dislikes (empty circles). Mário Sacramento Secondary School in Aveiro, Portugal; 56 students of 16-years-old; 4th March 2016.

Fig. 9: Classroom: Infanta Dona Maria Secondary School; Coimbra, Portugal, 2018.

Fig. 10: Corridor: Infanta Dona Maria Secondary School; Coimbra, Portugal, 2018.

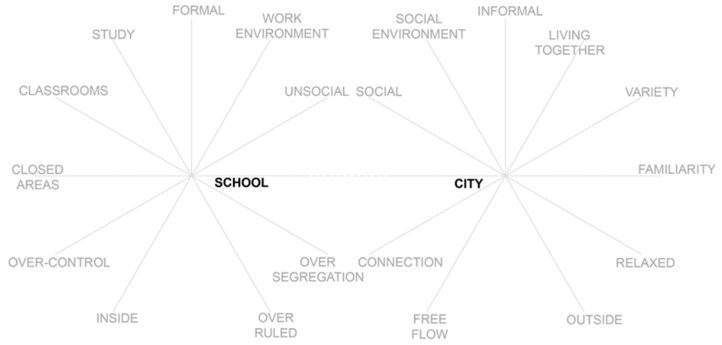

Fig. 11: School and city diagram.

Oxford Review of Education, 35(5), 651-669. https://doi.org/10.1080/03054980903216358
Veloso, L.; Marques, J; Duarte, A. (2014) "Changing education through learning spaces: Impacts of the Portuguese school buildings' renovation program", Cambridge Journal of Education, London: Routledge/Taylor & Francis Inc. Retrieved from: https://ciencia.iscte-iul.pt/public/pub/id/22863
Woolner P.; Hall, E.; Wall, K. (2007) "Getting together to improve the school environment: user consultation, participatory design and student voice", Improving Schools, SAGE Journals, 10 (3), 233-248. Retrieved from: https://doi.org/10.1177/1365480207077846
Yaneva, A. (2009) "Border Crossings, Making the Social Hold: Towards an Actor-Network Theory of Design." Design and Culture. 1(3), 273-288. DOI:10.2752/174967809X12556950208826

Notes

[1] The idea for this activity is based on the research work carried out by the Centre for Research and Studies in Sociology of ISCTE - University Institute of Lisbon (CIES-IUL) about site-specific focus group, a technique of analysing learning spaces in situ, developed as part of the assessment of the secondary school modernization programme in Portugal (DUARTE et al., 2014).
[2] All quotes referring to students' voices were translated by the authors of this article.

Image Credits

Fig. 1: Frontispiece Activity with students in Infanta Dona Maria Secondary School
Coimbra, Portugal, March 2018 Photo /Credits: Suellen Costa & Carolina Ferreira
Fig. 2: Schools' Profile; Credits: Authors
Fig. 3: City Mapping: Comparing Different City Networks, First Experiments Credits: Authors
Fig. 4: City Mapping: Graphic representing the percentage and the uses by students outside school Avelar Brotero Secondary School in Coimbra Credits: Authors
Fig. 5: City Mapping: Students' uses outside school, Coimbra network Avelar Brotero Secondary School in Coimbra
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Fig. 11: School and city diagram Credits: Authors

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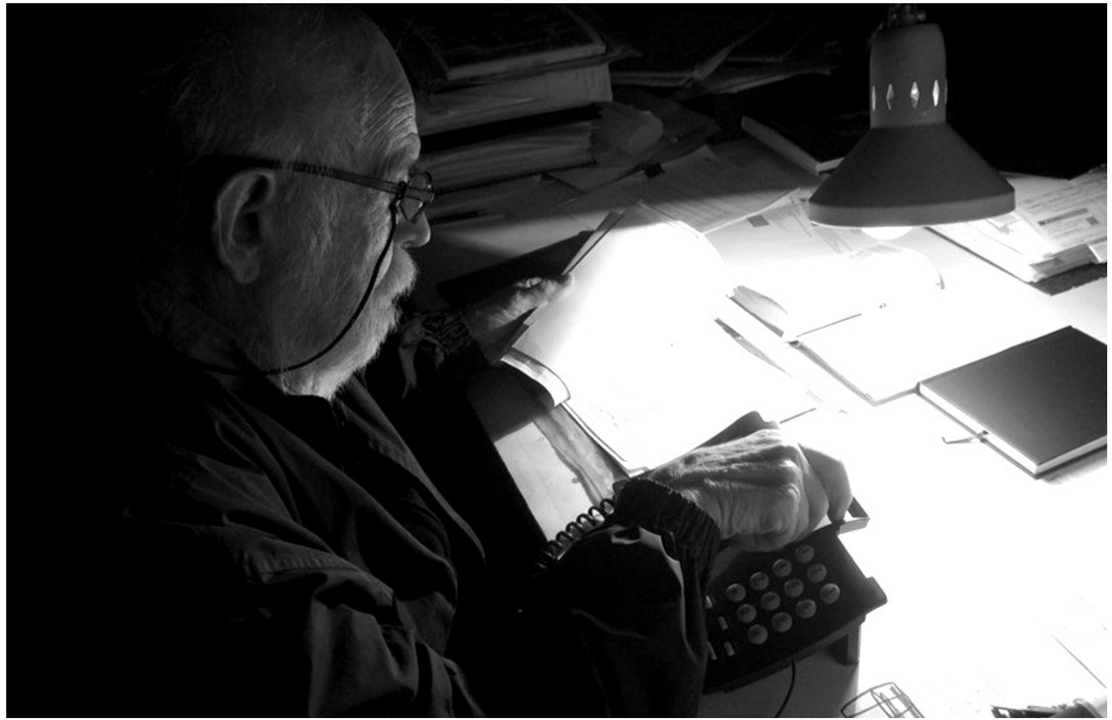

Fig. 1: Last Photograph of Hestnes Ferreira in his office, Lisbon, December 30, 2017.

Between the local and the global - The Pedagogical Experience of Raúl Hestnes Ferreira

Abstract

This article intends to emphasize Raúl Hestnes Ferreira's (1931-2018) merits in three fields: architectonic practice, pedagogical experience and architectural research. His remarkable and important contribution to Portuguese architecture was recognized by Coimbra University in 30th of September 2007, when he was awarded with the degree of Doctor Honoris Causa. He is an honorary member of Portuguese Institute of Architects (2010) and he owns a renown and award-winning professional practice. The article addresses Ferreira's experiences in Scandinavia, in the late 1950s, where he looked at Alvar Aalto's architecture, and in the USA, in the early 1960s, where he did a master in Pennsylvanian University and collaborated with Louis Kahn. Ferreira's research focused on Cassiano Branco's production, where he reflected about the relationship between ideology and architecture in the 1930s and the role of engineers in the change of the Lisbon image after that decade.

Raúl Hestnes Ferreira // architectural practice // pedagogical experience // architectural research // Cassiano Branco

Introduction

Architect and professor Raúl Hestnes Ferreira (1931-2018) was a relevant personality of the architectural and cultural Portuguese panorama. (Fig.1) Ferreira belonged to the fourth generation of modern Portuguese architects, who received their diploma between the 1940s and 1950s. After the graduation, his experiences, studies, and surveys made him, a key-figure to understand the national debate on architecture, particularly in the second half of the 20th century. His knowledge and experience of life were the base of his discourses as a professor of architecture at five different Universities, between 1970 and 2017, influencing and motivating several generations of students. With his collaborators in the office, he developed more than three hundred and fifty projects, including Masterplans, buildings and furniture. The most recurring project include housing and education programs, such as universities and libraries, , featured by geometric spaces, the sensitive value of light and the expressive potentialities of shape and materials. (Fig. 2)

This article is anchored in an on-going post-doc research which aims to investigate Ferreira's personal assets existent in his office in Lisbon Vila Sousa, in Graça neighbourhood. His drawings, letters, models, and memories have been fundamental pieces to understand the theoretical bases of Portuguese architecture after the Carnation Revolution of 1974.

Ferreira's educational path amongst Portugal, Finland and the USA

Raúl Hestnes Ferreira was born in 1931 during the military dictatorship, proclaimed in Portugal after the coup d'etat that deposed the Republican regime in 1926. This political cycle would become consolidated after the Constitution of the New State (Estado Novo) in 1933, under the leadership of Oliveira Salazar (1889-1970), featuring the Portuguese political situation until the democratic shift, which took place in 1974.

Ferreira's family was constituted by prominent personalities with regular civic participation in different movements of the 20th century Portuguese political scene. His grandfather Alexandre Ferreira (1877-1950) was a Republican councilman of Lisbon City Hall, who developed educational policies and social support to maternity of poor families. Also, his father, the writer José Gomes Ferreira (1900-1985), was actively involved in the opposition to the Salazar regime, taking part in the artistic and intellectual cycle of the neorealist movement. It was during his activity as a diplomat in Kristiansund, Norway, between 1926 and 1929, that he got married to Ingrid Hestnes (1904-1949), Raúl's mother. (Fig. 3)

The Architect Francisco Keil do Amaral (1910-1975) and his wife the Painter Maria Keil (1914-2012) were recurrent guests in Ferreira's house, contributing to structure his sensibility and his attention to the theoretical discourse of arts since his youth, opening his curiosity to what was happening beyond the Portuguese borders, mainly in Scandinavia and northern Europe and the United States. Gunnar Asplund (1885-1940), Willem Marinus Dudok (1884-1974) and Frank Lloyd Wright (1867-1959) were central references for Keil do Amaral, shaping his thought on architecture revealed in his books, The Architecture and Life (A Arquitetura e a Vida), in 1942, and The Modern Dutch Architecture (A Moderna Arquitetura Holandesa), in 1943.

Ferreira's preliminary school path was qualified, attending prestigious institutions in Lisbon at the time. He completed the kindergarten at École Française and the elementary school at Academic College.

Fig. 2: Marvila Library.

Fig. 3: Ingrid Hestnes and José Gomes Ferreira, Lisbon, 1931.

Fig. 4: Hestnes Ferreira in Finland, 1958.

The high school was divided between Gil Vicente School (1941-42 to1946-47) and Camões School (1947-48), returning to Academic College (1949-51) in order to conclude this cycle.

In the 1950s, Ferreira entered at the Fine Arts School of Lisbon to attend the course of sculpture, moving in the following year to architecture. In the school he was an elected member of the newly formed Association of Students in 1953-54, a position he used as a stage to spread his political and social conscience, which resulted in his detention by PIDE (International State Defense Police), in 1954. After his court case acquittal, he asked to be transferred to the Fine Arts School of Porto, where completed the 4th year of the Special Architecture course in 1956-57. The period he stayed in Porto, gave him the opportunity to collaborate with the architects Arménio Losa (1908-1988), Cassiano Barbosa (1911-1998) and also with João Andersen (1920-1967).

Alvar Aalto's (1898-1976) work, which had amazed the young Portuguese architects in the 1950s through the pages of L'Architecture d'Aujourd'hui, motivated Ferreira's option and his desire to visit the work of the Finnish master. Between 1957 and 1958 Ferreira moved to Finland, traveling around Scandinavia, pursuing Alvar Aalto's architecture and that of his Nordic colleagues. (Figure.4) This study trip was not only an opportunity to surpass the crisis of the modern movement, but also a chance to figure out possibilities for intervening in his own country, which was at the time closed behind Salazar's dictatorship. In short, it broadened his scope. In Finland, he attended, as a student volunteer at the Finnish Institute of Technology in Helsinki, classes of the urban planner Otto Meurman (1890-1994) and he followed the Architecture studio with Heikki Siren (1918-2013). These two

architects had a strong impact on Ferreira's education, revealing him the importance of the construction and structure as an integral component of the conceptual process. In 1958 he collaborated in the office of Woldemar Baeckman (1911-1994) in Helsinki, and during this period he also developed a Contest for a Church as a collaborator of Osmo Rissanen. (Saraiva 2011). On his return to Portugal, in 1958, Ferreira visited Belgium, Scotland, England and Paris.

In 1961 he concluded his graduation in Architecture at the Superior School of Fine Arts of Lisbon with the thesis: 'University Residences - Plan and Projects', with the grade 19 out of 20.

His awareness about the international debate on architecture led him to apply for a Caloute Gulbenkian Foundation grant to conduct a master program at the University of Pennsylvania. (Figure. 5) In the USA, Ferreira attended the Architecture Studio led by Louis Kahn, with the support of Norman Rice (1903-1985) and Le Ricolais (1894-1977). He had also the opportunity to attend the classes of City History by E. A. Gutkind's (1909-2004), Urban Sociology by Chester Rapkin (1919-2001), Concrete Structures by August E. Komendant (1906 -1992) and Landscaping by Georges Erwin Patton (1920-1991). The weekly conferences by Lewis Mumford, Holmes Perkins, Mac Harg, Burle Max, Charles Eames and Crane, among others, were significant opportunities to understand the main ideas and experiences at the time as well as establishing direct contact with those protagonists.

In the sequence of his studies, Ferreira took part of Louis Kahn's studio, between 1963 and 1965, participating in the plans for the Pakistani government centers in Dhaka and Islamabad, as responsible for the design of the buildings of the National Assembly and Dhaka's main hospital.

The American experience allowed him to interiorize the significance of the ancient Mediterranean culture and the extension of the idea of 'monumentality' developed by Kahn. When he returned to Portugal in 1967, this sensibility was crucial, in developing an architecture conceived from common technological processes, sensitive to popular knowledge, places, materials, and proportions, providing, in a certain sense, the restoration of some social foundations of architecture.

Ferreira´s architectonic practice

His architectural practice was quite intense and can be understood by the constant triangulation between Mediterranean and Scandinavia architecture and Kahn's work, in search of the essence of architecture. More than eighty architects from different generations worked in his office, such as Vicente Bravo, Romeo Pinto da Silva, Silva Gomes, Manuel Miranda, Rodrigo Rau, Eugénio Castro Caldas, Filipa Vedes, Manuel Samora, Teresa Valsassina, Teresa Poole da Costa, Pedro Ressano Garcia, Bernardo Miranda, Gonçalo Saldanha, Ana Chiote, Marta Macedo, Susana Sequeira, as well as several designers such as Jaime Pereira, Luís Castanheira among others.

In the Portuguese as well as in the international context, authors like Carlos Santos Duarte, Paulo Varela Gomes, Willy Serneels, Ahmet Gülgönen and others, confirm the importance of Raúl Hestnes Ferreira for the panorama of Portuguese architecture. He won several awards and prizes with his works, the first of which was the National Prize of Architecture and Urbanism of 1982, by the Portuguese Section of the International Association of Art Critics and in 2002, the Valmor Prize for ISCTE II building. Ferreira was the winner of the Tektónica Architecture Award 2015, attributed, according to the jury, "for the emblematic work in Portuguese architecture".

The design, the order and the form are for Ferreira, concepts that are interrelated and complementary, in the will to overcome the conceptual process. In Ferreira's works, ancestry, tectonics and geometry are inseparable. The materials are chosen in accordance with the formal and expressive potentials of each site and integrating the value of time and the way each material behaves throughout the life expectancy of the building. By making the construction system apparent, each work is simplified, eliminating any element that may confuse its reading. Ancestry is one of the qualities of his works, originated by his interpretation of the long time.

One of his early works, was the house in Albarraque, for his father, in 1960 This work reflects the strong connection with the owner and the respect for the surroundings, having been determinant in the formal simplicity of the house. Manuel Graça Dias performed in 2013, a short film about the house 'A Encomenda' (18') in the context of the research project, Silent Rupture. Intersections between architecture and film. Portugal, 1960-1974. In 'A Encomenda' (The order), architecture is the protagonist, but "this" architecture cannot be explained without revealing a little of the family context that accompanied its construction. And it is this story behind this architectural project, this "biography" of house in Albarraque, which the film manages to convey with effective and relaxed rigor, where Raúl Hestnes Ferreira participates.

The Municipal Library of Marvila (2014-2017) in Lisbon, was his last work, with almost 3000 square meters, occupies two buildings, one new and another recovered. The books and memories of the past coexist side by side, between reading rooms, work rooms and play areas for different age groups. In the old restored building of the Quinta das Fontes there is an area of homage to the writer José Gomes Ferreira, the architect's father.

Fig. 5: Hestnes Ferreira with Edgar J. Kauffman and others architects, Fallingwater house, 1963.

Ferreira´s pedagogical experience

In 1966, Ferreira applied for a Professor position on Architecture at the School of Fine Arts in Lisbon. Although his international experience and the level of his studies and capacities, attested by a recommendation letter of Louis Kahn in person, he was excluded by a decision of the Ministers Council, confirmed by PIDE information. The base of the decision was Ferreira's previous path as student and his registration as an opponent of the regime.

This fact postponed the beginning of Ferreira's pedagogical experience which took place between 1970 and 1972 at the Lisbon School of Fine Arts. During this period, he was invited as Guest Lecturer Assistant, collaborating with Frederico George (1915-1994), in the disciplines of 'Architecture' of the 4th, 5th and 6th years.

Sixteen years later, after a short two-year experience (1988-1990) as a Guest Professor at Cooperativa Árvore University, invited by Pedro Vieira de Almeida, Ferreira initiated his work as Guest Professor at Coimbra University. It was in Coimbra that Ferreira established stronger links with pedagogy, during a period of twelve years, between 1990 and 2003, when he shared his classes with a generation of prominent assistants, such as, Gonçalo Neves, Pedro Maurício Borges, Adelino Gonçalves, Nuno Correia, Armando Rabaça and Susana Lob. (Bandeirinha 2013). Between 2001 and 2003, Ferreira also taught at ISCTE University, concluding his Professor career at Lusófona University, where he taught from 2010 until 2017.

The methodology and type of exercises proposed to his students were similar in all the schools he taught. Generally, he always taught at the 1st year of architecture. For this stage he gave a kind of condensed architecture course, where the students should perform exercises with different scales, programs, and situations. According to Ferreira, the students should 'leave the first year with an overall idea of what architecture is.' (Saraiva 2011:296).

'Introduction to Architecture' was the subject that Ferreira coordinated at Coimbra University, aiming at clarifying the multiplicity of factors that informed and conditioned the organization and composition of architectural space, and its relationship with the environment. The pencil (graphite or color) was the main representation medium. In its pedagogical practice, the composition of an architectural space goes through an internal process, supported by cultural factors, which should encourage the development of the capacity of seeing, understanding, inventing, rationalizing and transmitting the architectural proposals.

In 'Introduction to Architecture' seven exercises used to be launched as a strategy to confront students with the experimentation of the most recurring situations in architecture. The first exercise aimed at underlining the realistic sense of architecture, through an analytic work focusing on historical buildings and their construction processes. This gave students the opportunity to develop their skills in two-dimensional representations at different scales and techniques. A three-dimensional representation was also explored through physical scale models. In the second exercise he focused on concepts of abstraction. Short programs were launched to be manipulated through platonic solids. Students should deliver their proposals using the scale 1/200 and 1/100 accompanied by a scale model. The third exercise used to correspond to the constructive development of the previous one. Students should use their preliminary knowledge about ordinary materials, to strengthen an internal and external characterization of their proposals. The control of acoustic, ventilation, insulation and lighting conditions of the projects, in accordance with its location, were also mandatory aspects. The drawings had to be drawn at a 1/50 scale, with stereotomy representation, textures and chromaticism. A constructive scale model, at 1/20, was also requested. The fourth exercise aimed at understanding the ergonomic proportions of human beings as an essential factor in architecture. The students had to design a piece of furniture integrated in an appropriate internal space. This exercise had to be done on scale 1/5. In the fifth exercise, focusing on the importance of landscape architecture and natural materials, students had to adapt an unoccupied urban area into a leisure nucleus, with the definition of all plant species and facility elements. In this exercise, larger representation scales had to be explored, for example the model of the intervention area had to be made at scale 1/200. The sixth exercise encompasses the development of a house with a very simple program in a limited amount of time. The seventh and last exercise comprises the design of a small two-story building, in a difficult urban context. Usually very small lots were proposed, preferably in a corner of a block. All the requested graphic elements had to be delivered with a pencil (graphite or color) on opaque paper (vegetal sheets or copies were not allowed). Each exercise should be accompanied by a short supporting text.

His teaching was innovative in the experimental way that the exercises are divided into two distinct phases. In the first phase the students must exercise the ability to 'see', 'feel' and 'represent' the environment, at various scales, through various techniques of design and volumetric representation. In the second phase, they learn to 'create', while formulating their own proposals

Once a week, Ferreira showed the students a multitude of slides, ranging from Greek and Roman architecture, to Romanesque, Gothic, Renaissance, Baroque, nineteenth-century architecture, or the most significant architects of the 20th century (such as Le Corbusier, Barragán, Aalto, Scarpa, among others).

Ferreira's research activity

As an architect, Ferreira investigated his own projects, which were used by himself as cases studies to rehearse new typologies, material techniques and light capacity on space definition. These architectural fundaments were important tools for him to understand the human behavior and the capacity of modern architecture in establishing connections with the legacy of the ancient past. The sense of 'monumentality' apprehended from Kahn, potentiated Ferreira's investigations about a certain sense of eternity, clearly characterized in the durability of his architecture and in its resistance to the cadence of time. Ferreira pursued those principals through the complexity of his graphite drawings, encompassing his gestures and his own body in the same process of his projects' conceptualization.

Ferreira also dedicated himself to organize and reveal the assets of his own family. His father and grandfather personal, artistic and political paths were thoroughly studied as a source of inspiration for framing his ethical principles. In 2000, Ferreira was the curator of the exhibition of the commemorative catalog of the centenary of his father's birth, entitled José Gomes Ferreira, the workman of the words, where several personalities from different areas reflect on the "imaginary" of his father and the different artistic areas he developed, from literature (fiction, poetry, chronicles, memoirs and diary), music, translations and events that marked the life of his father. The photo-biography published by Ferreira in 2001 is important because it fits the various personal events, with the social and political events

of José Gomes Ferreira, showing the different facets of the poet: literature; science and technology; art; music; cinema - relating to the Portuguese and International contexts. Among the friends with whom he created ties of deep friendship and camaraderie, are musicians such as David de Sousa and Lopes Graça, architects and artists such as Keil do Amaral, Maria Keil, Bernardo and Ofelia Marques, Manuel Ribeiro de Pavia and Nikias Skapinakis, men of science such as Bento de Jesus Caraça, Alberto Candeias and Luis Soeiro, and writers such as José Rodrigues Miguéis, Manuel Mendes, Mário Dioniso, Manuel da Fonseca, Carlos de Oliveira, Joao José Cochofel, José Fernandes Fafe, Alexandre Pinheiro Torres and Augusto Abelaira.

Besides Ferreira's researches about his architectural activity and his family, the role of architects and civil engineers in the 1930s was also a subject of his particular attention. The massive use of concrete in public works and residential buildings in that decade defined a new vocabulary for architecture. Cubic shapes, plans, curved balconies, and cantilevered slabs, became recurrent elements of the urban image.

Cassiano Branco's (1897-1970) personality emerged among the architects considered the pioneers of modernity in Portugal. Hestnes Ferreira, together with Fernando Gomes da Silva, initiated in the late 70s a preliminary research about this relevant architect of Lisbon that had a huge production in the capital. Cassiano Branco was also seen as opponent to the regime, as Hestnes Ferreira. Indeed, his activism also conducted himself to be arrested in 1958, which made him a particular character among his generation.

The studies and scientific interest about Branco's architecture started in 1976 when the magazine L'Architecture d'Aujourd'hui, dedicated an issue to Portugal two years after the Carnation Revolution. Hestnes Ferreira was deeply implied in the structure of dossier named 'Portugal an II', proposing the article "Cassiano Branco (1897-1970) – L'Exception et la Régle", written by Gomes da Silva. This article was later used as base to the exposition organized by the Portuguese Association of Architects, commissioned by Hestnes Ferreira and Gomes da Silva in 1981. They wrote the catalogue, to show that Branco's production corresponded to a relevant contribution to the Portuguese history of architecture, particularly about the relations between ideology and architecture. (Ferreira & Silva 1986) Hestnes Ferreira and Gomes da Silva would also be involved in the preliminary analysis of Cassiano Branco's assets, saved by the City Hall of Lisbon, since 1991. (Bonneville et al.1991)

Conclusion

Ferreira's path as an architect, professor and researcher was the basis of his civic personality, which inspired a high number of students and collaborators. His remarkable and important contribution to Portuguese architecture was recognized as an honorary member of Portuguese Institute of Architects. Within the professional practice, his father is linked to the first and last work. In the first, he creates his house in Albarraque and in the last, creates a space where several documents were present, pieces of furniture and portraits of José Gomes Ferreira.

Although his own projects were the center of Ferreira's activity, his surveys about the bases of modernity in the Portuguese architecture of the 1930s were also relevant. Particularly through his research about Cassiano Branco's production, he reflected about the relationship between ideology and architecture and the role of the engineers in the urban change of Lisbon image after that decade.

His important contribution to the pedagogical experience was recognized by the University of Coimbra (2007) with the degree of Doctor Honoris Causa, Merit Medal of the University of Lisbon (ULisboa) (2011) and the Diploma of Recognition and Merit of the Lusófona University (2014). In 1995, Hestnes Ferreira presented a very clear reflection on the Architecture course at the University of Coimbra's Tomar Meeting, emphasizing the importance of drawing, constructing models as tools of a mental process. According to Ferreira, 'In any creative work, the mental capacity of conceiving should be considered the fundamental phase, preceding any type of representation' (Ferreira, 2000). Ferreira finishes his communication, comparing his experiences as professor with a microcosm where the students should be involved to develop their own sensibility as architects.

Bibliography

Bandeirinha, J.A. (2012, abril) Pedagogia do Projecto. JOELHO, 3, 102-113.

Bandeirinha, R.M. (2013) O limiar do Claustro Origens e práticas do Departamento de Arquitectura de Coimbra. Orientador: Jorge Figueira. Departamento de Arquitectura, FCTUC

Bonneville, m. r.; Summavielle, e.; Cayatte, h. (Coord.) (1991) Cassiano Branco uma Obra para o Futuro, Câmara Municipal de Lisboa, Pelouro da Cultura, Edições Asa, Lisboa.

Ferreira, R. H.; Silva, F. G. (1986) Cassiano Branco, Catálogo da exposição organizada na Associação dos Arquitectos Portugueses, Lisboa

Ferreira, R.H. (2000, março) Comunicação. Ecdj, 2,

Saraiva, A. (2011) A influência de Louis I. Kahn na obra de Hestnes Ferreira. Director: Madrid, Joaquin Fernadez. Universidad de La Coruña, Departamento de Construcciones Arquitectónicas

Image Credits

Fig. 1: Last Photograph of Hestnes Ferreira in his office, Lisbon, December 30, 2017. Credits: Hestnes Ferreira's personal archive

Fig. 2: Marvila Library. Credits: Hestnes Ferreira's personal archive

Fig. 3: Ingrid Hestnes and José Gomes Ferreira, Lisbon, 1931. Credits: Hestnes Ferreira's personal archive

Fig. 4. Hestnes Ferreira in Finland, 1958. Credits: Hestnes Ferreira's personal archive

Fig. 5: Hestnes Ferreira with Edgar J. Kauffman and others architects, Fallingwater house, 1963. Credits: Hestnes Ferreira's personal archive

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Fig. 1: Aerial photo of the project area from google earth.

To experience preservation and design of modern architecture by combining original and new functionality: Antalya Memur Evleri example

Abstract

Architectural education of Akdeniz University is built on conservation and design researches predominantly. Accordingly, in 2017-2018 fall term the theme of Architectural Design III course, that aims awareness on housing and sociology in urban context, is “neighborhood of modern housing”.

The project area is located in Antalya Memur Evleri Region which was established as a planned housing area in 1960’s (Cimrin, 2007). The apartment houses are known as the first high-rise(!) housing of Antalya (Gönüllü, 2012) which was previously one or two storey single family houses built in traditional plan types.

In the 1960’s, Antalya was a small city and closed community where everyone know each other. But state officers were generally foreigners moved to town as commissioned in various governmental agencies. Housing these foreigners can sometimes be problematic, not only due to few number of tenements but also differences between local and new families. The housing area is specifically designed for needs of these families in modern plans with modern kitchen and bathroom, and special outdoor facilities such as playgrounds and car parking areas in order to establish a living neighborhood. Moreover, this project is a distinctive one which was financed in special method (Güçlü, 1997). A cooperative for housing was established for state officers who could have apartment houses by paying small fees in a long time. Needless to say, the apartment houses were built on a site which was cheap and far from city center.

Unfortunately, time brought some innovations and opportunities also threats and deformations. Antalya get a lot of immigration and city borders expanded too much. The area has become the center of the city and its habitation identity transformed to commercial one. As a result of these processes, most locals moved out of the region and the rest get really old.

Under these circumstances, the main problematic of the Design Studio is defined as to restore this mid-century modern housing area by reusing the existing settlement and adding new functions to the area to create original social coherence. Hence, the local residents of the region can maintain their lives and new ones can establish new neighborly relations in an area where the first modernist apartments and residents of Antalya are located. The study method was developed to address the social, aesthetic, technical and legal aspects of the problem. However, it was observed that the students made all the targeted analyzes, but the aesthetic aspect was prominent in their designs. The aesthetic aspect of student designs produced two different attitudes, which can be briefly summarized as harmony and contrast with the existing context. This study aims to convey that among all the analysis carried out in the studio process, the aesthetic analysis is the most influential analysis that affected the student projects.

Modern Heritage // Adaptive Reuse // Architectural Education

Introduction

Architecture is a powerful tool shaping physical environment, affecting all actions of human life through space. Nevertheless, the places in which we live our daily lives are probably the places we most interact with architecture, feel the presence of a designer and exposed (!) to design. The design of domestic spaces affect our everyday life from the first scene we see in the morning to a good quality of sleep while sleeping at night. Not only shaping every single detail of our everyday habits, these spaces also determine our social relations due to the intensive texture of our cities such as our neighborhood relationships, how close we are to each other and how far we can stay. For instance a good planning of a single flat enacts true relations with the climate and daylight, may affect the quality of the time we spend in our homes, while arrangement of units in plan and section of housing blocks affect the neighboring culture of the town, and lead to the divergence of different groups of the society.

In this context, the theme of Architectural Design Studio III in fall semester of 2017-2018 is designing vertical habitats, in which the quality of life and relationships in between the inhabitants are considered with the consciousness of housing, neighborhood and urban culture. More to the point, the students are asked to achieve these socio-spatial goals within an existing mid-century housing area which was damaged by an inconvenient addition in 1990's and lost its original neighborhood character. In doing so, it is required create a new housing area within an existing one while preserving the historical value of the place which was an important habitation area for state officers in 1960's. Unlike the low-density housing character of the area in 1960's in which the buildings are only rising blocks, the site is now surrounded by a school, a hospital, a busy avenue and dense housing area.

There are four existing mid-century housing blocks in the given project area (Fig. 1). These are the first examples of social housing in the city but there is an additional block built between them in 1990's without concerning the architectural coherence in-between them and destroyed the social relations on ground level. The students are asked to replace the inconvenient block (A) with a new one which will reinstitute these relations within the site and to restore this mid-century modern housing area by adding new functions to create old social coherence. Hence, the local residents of the region can maintain their lives and new ones can establish new neighborly relations in an area where the first modernist apartments and residents of Antalya are located.
In addition to rehabilitation of the site, they were asked to consider the historical importance of the site in city's collective memory. The students are free to offer their specific housing programs, but no suggestion can be made under the current number of users (the number of existing families and commercial area owners) in the replaced building. They are also encouraged to offer reuse of existing mid-century housing blocks when needed but they have to take into consideration the building codes such as zoning laws, axle, fax, altitude limitations and various regulations. The problems of traffic and parking should also be dealt with as contemporary urban challenges which was not the case in 1960's; but today a vital problem of the area. Therefore, parking problem had to be handled with care and size of parking should not fall below the recommended amount of living comfort and the recent cost of the investment in the area.

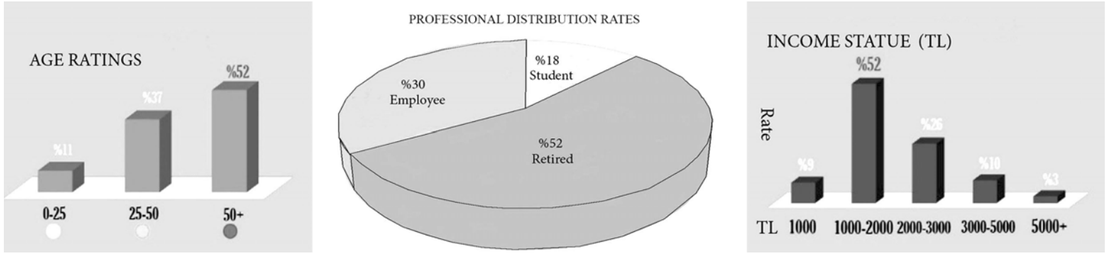

Fig. 2

The area

In the 1960's, Antalya was a small city and closed community where everyone know each other. But state officers were generally foreigners moved to town as commissioned in various governmental agencies. Housing these foreigners can sometimes be problematic, not only due to few number of tenements but also differences between local and new families. The housing area is specifically designed for needs of these families in modern plans with modern kitchen and bathroom, and special outdoor facilities such as playgrounds and car parking areas in order to establish a living neighborhood. Moreover, these project is a distinctive one which was financed in special method (Güçlü, 1997). A cooperative for housing was established for state officers who could have apartment houses by paying small fees in a long time. Needless to say, the apartment houses were built on a site which was cheap and far from city center.
Unfortunately, time brought some innovations and opportunities also threats and deformations. Antalya get a lot of immigration and city borders expanded too much. The area has become the center of the city and its habitation identity transformed to commercial one. As a result of these processes, most of the locals moved out of the region and the rest get really old. By the new construction within the site, the housing area divided into single apartment blocks, lost its common fields and accordingly lost its social coherence.

Designing within an historical environment

Designing within an historical environment is a complex problem for architectural education (Embaby, 2014). Therefore, students had to be guided delicately at the beginning of the studio, on the analysis stage. Hence the analysis process planned carefully in order to help students to develop their own ideas on conservation, reuse and built within an historical environment. The study method was developed to address the social, legal, aesthetic and technical aspects of the problem. After improving their knowledge about the historical importance of modern heritage and history of Republican period of Antalya, the students are informed about the analysis methodology and taken to site to experience and discuss about the qualities and problem of the area by analysis process.

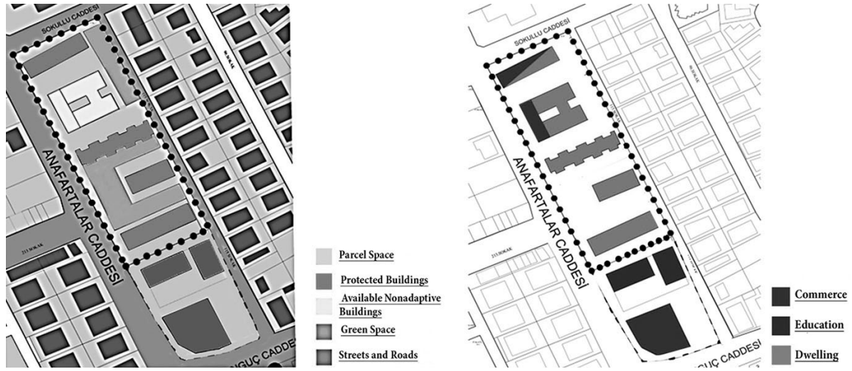

Fig. 3: Technical analysis studies of the building site.

Social Aspect

First of all, It is stated that students are expected to make projects that are compatible with the region and that offer solutions to the problems of the region. Therefore, the students were asked to analyze social structure of the area where they will design and to determine the requests and needs of the people living in the area. In order to design a project to solve to meet the requests, it is aimed to identify the current problems. Hence, surveys and one to one interviews are made with the neighborhood residents.The surveys are done on 155 participants and the one to one interviews are realized with 12 participants to take the comments of residents into consideration.

According to surveys, 52% of the residents are retired and over 50 years old, while 37% are workers aged between 25-50 and 11% younger than 25 including children. Hence, it is realized that in addition to the existing users from 1960's there are considerable amount of young and new residents inhabits in the area. When the economic level and job status are analyzed, it is uncovered that 52% of the total inhabitants are retired but %30 of the workers and %18 of them are students, and according to the level of income, 9% of the residents earn 300$, 52% between 300-600$, 26% between 600-900$, 10% 900-1500$ and 3% more than 1500$ per month. The results indicates that middle and low income groups especially preferred this old housing area due to its central location in the city in spite of their complaints about the comfort of the space.

Although most of the neighborhood residents (59%) declared that they are content with the flats physically, they declared problems about social coherence. The good neighborhood relations said to be in the region in past was lost because the former residents who had moved or had passed away and new people have settled into their homes. Neighborhood residents have not developed much, since most of these people are low-income tenants, move often and change neighborhoods. 77% of the neighborhood residents believed that social areas are inadequate and 83% complaint about the security problem in the region. 85% of the residents stated that there is excessive noise in the region and 35% said they can not find a place to park the car.

Legal Aspect

As the project site is within the municipal boundaries, the students are asked to learn and obey the building codes of the related municipality. Moreover they are obligated to obey the general construction codes such as fire code, earthquake regulations etc. And they were also asked to consider designing disabled friendly spaces. Moreover, the registered buildings for historical preservation is also mentioned in master plan of the city. According to zoning ordinance requirements, the new construction had to obey the rules such as 5 meters curtilage, 1.50 meter sub-basement altitude, 10 meters in between buildings and detached construction. Besides, the students had to plan minimum 1800sqm playground for 5632 spm building lot due to master plan.

Aesthetic Aspect

Aesthetic is a very problematic area due to its subjectivity. The students are asked to analyze the aesthetic aspects of the mid-century modern buildings in relation with technical analysis. Nevertheless, it was a problem in evaluation of the students' projects, therefore in this studio work an expert commission practice was applied. Expert commission is a practice used in defining the protection criteria (Ahunbay,

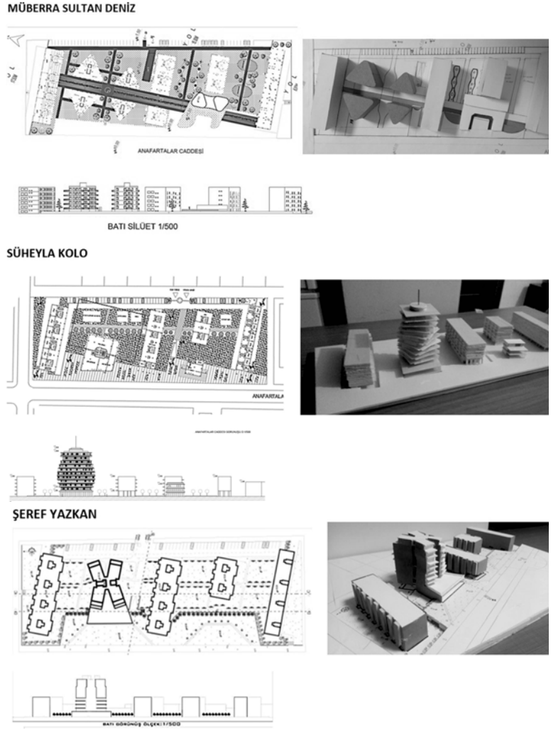

Fig. 4: Examples of contrast Students Diagrams.

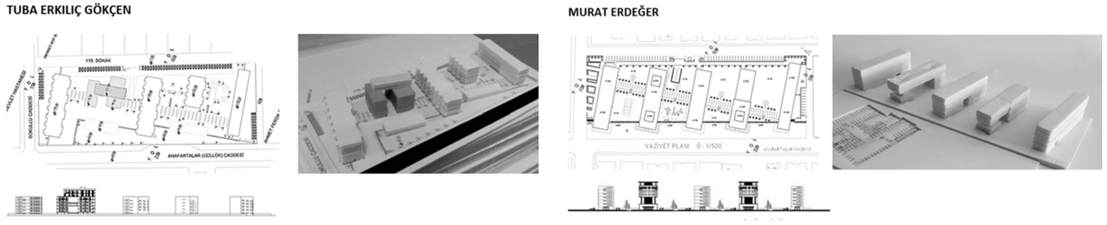

Fig. 5: Examples of harmony Students Diagrams.

2009). This commission is composed of three academicians study on protection and three practicing architects who were awarded in national architectural design competition. The commission evaluated the students' projects in aesthetic view.

Technical Aspect

The students performed technical analysis to understand historical, architectural and urban development of the region. They interpret the area physically and aesthetically, by considering silhouettes, proportions and noli maps. Firstly, they defined the structures incompatible with the protected buildings. Then they delineated the green areas and circulatory spaces on the ground level. Afterwards they made various other analysis about building age, function, transportation, climate, directions, ownership, construction system and deterioration analysis.

Student Designs

The projects of students has developed in two opposite approaches; harmony and contrast with the existing modernist buildings. It is observed that the students who tend to design in contrast approach preferred geometries such as triangles, circles and organic forms which differ from rectangular forms of existing mid-century buildings. Nevertheless, in some cases the ones who preferred contrast in plan used harmony in section.Instead, some of the students used contrast in building materials and preferred steel construction.

On the other hand, the students who preferred harmony, designed in rectangular plan similar and parallel with the existing buildings. Some of these students design their buildings in combination of few rectangular masses, while the others try to make a huge rectangular mass break up with large openings. The students who used harmony method usually preferred reinforced concrete construction system.

Conclusion

In the studio students were introduced with modernist buildings. They learned about the history and architectural properties of these buildings, and understood the importance of them for architectural conservation. Then they were introduced the terminology "authentic use" and "reuse" which are important subjects of architectural conservation. In order to understand historical, architectural and urban characteristics of the site the students are leaded to make analysis on available urban fabric. Students are also asked to make an analysis on requests and complaints of neighborhood residents. Hence, they understand the social dimension of reuse and importance of user participation. They were also introduced with legal aspect of construction as an important guideline in design of reuse projects.

Nevertheless, at the end of the process, the students are observed to be benefitted from some of the analysis more than the others while not taken some results in consideration. For instance; in the light of social analysis, most of the students tend to include common areas, pedestrian flows and meeting squares in their projects. On the other hand, the technical analysis results are hardly included in projects such as preferring to locate the masses in accord with the existing ones rather than taking the climatic data into consideration. It has been observed that the aesthetic analysis had a great effect on shaping the students projects. Together with the problem in designing within an historical context, the students seems to be affected by aesthetic concerns, hence they developed two main design attitudes shaped by harmony and contrast concepts. This is an acceptable result when the level of second year student taken into consideration. In consequence, students are observed developing their design abilities with and within existing historic environment during the studio process.

Bibliography

Ahunbay, Z., 2009, Tarihi Çevre Koruma ve Restorasyon, YEM yayını, İstanbul.

Çimrin, H., Bir zamanlar Antalya: tarih, gözlem ve anılar : yakın geçmişe yolculuk, Antalya Ticaret ve Sanayi Odası, 2007

Embaby, M. E. (2014). Heritage conservation and architectural education: "An educational methodology for design studios". HBRC Journal, 10(3), 339-350.

Gönüllü, A. R., Cumhuriyet Döneminde Antalya (1923-1960), Tarihçi Kitabevi, 2012.

Güçlü, M. XX. Yüzyılın ilk yarısında Antalya, Antalya Ticaret ve Sanayi Odası Kültür Yayını, 1997.

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Fig. 1: The waterfalls of Antalya and the old hydroelectric power plant on sea cliffs in 1935.

Reuse of industrial heritage and architectural education

Abstract

Today, the role of architecture is being redefined down to many contemporary disputes such as ecologic, environmental and socio-economic problems. Therefore, in addition to designing of new buildings, the transition and reuse of existing build environment earning a vital importance in practice and theory of the profession (Plevoets, 2011). With this issues in mind 2017-2018 Spring Term of the Akdeniz University Architectural Design VI Studio aims to focus on the adaptive reuse problematic of early republican industrial heritage, which is quite neglected area of design in undergraduate architectural education in Turkey not only as problematic of adaptive reuse of historic buildings but also awareness on industrial heritage.

The topic of the studio is defined as reuse of old hydroelectric power plant established in 1925 on the sea cliffs of the city. This is the first industrial plant established by private sector and has a vital part in city's history of electrification. The site area is a critical point on the cliffs 35 meters high from the sea level and the plant is built on a small waterfall in order to run the turbines. Unfortunately, the building lost its roof and most of its technical infrastructure but the traces of the machinery is still visible.

Under these circumstances, students are asked to formulate an adaptive reuse project for this building related with tourism sub-theme which is main economic facility of the city of Antalya. They were asked to protect not only the architectural characteristics but also the building as an edifice of city's collective memory while giving the building a new function for people to experience the space. Hence, the students were asked to develop a study method which will not only concentrate to architectural and historical concerns but also aesthetic, technical and legal aspects of the problem together with the social expectations of the citizens.

This study aims to reveal architectural students` approach to adaptive reuse problem and to discuss contributions of selecting an adaptive reuse theme as a problem in design studio to student awareness on modern heritage. To this end, in the first part of the study, results of a small questionnaire applied to students related to their approaches to adaptive reuse problem will be summarized. In the second part, the students` proposals will be shared in the light of their approaches. The results of the study are expected to be a roadmap for architectural education in the future which will focus on heritage values by defining the problems encountered during the studio process.

Industrial Heritage // Modern Architecture // Adaptive Reuse // Architectural Education

Introduction

Classical architectural education mainly focuses on teaching how to design a new building for prevailing functional needs within existing topographical and/or urban environments. Accordingly, the curriculums in architectural schools emphases on courses teaching how to design and built new buildings. However today, the role of architecture is being redefined down to many contemporary disputes such as ecologic, environmental and socio-economic problems. Under these circumstances, architecture had to broaden the limits of design not only with the new but also with the reuse of the old spaces. Hence, in addition to designing of new buildings, the transition and reuse of existing built environment earning a vital importance in practice and theory of the profession.

However, reviving an old space is a complicated design problem since a building is subject to technological, functional and aesthetic obsolescence over time. Technological problems in an existing building can be overcome by contemporary building techniques therefore can be a specialization under the profession; but functional and aesthetical obsolescence, which are the results of changing modes of living and thinking realized in course of time, have to be challenged in delicate adaptive reuse projects (Kuloğlu, 2014). Otherwise, an important part of collective memory would be lost not only by demolition but also by renovation projects deaf to historical characteristics. The situation is harder when it comes to modernist buildings from the second part of the 20th century, because they are in danger of demolition if they are not adapted to contemporary needs since, most of them, are not under the protection of law.

With this issues in mind 2017-2018 Spring Term of the Akdeniz University Architectural Design VI Studio aims to focus on the adaptive reuse problematic of an early Republican industrial heritage, which is quite neglected topic of design in undergraduate architectural education in Turkey not only as problematic of adaptive reuse of historic buildings but also awareness on industrial heritage. The topic of the studio is defined as reuse of old hydroelectric power plant established in 1928 on the sea cliffs of Antalya (Çimrin, 2012). This is the first industrial plant established by private sector and has a vital part in city's history of electrification (Şekerci and Ormecioglu, 2018). The site area is a critical point on the cliffs 35 meters high from the sea level and the plant is built on a small waterfall in order to run the turbines (Fig.1). The plant is a small complex of buildings including main power plant and two additional housing for the engineers. The housing parts are already reused by municipality for public purposes but the main building remained untouched and abandoned. This main building is a single space area covered with a hipped roof and was selected as the project area (Fig. 2). There are four tribunes, a lifting crane, and a control area within the space. At the time of construction the site is on the eastern periphery of the city close to some other factories such as floor plant etc.; but today it became a central location in an eligible neighborhood. The coastal line became a part of urban recreation area of this neighborhood and the ruins of the old plant became a part of this green area (Fig. 3).

Unfortunately in recent decades, the building lost its roof and most of its technical infrastructure but the traces of the machinery is still visible When the students are asked to make an adaptive reuse proposal for the building, they were informed about the building and its historical value in city's collective memory by seminars but not given any restrictions in design except for the height of building which can not be more than roof ridge of the old building.

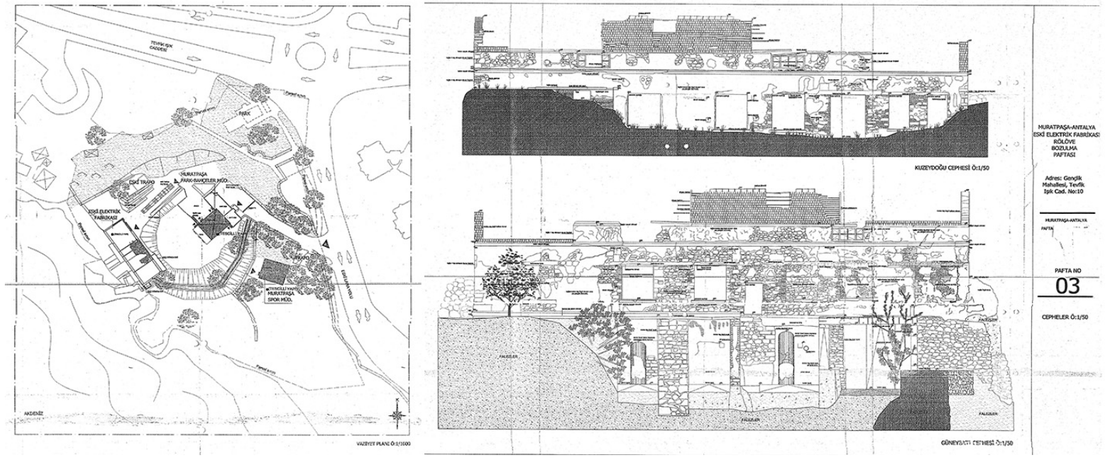

Fig. 2: Site plan and facade of the plant.

Departure from the spatial and morphological principles embedded in the original plans according to original function, students suggested their personal approaches in the process of adaptive use, where the only condition is to consider the document value of the building.

Methodology and Findings

Within the scope of the studio a short questionnaire was applied to students in order to display their personal ideas about modern heritage and adaptive reuse before and after the studio experience and reveal their background education about modern architecture and adaptive reuse. In addition to the data obtained from the surveys, the studio grades of the students were analyzed in correlation with the survey results. The first questionnaire is focused on students` educational background about modernism and reuse together with their perception about conservation of early modern era architecture in Turkiye and their ideas about reuse of these buildings. In the second questionnaire, students were asked about the difficulties they faced during the studio while proposing an adaptive reuse project for the old hydroelectric power plant in Antalya.

All students attended the studio were invited to participate the surveys and sixty six of the students participated which is 96% of the whole group 60,6% of these students who participated in the surveys reported that they have not get any architectural history

courses (compulsory or elective) about 20th century architecture in general, yet. Likewise, none of them took any specific course about adaptive reuse of historic buildings since there is no course in undergrad curriculum, but 75,8% of them stated that adaptive reuse examples of modernist buildings mentioned within the scope of some of the courses they had taken before. In spite of the absence of educational formation, 72.7% of the students think that modernist buildings in Turkiye should be preserved because of they feature the traces of collective past and memory. On the other hand 72.7% of the participants convey that they found these buildings inadequate to meet contemporary needs of recent decades. The second part of the survey intends to measure the awareness of students on adaptive reuse methods of historic buildings. Although majority of the participants find modern buildings inadequate to meet contemporary needs, 75.8% of the students believe these buildings can be used again by adaptive reuse projects. When they asked about their ideas on conservation of spatial syntax, façade and mass configuration, tectonic details etc. they predominantly conveyed their strong belief on conservation of original aspects of the building as much as it can be.

In the second survey, subsequently done afterwards the final jury, the students were asked about their experience during the studio process and convey the difficulties they faced in the adaptive reuse project. When the results of their answers compared with the previous ones about their ideas on conservation methodology, the results reveal significant differences between their ideas and practice. For instance, in spite of the fact that 69.7% of the students believe that the façade configuration of the buildings, which are subject of adaptive reuse, should be conserved, 42.4% of them stated that they had problems in conservation of façade. The second survey presented that students had difficulty in various steps of adaptive reuse project such as proposing new and suitable functions, developing plan proposals, developing façade proposals, developing structural system proposals, and developing site plan proposals in different percentages. The answers showed that most of the students had difficulty in developing site plan proposal within the old building environment while majority of them found developing structural system proposals easier. The answers given by students in this section are summarized in Tab. 1.

When the final project success of the students were analyzed it was found out that only 51.5 % of them had good degree in the final project jury (Tab. 2). These findings showed that although most of the students thought that they had no difficulty in areas such as developing plan proposals or developing structural system proposals, they have had difficulties in providing the desired success during the project process. Moreover, it is also observed that despite of their final grades, façade design is one of the less successful aspects of student projects that students had difficulty in reuse of modern buildings.

Discussion and results

As Eyüce (2010) conveys the adaptive reuse process is “shaped within the possibilities of an already architectured structure” that the term adaptive reuse is labelled as ‘re-architecture’ by Cantacuzino (1989). Therefore, adaptive reuse projects not only offer potentials but also impose constraints of an existing historical structure. Designing within the boundaries of an existing building but at the same time offering a new program and a new space syntax for a functionally obsolete building is an ambivalent problem, loading the designer responsibilities and require specific methods and approaches depending on the peculiarities of the original structure.

Fig. 3: Existing situation of the plant (By courtesy of Yaren Sekerci).

This study is about to understand the methods and self-perceived responsibilities of architecture students’ while designing within existing historical building in adaptive reuse projects of modernist building. The survey results convey that in spite of the theoretical consciousness the students had about conservation and reuse of modernist heritage, their designing skills on the topic is not developed. By using a comparative-method approach of survey and student grades, it is uncovered that the students are sensitive to the issue and aware of the necessity of protection of modernist buildings; but this is not helping them in design process, rather discourage them. As it is uncovered, students feel inadequateness, and act timidly when they had to cope with an adaptive reuse problem; since they are aware of ideas regarding the importance of historic buildings and responsibilities in protection, but not aware of the methods and options developed by designers and theoreticians while designing within an existing historical building .

The students also have problems in developing their personal design strategies about adaptive reuse projects, since they feel insecure in design within an existing historical building. When final jury notes and surveys taken into consideration, it is seen that students who had difficulties in adaptive reuse project and get lower grades in studio are mostly the ones who conveyed that they did not have educational background about the topic. After all, it can be stated that the existing level of knowledge about the adaptive reuse of modern structures makes it difficult to achieve the intended results in the studios. In order to increase success in studios, the topic had to be addressed more extensively through examples, the problem of adaptive reuse of modern buildings must be explained in a comprehensive way, both in

Grade	Rate (%)
Good degree (between 100-73)	51.5
Intermediate degree (between 72-60)	39.4
Low degree (59 and lower than 59)	9.1

Tab.1: Main problem areas in re-using project process for the students.

Problem Area	Rate(%)	
	Have difficulty in	Have no difficulty in
Developing site plan proposals	47	53
Developing façade proposals	42.4	57.6
Proposing new and suitable functions	40.9	59.1
Developing plan proposals	25.8	74.2
Developing structural system proposals	24.2	75.8

Tab.2: Final project success of the students.

terms of the plan, the facade order, and the structural system intervention methods, and supported by other theoretical lessons in the earlier semesters of the architectural curriculum.

Bibliography

Cantacuzino, S. (1989). Re-Architecture: Old Buildings/New Uses. New York, NY: Abbeville Press.

Çimrin, H. (2012). Bir Zamanlar Antalya: Tarih Gözlem Anılar, Vol. 2. ATSO publishing: Antalya.

Eyüce, O., & Eyüce, A. (2010). Design education for adaptive reuse. International Journal of Architectural Research: ArchNet-IJAR, 4(2/3), 419-428.

Kuloğlu, N., (2014). Mevcut Çevrede Tasarım: Stüdyo Deneyimleri, Mimari Güncellemeler, Publisher: Nobel Yayın, Editors: Şengül Öymen Gür, pp.125-138.

Plevoets, B., & Van Cleempoel, K. (2011). Adaptive reuse as a strategy towards conservation of cultural heritage: a literature review. Structural Studies, Repairs and Maintenance of Heritage Architecture XII, 118, 155-163.

Şekerci Y. and Ormecioglu H. T. (2018). Erken Cumhuriyet Döneminden bir Endüstri Mirası: Antalya Eski Elektrik Fabrikası, 3rd International Akdeniz Art Semposium: Protection and Conservation of Cultural Heritage 24-25 April 2018.

Zhang, S. (2007). Conservation and adaptive reuse of industrial heritage in Shanghai. Frontiers of Architecture and Civil Engineering in China, 1(4), 481-490.

Image Credits

Fig.1: The waterfalls of Antalya and the old hydroelectric power plant on sea cliffs in 1935. (By courtesy of Yaren Sekerci)

Fig. 2: Site plan and facade of the plant (Source: Municipality of Muratpasa/Antalya)

Fig. 3: Existing situation of the plant (By courtesy of Yaren Sekerci)

Fig. 4: Despite of their final grades, and the survey results, we, the tutors observed that façade design is one of the most problematic aspect in reuse of modern buildings that students had difficulty in. The façade solutions proposal from student projects in different grades. Left good degree, middle intermediate and right low degree

Session 2.0

RESEARCH on Reuse of Modernist Buildings

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She has been presenting her research findings in peer review publications, like a chapter in the book by Muntañola (Ed) (2017) “Architecture and social space” and in “Ambiances Review” (2015). She has also participated in international conferences and had her presentations published in the proceedings, namely in Milan (Nexus Conference 2012, EAEA 2013), Barcelona (Arquitectonics 2013), London and Lisbon (Space Syntax Symposium 2015, 2017).
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Fig. 1: José Falcão Secondary School, 2018.

In search of modernist adaptability- The adaptive reuse potential of José Falcão School for contemporary learning

Abstract

This paper focuses on José Falcão Secondary School, in Coimbra, from 1936 by Carlos Ramos, Jorge Segurado and Adelino Nunes, acknowledged as national built heritage, and it aims to critically reflect upon the school's collective spaces as active learning environments and to discuss the adaptability potential of a modernist Portuguese school towards the current pedagogical outlook. Ultimately, it intends to provide a critical thinking on potential interventions to enhance it on this behalf, enabling the accommodation of contemporary learning practices.

Adaptability // Adaptive reuse // José Falcão Secondary School // Contemporary learning practices

Introduction

Contemporary learning practices and environments

Contemporary learning practices comprise the active creation of knowledge, surpassing passive lectures and reaching for the independent and critical thinker. This could be achieved either by construction, communication or evaluation moments, whose dynamics have to be spatially accommodated and fostered.

Some 20th century schools represent prominent moments of experimentation, whose focuses may vary, from the students' well-being and hygienist purposes of the Open-Air schools by modern architects like Duiker and Bijvoet (Amsterdam, 1927-30); to approaching the outdoors, as in Impington Village College by Walter Gropius and Maxwell Fry (Cambridgeshire, 1938-40). Classroom configuration has also been subject of research, such as in Hans Scharoun's schools (Marl, 1960-71 and Darmstadt, 1951); or previously in Richard Neutra's Corona Avenue Elementary School (1934-35), or the Crow Island School by Eliel and Eero Saarinen with Perkins, Wheeler and Will (Winnetka, 1939-40). Furthermore, the need for space growth and curricular change guided significant school building developments exemplified by the Hertfordshire post-war experience.

Still, one of the most prominent spatial realisations of the contemporary schools is the acknowledgment of active learning environments, potentially decentralised from the educator or, primarily, from the traditional classroom. Specifically, more than the formally defined classrooms, this concept implies a wider array of spaces where learning occurs, often by means of non-programmed and extra-curricular experiences, and enabled by social encounter and individual reflection. This could be paralleled to Vygotsky's (1978) concept of "interpsychological" that defines the child's development to be socially engaged. These active learning environments can act as spaces where knowledge creation occurs amongst peers in informal moments with substantial learning potential.

As the case study, this paper will focus on José Falcão Secondary School, in Coimbra, from 1930-1936, by Carlos Ramos, Jorge Segurado and Adelino Nunes, from the "Santa Cruz" design proposal (Moniz, 2003; Moniz, 2007, pp.170-178). In spite of subsequent alterations from the original design, it is an acknowledged national built heritage and holds undisputable spatial quality and urban representativeness within the city of Coimbra (Fig. 1).

Nevertheless, its physical obsolescence is evident, and despite the recent Secondary School Modernisation Programme extensively set out in Portugal, it has not been rehabilitated. Hence, the latest news on the media related to the struggle for urgent rehabilitation of the school.

On this regard, three questions can be placed:

How can a modernist building accommodate the current learning practices, as wide as these can be?

What are the school's active learning environments?

What is the adaptability potential of a modernist learning space towards informality and socialisation as a means for learning?

Thus, this paper aims at analysing the collective spaces used for the students' informal activities and to critically reflect upon their potential as active learning environments according to their adaptability condition, based on a Doctoral Thesis (Coelho, 2017) that identifies criteria for assessing contemporary adaptable school spaces. Adaptability is here assumed as "the ability of the built form to maintain compatibility between activities and spaces, as those vary" (Krüger, 1981, p.1169). This is particularly relevant for this school, because it continues to be working and it has to allocate the current academic and non-academic activities, perceived as part of its pedagogical curriculum.

Ultimately, it is intended to identify the informal spaces where adaptability can be higher and to provide a critical thinking on potential interventions to enhance them on this behalf, enabling the accommodation of current learning practices, as wide as these can be.

Adaptability retrieval

The Doctoral Thesis referred as a basis for this analysis is centred around three milestones: description of the spatial sample - consisting on the functional and morphological definition of the space; description of activity-space allocations – understanding how and where are the learning activities accommodated in space; and description of events and experience – defining what is the actual living experience and spatial appropriation in the school, by means of observations of spatial usage, walkthroughs and the recollection of testimonies from the whole school community. These, ultimately, can be correlated towards the adaptability retrieval that enables an overview of the space overall on the activities each space holds, either formally defined or informally appropriated, and generally their potential for widening these allocations to other learning practices (Fig. 2).

Initially, contemporary learning practices and spaces are addressed, realizing the bond between the teaching and learning methods and the place to accommodate them, in the current manner perceived today, where socialisation and informality also imply knowledge communication and acquisition. Hence, the need to understand the

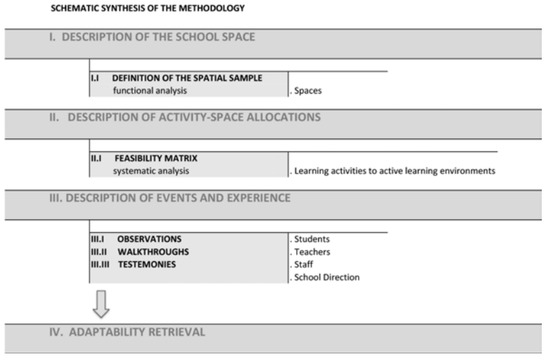

Fig. 2: Schematic synthesis of the methodology.

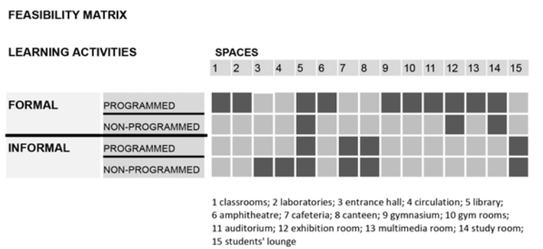

Fig. 3: Description of activity-space allocations: Feasibility matrix.

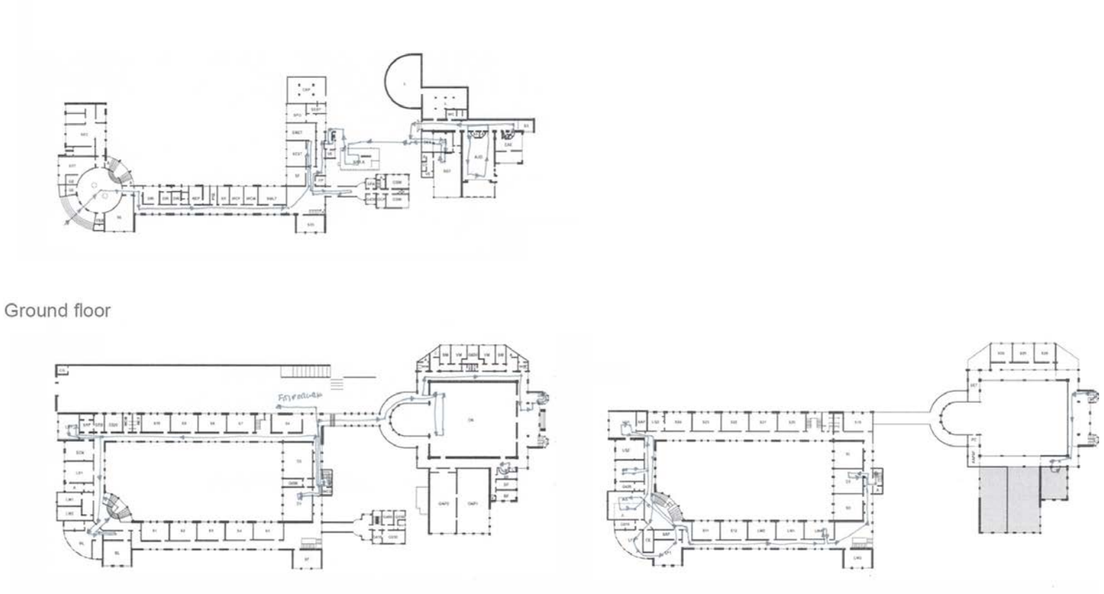

Fig. 4: Description of events and experience in the school: Walkthrough.

whole school, for self-discovery, group work and formal and informal learning activities overall, both in its classrooms, as well as beyond them.

Naturally, these practices also involve the use of technological devices, both in and beyond class, spatially implying new spaces conceived for such purposes, or the inclusion of such devices in pre-existing spaces.

For the purposes of assessing the school space, the drawings of the school have been accessed, in its original proposal from 1936 from the school's archives and also the ones that depict its actual situation, after the successive alterations the school has undertaken, namely the addition of an upper floor in 1938 (Rodrigues, 2003). The latter are the ones used as the basis for this analysis, as they report the school's effective usage today, according to the present spatial layout of the school.

Despite the perceivable physical obsolescence of the school, it has tried to cope with some eminent needs. So, some arrangements have been made recently, in specific spaces, such as: the multimedia room, a study room for accompanied learning, a reading room for individual study, an exhibition room for both an internal and external community, and spaces for group gathering particularly on wider niches opened onto the circulations. It is also visible that spatial appropriation has also been accepted and enabled, namely by artistic expression on the interior walls, as a demonstration of the students' curriculum, but also changing the spaces' interior coatings.

At first glance, we should also look into the access points of the school and perceive that, currently, there is a segregation of the entrances between teachers and students that potentially hinders interaction.

Retrieving the initial questions, the school effectively holds active learning environments for the current learning activities, and these more recent rearrangements have aided on that behalf, namely with technological provision and the definition of social areas. However, these spaces are segregated between themselves by areas and nature of the events and activities are site-specific and not widespread amongst the whole school. Generally, the exhibition room accommodates the exterior displays from the school to the exterior community or vice-versa, the amphitheatre frequently holds the events for more than one class, and the library shelters most of the remaining extra-curricular, formal and informal activities. Spaces such as the gym, the gym rooms, the canteen or the external spaces only occasionally accommodate some sporadic activities, as compared to the previous ones.

The systematisation of the activity-space allocations on a feasibility matrix aids to the visual perception of this situation. For such purposes, the learning activities can be divided in both: formal (academic and part of the schools' organisation and curriculum, e.g.: traditional lectures) and informal (social and often undertaken exclusively amongst the peers, e.g.: group gatherings); and each one could be acknowledged as: programmed (meaning of frequent usage or routinely occurrence, particularly within the school's weekly schedule, e.g.: formal study groups) and non-programmed (spontaneous or of occasional occurrence and not on a weekly based routine, e.g.: informal peer interaction) (Krüger, 1992).

The feasibility matrix is achieved by assigning the spaces to the effective learning activities they usually accommodate. This also confirms a segregation of spaces per type of activity and concludes on a low adaptability of the current spaces (Fig. 3). Even so, the most adaptable space is the library, which allocates the widest diversity of

learning activities.
This could be overcome if spatial allocations were widened to activities of more diverse nature, gathering formal/informal, and programmed/spontaneous experiences in the same or adjacent spaces. For example, the entrance hall could hold a more representative role as an extra-curricular learning space and occasional collective events could also be held in other spaces, such as the canteen for informal celebrations, or the auditorium that could be more extensively used for external and internal activities, as a way of disseminating the activities on the whole school space as a learning environment overall.
Hence, the results achieved on the library could be expanded towards other spaces, provided they can cope with them physically, and assuming that by management and spatial appropriation the school community uses them on other activities beyond the current ones.
The last milestone of this research complements the previous findings on spatial fruition. Walkthroughs imply a visit to the school guided by its community, potentially students, teachers and staff, that define the pathways taken and show the spaces according to an initially defined goal, that in this case, was identifying the spaces that could be considered most adaptable.
A walkthrough has been made with the school director, who showed us the recent school's rearrangements towards current learning practices. Another one has been made with the school staff coordinator that knows the school for longer and is in charge of all the spaces and equipment, who has also commented on the most representative spaces and their uses. The plans indicate the course of this longer walkthrough on the entire school (Fig. 4).
Besides observations, specific testimonies from the school community have also been gathered, enquiring on each person's spatial usage and the spaces considered to be active learning environments. These have been asked to the teachers and staff, and the results are displayed on the plans, according to the formal and informal spaces they have considered (Fig. 5).
Other testimonies have also been collected from students that provided their regard on their respective spatial fruition, which, again, has been displayed on the plans (Fig. 6). As perceived, there are some spaces that are unanimously considered by all, whereas on other spaces, the commentaries do not overlap: teachers and staff consider that informal activities occur in defined spaces of the school, while students perceive leisure and socialisation on the school overall, namely loosely on the circulations.
In fact, and besides the previously defined spaces for students to lay, informal activities and socialisation are perceived throughout all the school's circulations, namely on the benches placed on the corridors and on the niches and openings, as well as on exterior spaces, which are appropriated by students for their leisure and considered as meeting points.
Despite the tables and seating areas provided near the library, few students usually stand in those spaces. Students generally perceive the library as a more formal space, even though it is considered the most adaptable space that gathers both formal and informal activities.
Formal events are usually placed on defined spaces such as the amphitheatre and the library. According to the students' testimonies, the auditorium is seldom used and the cafeteria and the canteen are not spaces where the students prefer to spend their time other than needed. Moreover, students appreciate standing in the corridors on the benches near the classes and on the circulations overall, namely on the niches and alcoves.

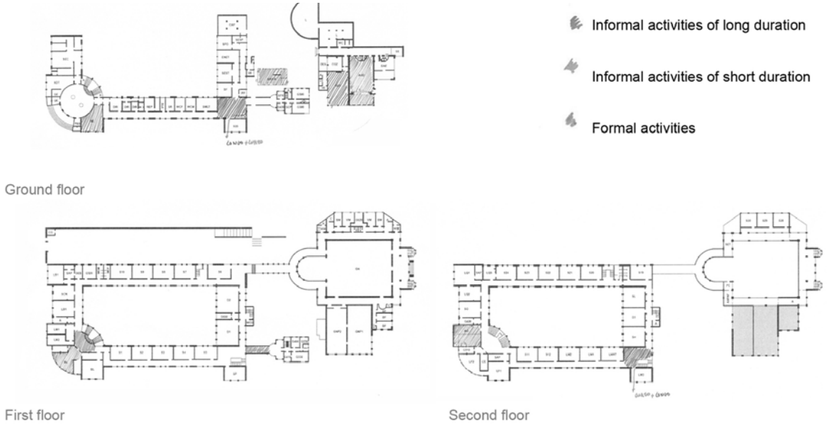

Fig. 5: Description of events and experience in the school: Teachers' and staff 's testimonies.

Overall, separate areas for learning, for entering the school and for formal and informal activities, enhance spatial segregation and low adaptability.

Discussion

Possible widening of modernist adaptability?
Having understood the school space, activities and effective spatial fruition, a discussion can be undertaken to identify the spaces where adaptability can be higher. From the analysis on spatial morphology, it could be concluded that the school has the potential to hold "learning streets"[1] (Hertzberger, 2008, p.113), due to its corridors' width, environmental conditions, high integration and connectivity to the several surrounding spaces. Nevertheless, the learning activities are mostly acknowledged on secluded spaces and not on the circulations or on mixed-use spaces. So, the potential of those circulations could be more acknowledged as both moving and standing spaces, where peer interaction and knowledge communication may occur (Fig. 7).
Also, from the analysis of the school's spatial morphology, the interior courtyard is central to the main building. Its high integration enables visual permeability, but it could also be an effective learning core of the school, gathering both formal and informal activities and programmed and/or spontaneous events.
Likewise, morphologically deep spaces[2], with low integration on the school and with low connectivity, imply few accesses towards them

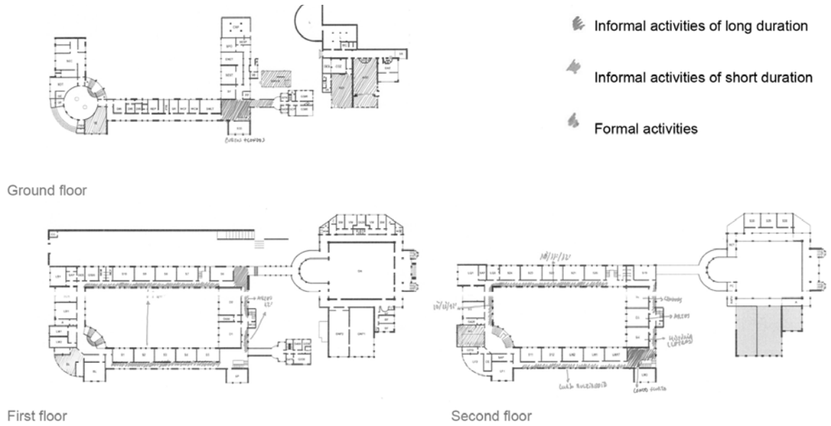

Fig. 6: Description of events and experience in the school: Students' testimonies.

and are also less used by the students. Therefore, common used spaces (such as the cafeteria or the canteen) could be placed in more integrated and connected spaces and be more accessible and comfortable to reach.

The analysis on activity-space allocation also provided conclusions on the low activity mix. Besides the library, other spaces could consider widening their activities, enabling higher learning diversity.

Moreover, more spaces for informal learning and social activities could be provided to the students, besides the niches on the circulations. This would also imply future proofing the most preferred spaces by the students with furniture and physical comfort, from which the students' main hall is currently deprived.

All in all, and despite its very assumed modernist matrix that constrains the adaptability of each space to a very specific functionality, this building has many assets, namely: facilities such as an amphitheatre, an auditorium and a gym with a separate access used by an external community; the previously referred wide, highly integrated and well-lit circulations; the wide provision of the laboratories and the library; the spatial quality of the building and its urban condition and location within the city.

For more insightful and thorough spatial recommendations on providing for high quality and adaptable spaces, the school should be perceived as a whole, and rearrangements should be thought as a conjoint design, more than a piecemeal rearrangement of separate

Fig. 7: School's circulations used for moving and standing.

spaces according to the most pressing technological, pedagogical and physical demands.

Specifically, interior and exterior spaces when considered as a whole provide a more diverse learning ambiance. Circulations and standing spaces, when morphologically connected, gather more students together. Likewise, formal and informal spaces, when considered adjacently, enhance a wider array of interrelated learning activities and experiences (Fig. 8).

Ultimately, the outputs presented can be both insightful as a theoretical research applied to a modernist case study, and can also inform the practice on this building's potential future rehabilitation according to the current pedagogical outlook.

From this conference's motto on "Reuse of Modernist Buildings", it can finally be argued that this school's modernist grounds endows the space with environmental and constructive quality that needs to be rethought and retrofitted from a functionalist spatial profile to a mixed-used and adaptable overall learning environment. This will cater for both the present pedagogical situation, as for the still unforeseeable changes on the forthcoming academic curricula, school community and urban requirements, the school will need to cope with in the future.

Acknowledgments

We kindly acknowledge Ana Bagulho and Francisca Biscaia, who assisted with the retrieval of all photographic records and interviews. We also acknowledge all the community of José Falcão School: direction, teachers, staff and students, who have provided us with all the materials and a deep insight on both the school physical structure and the living and learning experience within.

Fig. 8: Socialisation and communication in the school's informal spaces.

Bibliography

Coelho, C. (2017). Life within architecture from design process to space use. Adaptability in school buildings today – A methodological approach. PhD Thesis in Architecture. Departamento de Arquitectura da Faculdade de Ciências e Tecnologia. Universidade de Coimbra.

Hertzberger, H. (2008). Space and Learning: Lessons in Architecture 3. Rotterdam: 010 Publishers.

Kruger, M. J. (1981). 'Maximização da adaptabilidade'. In Ciência e Cultura, 33 (9), 1169-1182.

Kruger, M. J. (1992). Caracterização e Programação de Edifícios Complexos. Departamento de Engenharia Civil. Instituto Superior Técnico. Universidade Técnica de Lisboa. Abril de 1992 (Publicação N° 78).

Moniz, G. C. (2003). 'O Liceu Moderno. Do Programa-tipo ao Liceu-máquina'. In A. Tostões; M. Lacerda; M. Soromenho (Coords.). Arquitectura Moderna Portuguesa 1920-1970. (pp.66-81). Lisboa: Instituto Português do Património Arquitectónico.

Moniz, G. C. (2007). Arquitectura e Instrução. O projecto moderno do liceu 1836-1936. Coimbra: e|d|arq.

Rodrigues, A. S. (2003). 'Liceu José Falcão, em Coimbra'. In A. Nóvoa; A. Santa-Clara. Liceus de Portugal: Histórias, Arquivos, Memórias. (pp.222-241). Lisboa: Asa.

Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes. Cambridge, Mass: Harvard University Press.

Endnotes

[1] According to Hertzberger: "There are school buildings where learning and instruction are not confined to the classroom, where there is as much going on outside the classrooms as inside […]" (Hertzberger, 2008, p.113).

[2] Topologically, deep spaces, as opposed to shallow spaces, are more segregated, and their access involves passing through other in-between spaces, which are more integrated in the overall spatial layout.

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Fig. 1: José Falcão Secondary School, 2018 (Image credits: Carolina Coelho)

Fig. 2: Schematic synthesis of the methodology (Image credits: Carolina Coelho)

Fig. 3. Description of activity-space allocations: Feasibility matrix (Image credits: Carolina Coelho)

Fig. 4. Description of events and experience in the school: Walkthrough (Image credits: School plans from the current building from José Falcão, edited by Carolina Coelho)

Fig. 5: Description of events and experience in the school: Teachers' and staff 's testimonies (Image credits: School plans from the current building from José Falcão, edited by Carolina Coelho. Photo credits: Carolina Coelho, Ana Bagulho, Francisca Biscaia)

Fig. 6: Description of events and experience in the school: Students' testimonies (Image credits: School plans from the current building from José Falcão, edited by Carolina Coelho. Photo credits: Carolina Coelho, Ana Bagulho, Francisca Biscaia)

Fig. 7: School's circulations used for moving and standing (Image credits: Carolina Coelho, Ana Bagulho, Francisca Biscaia)

Fig. 8: Socialisation and communication in the school's informal spaces (Image credits: Carolina Coelho, Ana Bagulho, Francisca Biscaia)

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Under graduated in FAUUSP (2000), defended the master's thesis "Preservation and Sustainability: restorations and retrofits" at the same institution in 2013. The study analyzes the origins and development of these fields, especially, their architectural aspects.

Nowadays, integrates the Laboratory of Urbanization, Architecture and Preservation (LAPUSP), where develops the Phd thesis: "Urbanity as a Contemporary Project: the reuse of the axis Arouche - Praça Ramos de Azevedo", under the guidance of Professor Nestor Goulart Reis. The research addresses the feasibility of urban projects in historical regions based on the cultural and economic valuation of the built heritage.

Also contributes with two other research groups, coordinated by Professors Julio Roberto Katinsky and Helena Ayoub (FAUUSP), linked to the National Council for Scientific and Technological Development (CNPQ:
- Retrospective Techniques, Restoration, Preservation of Constructed Sets and;
- Architecture, Design, Research and Teaching.

As technical director of the company Casatual Incorporações e Construções ltda, coordinated projects aimed at the preservation of cultural heritage, such as the Américo Simões Residence (2003), the restoration of the Oscar Freire Institut (2009), the restoration of the Lutheran Church of São Paulo (2010), the Complex of Carmo (2013), and the Hospital Matarazzo (2017).

Fig. 1: Downtown São Paulo (1950).

Reusing modern spaces in the historic center of São Paulo - Brazil

Abstract

The article shows the current stage reached by our doctoral research on reuse of modern spaces in the area known as the "Arouche - Praça Ramos de Azevedo urban system". This phenomenon typical of historic centers in Brazilian cities is addressed by analyzing the process of obsolescence of a central São Paulo area that was verticalized in the first half of the 20th century, to then look at the potential for reuse there.

We therefore emphasize the importance of recognizing the particularities of this process (although there are similarities with European urbanization in some respects), the formulation of urban modernizing policies in Brazil, their impact on the configuration of the city of São Paulo and the need to bring in various aspects such as cultural and economic discussions involved to ensure feasibility for reuse initiatives.

reuse // built heritage // urban design // preservation.

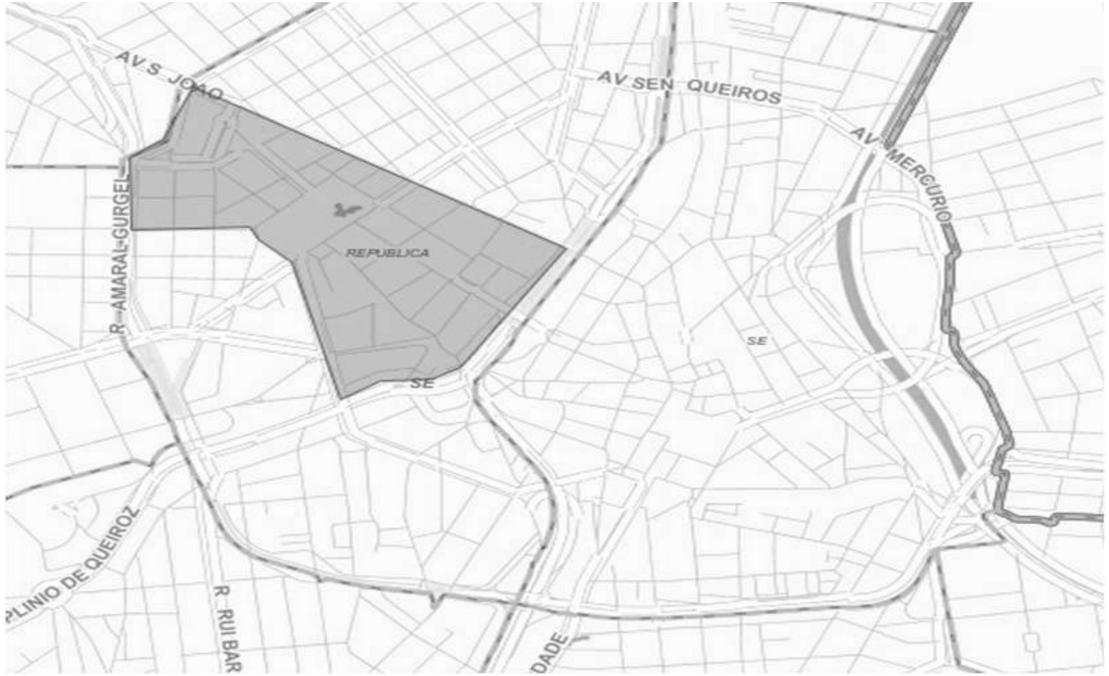


Fig. 2: Polygon formed by the city's old town (aka historic center) and the Arouche – Praça Ramos axis.

Introduction

Our research team at the Architecture and Urbanism School, Universidade de São Paulo (acronym FAUUSP), coordinated by Professor Nestor Goulart Reis Filho, is analyzing urbanization in densely occupied areas such as the São Paulo Metro Region.

We approach urbanization as a social process characterized by two distinct but inseparable dimensions: social relations and spatial configurations (REIS FILHO, 1967). Our discussion of the process of organizing physical space is therefore based on the latter's relation to the political, economic, cultural and ideological dimensions that characterize human interactions.

This article shows the current stage of development of our doctoral research, which suggests criteria for developing future reuse initiatives in downtown São Paulo, given its extensive built heritage characteristic of Brazilian modernity.

Reuse and architectural and urbanist scales

We shall proceed with a brief overview of reuse and the theoretical discussion of this notion internationally.

Some researchers have attributed progress in architectural and urban heritage preservation to heightened awareness of the importance of reuse initiatives. Francisco Javier Gallego Roca, professor of Architectural Restoration at Universidade de Granada (2017, p.30) writes:

> "Our cities and their architectural heritage set new requirements for citizens to use and enjoy them. These activities are the result of a new more technological and less artisanal production system as information technology changes architecture and design. Reusing, as a new concept in this new architectonic world ... must adapt to new sociological conditioning factors. (our translation)

He claims that the reuse concept may be seen as recognizing new social demands around the reuse of existing urban elements. In this respect, the notion broadens the potential for investigating the relation between officially recognized fields of study such as Cultural Heritage Preservation and Urban and Regional Planning while highlighting the multidisciplinary (and multidimensional) nature of reuse initiatives.

Our initial hypothesis is that reusing modern (and modernist) spaces depends on creating visions that articulate architectural and urbanist scales. Restoring buildings in isolation is therefore insufficient to ensure their conservation in degraded areas, even if urban infrastructure is provided.

A recent instance of this phenomenon may be seen in downtown São Paulo from 2000 through 2010, when buildings dating from the 1910s were repaired or refurbished to provide new housing units. Most units were sold quite quickly but in the absence of public policies for preserving the region, this was not sufficient to ensure their conservation in the subsequent period. (JOSÉ, 2010; SILVA, 2013).

This type of concern for articulating architectural and urbanist scales for reuse initiatives may be seen in the evolution of theoretical discussions such as Restoration Theory. Hence the International Council on Monuments and Sites (ICOMOS) documents such as the Amsterdam Charter (1975) and Nairobi Recommendation (1976) posing closer relations for buildings and cities in terms of scale. Generally speaking, notions such as urban rehabilitation reflect the need to preserve both historic buildings and the wider areas around them.

In the early 1980s, Unesco pointed to the importance of restorers and urban planners working together (UNESCO, 1980, p.11):

"… the aims and requirements of urban planning and conservation differ on account of their legal and organizational basis and historical development. Urban Planning is principally concerned with the overall concept and sees the individual buildings as part of it, whereas the protection approach, both in theory and by transition, tackles the problem the other way around. However, it is no longer practicable to maintain this sharp distinction. The fact that most buildings qualifying for protection are at the same time affected by development plans has produced many widely different forms of cooperation."

In the following period, more progress was made on the same lines. Unesco's Historic Urban Landscapes Recommendation (2011) called for historical preservation initiatives integrated with urban policies while recognizing the multidisciplinary nature of the debate, encouraging civil-society participation, creating appropriate financing and management instruments, and fostering international cooperation.
While agreeing with this perspective, we should point out that initiatives to preserve and reuse deteriorated areas in Brazil meet with huge obstacles for their technical and economic feasibility. As we shall show below, despite the cultural conversation around Brazil's modernity, urban policies for the reuse of historical buildings and areas do little to attract property developers. Crucially we must set criteria that take into account the need to get these agents involved in the productive process

Reuse for the Arouche – Praça Ramos de Azevedo system

A study of this area known as the "Arouche - Praça Ramos de Azevedo system" involves analyzing the collective and spatial changes that determined its urban configuration from 1930 to 1970, a period that may be seen as part of Brazil's modernity - itself a concept that requires further discussion. As Hilde Heynen puts it (p.7, 1999):
"Modernity is used here in reference to a condition of living imposed upon individuals by the socioeconomic process of modernization. The experience of modernity involves a rupture with tradition and has a profound impact on ways of life and daily habits. The effects of this rupture are manifold. They are reflected in modernism, the body of artistic and intellectual ideas and movements that deal with the process of modernization and with the experience of modernity."
Her notion of modernity emerges from the discontinuity of certain lifeways that were characteristic of pre-industrial society. These changes garnered much support from cultural movements that went on to gain recognition as avante-garde.
For the purpose of interpreting Brazilian urbanization, a key point concerns the very specific meanings of said processes, since Brazil's modernization lagged several decades behind urban change in European capitals such as London and Paris.
Industrial growth impacted Brazil's state capitals in the 1930s, when federal government institutionalized protection of cultural heritage in the form of its department for Historic and Artistic Heritage (1936). Then came the Ministry of Culture and Education building (1937-44) designed by Lúcio Costa's team as the first icon of Brazilian modernist architecture. Government projects began to reorganize the downtown areas of major cities. The period in which society was industrialized therefore coincided with the consolidation of cultural movements aligned with international avant-garde movements.
In São Paulo, this agenda posed two phenomena:

1) The Avenues Plan executed by mayor Francisco Prestes Maia from 1938 to 1945;
2) Innovative legislation for urban planning and the property market from the 1940s onwards.

The Avenues Plan reflected dialogue with North American urban models based on automotive vehicles. Public funds were used to modernize the road system in the city's historic center by widening existing thoroughfares and integrating them through the same radial and perimeter structures that continue to structure the region even today (ZMITROWICZ and BORGHETTI, 2009).
Meanwhile federal government legislation was restricting traditional urban land use practices, thus significantly altering the urban design of the entire central region of the city of São Paulo. In 1942, for example, a two-year rent freeze was decreed by President Getúlio Vargas under a new Tenancy Law. In São Paulo, legislation led to more residential and office blocks in the central region lining spaces produced by the Avenues Plan (SOMECK, 1997).
Innovative banking arrangements steered credit to the construction industry. In 1945, two entrepreneurs (Octavio Frias Oliveira and Orozimbo Roxo Loureiro) founded a bank for this purpose. Banco Nacional Imobiliário (BNI) financed developments designed for the altered scale then characterizing São Paulo's urban planning. It was no coincidence that the new developers were engaging the services of modernist architects for their projects.

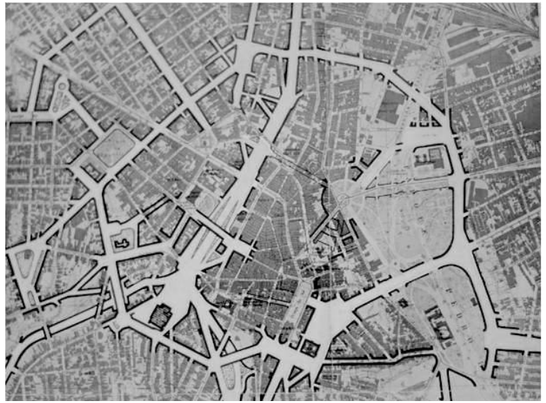


Fig. 3: Avenues Plan (1945).

Even before the Tenancy Law came into effect, there were modern experiments such as the Esther building (1938), for which architects Álvaro Vital Brazil and Adhemar Marinho closely followed modernist principles. From 1945 onwards, there were many more: Oscar Niemeyer's designs for the Califórnia (1953), Montreal (1954), Triângulo (1955), Eiffel (1956) and Copan (1966) buildings; Oswaldo Arthur Bratke's for Jaçatuba (1942), ABC (1949) and Renata Sampaio Ferreira buildings; Franz Heep's for Círculo Italiano (1965); Salvado Candia's and Gian Carlo Gasperini's for Galeria Metrópole (1964). Many other Brazilian and European emigrant architects played a role in shaping the morphology that is still found in the region today.
At the time, as Raul Juste Lores notes (2017:56), although Communist Party members, architects had created a mutually beneficial relati-

Fig. 4: Esther building, with a view of Avenida Ipiranga (Álvaro Vital Brazil and Adhemar Marinho).

onship with capitalist property developers. People were astonished at such an unusual alignment of the stars - capital and talents - in Brazil. This situation lasted until the property market moved on to higher valuations for other areas of the city in the 1970s.
Culturally, therefore, in the area demarcated by the Arouche - Praça Ramos de Azevedo system, a record of the city's modernizing process, including buildings, avenues and squares, has been left behind to show how Brazilian society evolved in the course of the 20th century. From the economic point of view, however, there was a steep fall in the region's property valuations. Despite the high quality spatial solutions produced, the last few decades have seen population exodus with families impoverished, crime rates rising and built-heritage assets poorly conserved.
More recently, small businesses have posed alternative ways of producing housing by reusing buildings designed in the first half of the 20th century. These operations mostly hinge on restoring and retrofitting existing buildings such as Residencial Américo Simões (1918) or Germaine Bouchard (1955), as well as less outstanding buildings on Avenida Ipiranga.
These developments soon found buyers, showing that many families or households would like to return to the city's historic center. However, the process was limited by the urban space around these properties deteriorating, with high crime rates due mainly to drug traffic (SILVA, 2013).
Nevertheless, a recent survey found around 30 new buildings (commercial and residential) ready to sell as of 2010 in the vicinity of the Arouche - Praça Ramos de Azevedo axis. Projects such as Settin – Down Town República and São Luis were built in empty areas (such as parking lots and gas stations) to offer apartments ranging in floor space from 27 to 49 m², thus showing the trend for new buildings to fetch higher valuations in locations boasting decent infrastructure. But the real estate sector is still reluctant to invest in reuse initiatives, despite seeing the region's current infrastructure as an asset.
In order to grasp the meaning of this situation, we talked to real estate entrepreneurs. Three points stand out in relation to economic feasibility for reuse initiatives:

a) On the architectural scale, private developers need fast-tracked approval given the particularities of adapting old buildings for new uses;
b) On the urban planning scale, the State must implement efficacious policies for public order and sanitation, since most people view the region as decadent;
c) The financial system should provide structured credit facilities for interventions in existing buildings and areas that will provide housing and office space.
Changes are required to improve this productive environment in particular. Rather than believing that capitalist interests will take charge of social amelioration, it is a matter of seeing them as part of a technical-financial formula needed to ensure feasibility for reuse proposals.

Conclusions

The following remarks are preliminary in nature since this article corresponds to the stage our research has reached at this time.
We have pointed to obstacles facing Brazilians on recognizing our modern architectural and urban heritage as aspects enhancing urban living, although reuse initiatives are still far from being part of the urban agenda here.
However, we highlight reuse initiatives as an important aspect of the contemporary urban agenda in that much of our built heritage may be reused by joining cultural and economic aspects to be applied on both architectural and urban planning scales.
Taking part in RMB II has significantly added to perception of problems of this nature facing several regions around the world - although obviously involving different forms and ideas concerning design concepts for modern urban phenomena in each case.
This useful dialogue is encouraging Brazilians to think about what may be done in terms of working with our built-heritage assets.

Bibliography

CALABI, D:. História do Urbanismo Europeu. São Paulo: Editora Perspectiva, 2012.
CAMPANELLI, Alessandro P: Cassiodoro e o nascimento do restauro ao final do Império Romano do Ocidente. Revista Pós V21 N.35. São Paulo: FAUUSP, 2014.
THE AMSTERDAM DECLARATION. https://www.icomos.org/en/charters-and-texts/179-articles-en-francais/ressources/charters-and-standards/169-the-declaration-of-amsterdam Retrieved June 18, 2017.
FREGONEZI, Bruna B.N.: A Reabilitação do Centro de São Paulo: três projetos de intervenção. São Paulo: Mackenzie, 2015.
GERMAN COMMISSION FOR UNESCO: Protection and Cultural Animation of Monuments, Sites and Historic Towns in Europe, Bernecker, Melsungen, Bonn, 1980.
HEYNEN, Hilde: Architecture and Modernity, MIT Press, London, 1999.

Fig. 5: Copan building (Oscar Niemeyer).

JOSÉ, Beatriz C.: A Polarização do Centro de São Paulo: um estudo de transformações ocorridas nos últimos 20 anos. São Paulo: Doctoral thesis. FAUUSP, 2010.
LORES, R.J.: São Paulo nas Alturas: a revolução modernista da arquitetura e do mercado imobiliário nos anos de 1950 e 1960. Ed. Três Estrelas, São Paulo, 2017.
POMERANZ, L: Do Socialismo Soviético ao Capitalismo Russo. Atelier Editorial, Cotia, 2018.
THE NAIROBI RECOMMENDATION. http://portal.unesco.org/en/ev.php-URL_ID=13133&URL_DO=DO_TOPIC&URL_SECTION=201.html Retrieved June 18, 2017.
Recommendation on the Historic Urban Landscape http://portal.unesco.org/en/ev.php-URL_ID=48857%26URL_DO=DO_TOPIC%26URL_SECTION=201.html Retrieved September 7, 2018.
REIS FILHO, Nestor G.:Quadro da Arquitetura no Brasil. São Paulo: Ed. Perspectiva, 1997.
Urbanização e Teoria: contribuição ao estudo das perspectivas atuais para os conhecimentos dos fenômenos de Urbanização. São Paulo: FAUUSP, 1967.
ROCA, J.G: Rehabilitación, Reuso, Restauración, Conservación,in: REUSO – Sobre uma arquitetctura hecha de tiempo. pp29-30. Granada: Editorial Universidad de Granada, 2017.
SECCHI, Bernardo: Primeira Lição de Urbanismo. São Paulo: Perspectiva, 2006.
A cidade do Século XX, São Paulo: Ed. Perspectiva, 2009.
SILVA, Roberto T.S: Preservação e Sustentabilidade: Restaurações e Retrofits. São Paulo: Editora Novas Edições Acadêmicas, 2013.
SOMECK, N.: A cidade Vertical e o Urbanismo Modernizador: São Paulo 1920-39. São Paulo: Ed. Estúdio Novel/ FAPESP, São Paulo, 1997.
ZMITROWICS, W; BORGHETTI, G.: Avenidas 1950 – 2000: 50 anos de Planejamento da Cidade de São Paulo. São Paulo, Edusp, 2009.

Image Credits

Fig. 1: Downtown São Paulo (1950), http://www.laparola.com.br/31-fotografias-antigas-de-
Fig. 2: grandes-cidadesand the Arouche – Praça Ramos axis (in red), http://geosampa.prefeitura.sp.gov.br/PaginasPublicas/_SBC.aspx#
Fig. 3: Avenues Plan (1945), ZMITROWICZ and BORGHETTI, 2009.
Fig. 4:Esther building, with a view of Avenida Ipiranga (Álvaro Vital Brazil and Adhemar Marinho), http://fotografia.folha.uol.com.br/galerias/50297-edificio-esther-pioneiro-do-modernismo
Fig. 5: Copan building (Oscar Niemeyer), https://www.archdaily.com.br/br/876920/classicos-da-arquitetura-edificio-copan-oscar-niemeyer

António Carvalho

Politecnico di Milano, Milan, Italy
Visiting Professor

Antonio Carvalho is an architect and Visiting Professor at Politecnico di Milano, Italy, where he teaches a design course specifically focused on the creation of age-friendly environments. He has taught and lectured in Portugal and abroad, in Europe and China.
His PhD thesis “Housing for the Elderly in Lisbon: from Collective into Assisted Living” was awarded the national prize “Prémio Andre Jordan 2014” for the best PhD thesis in the years 2012-2013 in Portugal.

His main research domains are: elder-friendly environments and multigenerational housing in a lifelong perspective approach.
Antonio has 14 years of experience in teaching the design of age-friendly environments (housing and urban space) to architecture students in different schools.

He thinks it is a fundamental mission to educate the future generations of architects on how to conceive people-friendly environments at all scales: urban design, landscape, public facilities, housing, interiors, furniture and industrial design. If spaces and places are correctly conceived and holistically approached, generation gaps can be more easily overcome and neighborhoods in cities can become dynamic organisms, subject to the natural cycles of life, in a more continuous intergenerational flow.

He has 30 years of practice and is the founder of António Carvalho Arquitectura e Urbanismo, Lda (http://www.antoniocarvalho-au.com) in Lisbon, Portugal.
Some of his built works have received national and international architectural awards.

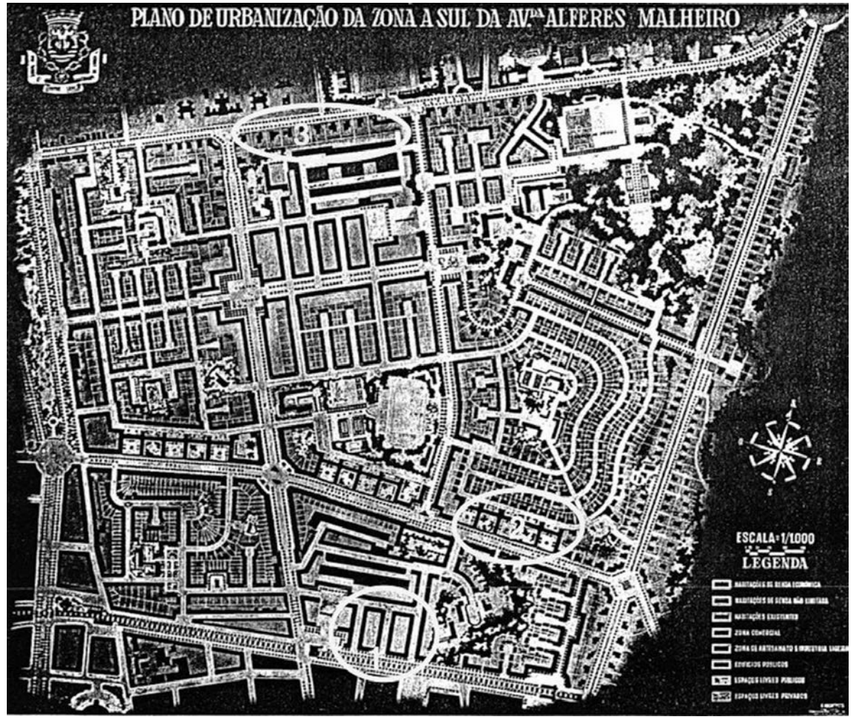


Fig. 1

ALVALADE: from MOD to NORC

Abstract

The Alvalade Plan was designed in 1945, when Lisbon was attracting new inhabitants from the countryside. In the following decades, a young generation of modernist architects designed the necessary housing, creating a MOD environment. Fifty years later the once young population has aged in place, turning Alvalade into a NORC whose modernist spaces need to be adapted to become age-friendly. Three case studies will be discussed in terms of urban space, interior spaces and buildings.

Alvalade // modernist // housing // urban space // age-friendly, age in place // intergenerational, // Bairro das Estacas, Av. EUA, Av. Brasil

Fig. 2

Introduction

Portugal, namely, Lisbon had in the middle of the 20th century a young and growing population for which new and modernist housing solutions were designed, turning the new Alvalade district into a modernist laboratory. But time passed by and half a century later, at the dawn of the new millennium, Alvalade was already a NORC (Naturally Occurring Retirement Community): its initial population had aged in place (Pastalan, 1990), making it a modernist environment now inhabited by older people who were no longer the stylish MOD[1] inhabitants envisioned by modernist architects in the 50's. This is the main issue we will address in this article: how to reuse and adapt this modernist global environment (public spaces, buildings, and interiors), respecting its high-quality design standards and yet turning it into an age-friendly community as a case study for wider dissemination.

Alvalade in the 1950's: young and MOD

When the Alvalade neighborhood was created, in the early 1950's, Portugal had a quite young population: the country had not been involved in the Second World War and the population pyramid was perfect, with a solid young base. Lisbon, as capital, attracted many people from smaller towns and, specially, from the countryside and Alvalade represented the new expansion of the city towards North where the city airport (a symbol of modernity) had been inaugurated in 1942. Therefore, this new expansion of the city (Fig. 1) was mainly intended to house the growing middle class, even though it also included the relocation of lower income families in "low rent" apartment buildings. Actually, for this emergency relocation reason, these were the first housing units to be built in compact corridor streets, in a clear hierarchy of main streets, secondary streets, cul-de-sac and pedestrian streets, following the neighborhood unit concept (Perry, 1929), which the Alvalade Plan's author, Faria da Costa, named urban cells (CML, 1948). Three of these urban cells with modernist design will be our case studies in this paper: 1-Bairro das Estacas, 2- Avenida dos Estados Unidos da America, 3- Avenida do Brasil.

Bairro das Estacas, 1949

This housing ensemble got instant fame in the city being nicknamed "Bairro das Estacas" (which means literally "Stakes Neighborhood") — but it also got international recognition in 1954, by winning the Municipal Architecture Award as well the Biennial of São Paulo Award, in Brazil. Its image of modernist buildings all aligned on top of round pillars, was indeed a revolutionary proposal for a traditional city such as Lisbon in the early 1950's. It was not just a question of architectural imagery: the urban space presented a totally new approach, with a parallel sequence of housing blocks (Fig, 2) and a public open space concept, replacing the traditional closed urban blocks foreseen in the original plan (Fig, 1).

Indeed, the architects Ruy d'Athouguia and Sebastião Formosinho Sanches, offered the city a new urban atmosphere (Fig, 3) based on new housing types in modernist buildings hovering above a continuous public green space designed by landscape architect Gonçalo Ribeiro Telles (Fig, 4). A new way of living the urban space: a clever mix of commercial spaces on the ground floors, along the peripheral streets, protected from sun and rain by the recess created by the modernist piloti colonnades (Fig, 4) was an invitation

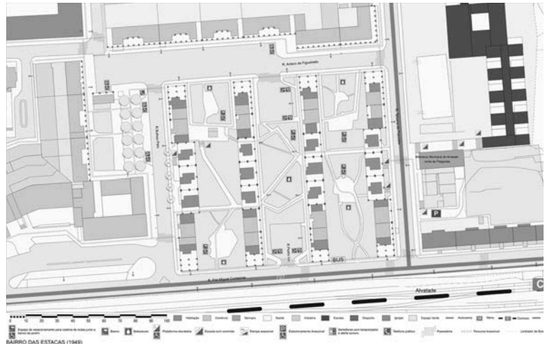


Fig. 7

Fig. 8

and possibility for comfortable window-shopping, while the central buildings' piloti offered visual permeability and public space continuity, thereby connecting and bringing together the three green spaces in between buildings, creating a continuous park where children could easily play, overlooked by mothers from the apartment balconies (Fig. 3). The intelligence and generosity of this urban layout would prove to be of great flexibility for new reuses, six decades after its first MOD residents aged in place (Pastalan, 1990).

Avenida dos Estados Unidos da America, 1954

The avenue layout goes back to 1941 when the city planning department designed it to become the main outward traffic distributor in Lisbon, aiming to connect the forest park of Monsanto (on the western end) to the river front at Poço do Bispo (eastern end). Its construction was already in progress by the time Faria da Costa designed the Alvalade Plan, thereby incorporating its presence and influence (Costa, 2002). In fact, as we can see (Fig. 1), its northern side already presented a modernist layout of buildings standing perpendicular to the avenue, creating public spaces in between them. By 1954, when the architecture team of Manuel Laginha, Vasconcelos Esteves and Pedro Cid designed the buildings in the northeastern side of the avenue, they proposed a continuous green park on the ground level (much similar in design to the one at Bairro das Estacas), providing visual transparency and physical continuity, thanks to the generous span of the large piloti of the buildings. The direct influence of Le Corbusier's Unités d'Habitation was clearly assumed by the authors for the taller buildings: ground floor on piloti, east-west full depth apartments with recessed balconies, modulated façades with sun louvers, a communal rooftop terrace. But for this case study, it is the apartments' layout that we'll be analyzing ahead in further detail: its rational and optimal organization was quite generous in space, thereby allowing future adaptations and reuses. In fact, each apartment is accessed to a central entrance hall distributing the domestic sectors (Fig. 5): services (kitchen, laundry, maid's room), social (living and dining room with recessed balconies) and private (bedrooms and bathroom). A secondary service door, accessed from the stairs, allows a service circuit separate from the family spaces. All these features will be useful for new uses.

Avenida do Brasil, 1958

In 1958 Jorge Segurado proposed a deep change in the 1945 urban layout: instead of having the buildings facing the avenue, the architect proposed to rotate them perpendicularly, thereby with the longer elevations facing East-West and offering the North elevation to the avenue instead, in a modernist sequence of slender volumes (Fig. 6). These eight housing blocks (7 floors each), only have car access from the secondary street, parallel to the avenue. The space in between the buildings thus became a sequence of small squares and gardens, interconnected by pedestrian paths that continue under the piloti buildings, framed on the South side by single-floor buildings for commercial activities — a design choice which permitted some urban mix of uses, thereby introducing flexibility into the modernist zoning criteria.

The fact that the whole ensemble still belongs to the bank Montepio Geral, has preserved its global image and allows us to consider each building as a global entity. It's also possible to propose new uses for this ensemble, in a privileged location: the university campus is

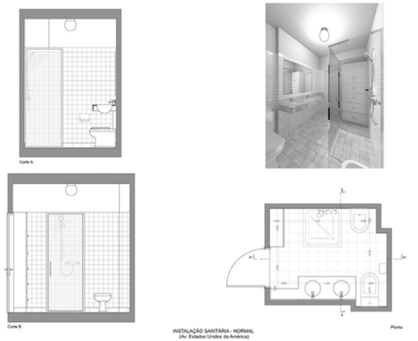
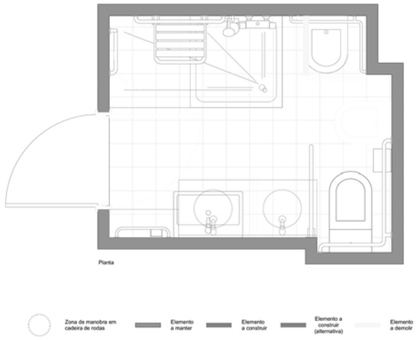


Fig. 9



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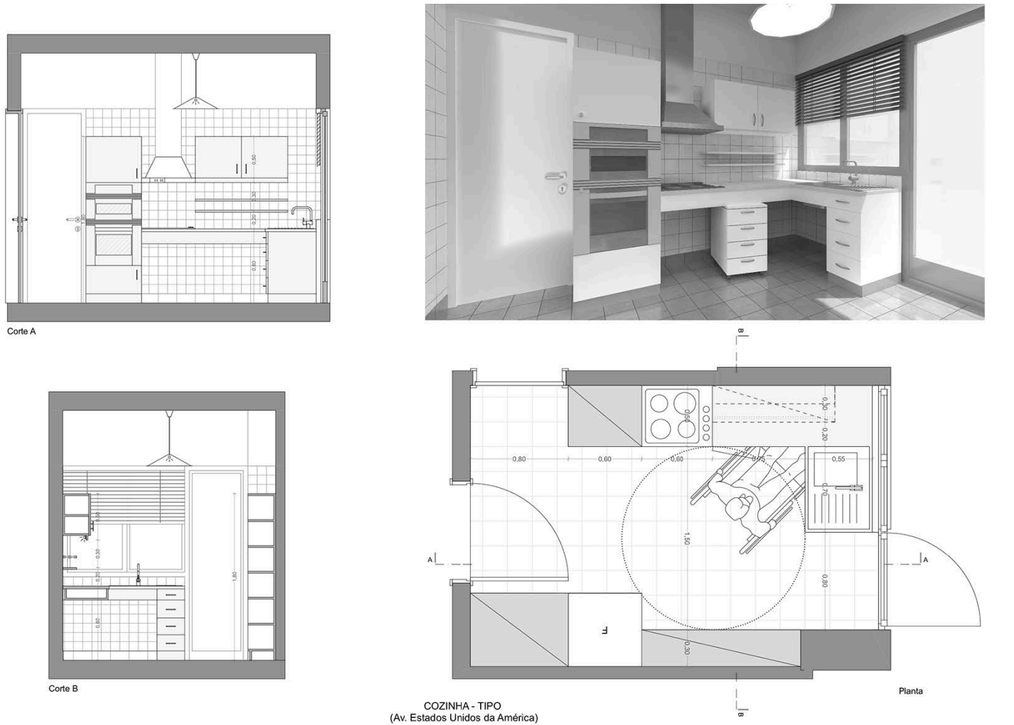

Fig. 11

located on the western end while the city airport roundabout is at the eastern end of the avenue, along which several public facilities are located.

Alvalade in the 2000's: a NORC in the city

The world population will keep growing (UN, 2017): by the year 2100 the population in all continents will have grown to a total of 11184 million — with the only exception of Europe whose population will continuously decrease (in Portugal, it will drop to 6.6 million inhabitants). Nevertheless, the most significant factor common to all continents, is the fast ageing: globally, population aged 60+ is already growing faster than all younger age groups. So, we say, the future will be grey (haired...) worldwide — and we must prepare our environments for it. In Lisbon, we'll use the Alvalade Neighborhood as our case study to find how some modernist spaces (of different scales) can be reused in a new societal context, totally different from the original one they were conceived for. In fact, Alvalade is now a NORC, that is, a Naturally Occurring Retirement Community: in the 2011 Census it was already the second most aged district in Lisbon.

Bairro das Estacas, today: public space for contemporary use

Almost seven decades later, the public space of Bairro das Estacas shows a quite remarkable resilience in the sense that it has undergone almost no changes (even most of the urban furniture is the original still) and yet it has withstood all the civilizational changes of society, namely the car invasion, keeping most of its original features, as an expressionist and organic green counterpart to the modernist buildings. Comparatively, the buildings suffered random individual changes made by the apartment owners (mainly the closing of the recessed balconies with diverse window types, thus affecting the visual atmosphere of the urban space and the visual-social interaction between balconies and public gardens below). Thus, how can the public urban space be readapted or transformed towards the new needs of the aged community in 21st century, and yet keep its original design features and quality?

Based on observation, site visits, and by applying an accessibility checklist (Dischinger, Bins Ely and Piardi, 2009) we concluded that most of the needs can be fulfilled with quite minimal changes. The promotion of active ageing (WHO, 2002) has been adopted by public health institutions as a major policy for contemporary societies, for which the use of public spaces is a main determinant. Thus, we propose (Fig. 7): turning some existing sidewalks into accessible pedestrian paths with smooth, levelled and non-slippery pavements (for wheelchair and all users); introduction of some ramps for accessibility; handrails on existing stairs; maintenance of the vintage benches and introduction of new ones (in stronger materials, for obese people) under tree shadows because older people get easily tired and need to rest; dedicated car parking places for people with impairments; more zebra crossings; introduction of traffic lights with sound timer at busier streets for safer crossing; drinking fountains in the park. The introduction of all these elements is totally compatible with the existing public space due to its clever original design, thus not requiring major infrastructural works. But one essential facility (Hanson, 2004) is still missing: public toilets. Its absence restrains older people from going far away from home; thus, we propose to create this facility inside the existing market warehouse.

Avenida dos Estados Unidos da America, today: age-friendly apartments

We'll consider, for the purpose of this paper, just the apartments of the five taller buildings (10 floors each) which face perpendicularly the avenue. So, now we'll analyse in which ways can interior spaces be adapted to older residents.

The longer life expectancy that progress has brought to all of us (WHO, 2002), means that people will be able to live longer in their homes and apartments — that is, if its spatial features allow it. In fact, most people would rather remain in their homes (Machado, 2007; Moreira, 2008) instead of moving into senior facilities. Looking at the plan of the apartments at Av. E.U.A. (Fig. 8) we conclude that the rational organization of the spaces allows the access (dotted lines) and rotation (circles) of wheelchairs, with no need for demolitions. Only bathrooms and kitchens would require major adaptations. But if the infrastructures (sewage, drains, water) are in the correct positions, minor adaptations would allow flexibility of use throughout time for different people, of different ages, with different needs (Fig. 9): opening the door outward for better circulation and safety; replacing the bathtub for a shower could easily have the cabin removed to be turned into a roll-in shower, accessible on a wheelchair; a single washbasin would give space to park a wheelchair parallel to the toilet. All these changes would not require changes in the main vertical sewage pipes of the building, so they could be done individually according to each resident's needs and decision. Thus, the proper positioning of each device would later require just the (reversible) addition of supporting bars (Fig. 10).

The kitchens, designed in a modernist "functional corridor" layout (Fig. 5), could be quite easily adapted (Maguire, M. et al, 2011) for the worst-case scenario of a wheelchair user (Fig. 11), without changing any walls. So, the solution would be the design of the kitchen cabinets, to provide empty space under the counters so that a person sitting on a wheelchair can fit the legs and approach the counter, the stove, the taps. Movable cabinets on wheels could be used under the counters and, whenever necessary to be used by someone on a wheelchair, they could be removed without changes in the infrastructures. The lower cabinets should all be provided with drawers which the person on a wheelchair can easily access (but also any other adult can, with the great advantage of not needing to kneel or bend over to catch something in the distant back of low shelves). The upper cabinets can also be provided with a suspension system that brings down the interior shelves. Anyway, the main purpose is to provide flexible solutions that everybody, even the most fragile, can use with autonomy, thereby allowing them to remain in their apartments for as long as they want or their health allows: apartments for life.

Avenida do Brasil, today: residential facilities for intergenerational living

These buildings could become intergenerational residential facilities: its location, very close to the university campus is very attractive for students, while the vicinity of urban facilities and commerce is very comfortable for older people (Fig. 12). Considering the lack of student housing in Lisbon and the large dimensions of the apartments, which are now empty nests (Zimmerman, Sloane and Eckert, 2001) for older people, matching both groups could promote urban and social renovation.

Starting at ground floor (Fig. 13), all spaces would be preserved for new uses: the main entrance for a waiting lounge to sit while

Fig. 12

waiting for a taxi or someone, comfortably watching life outside; the storage on the left for a parking for bicycles and motor wheelchairs; the doorman's apartment, on the right, would be reception and office for the new service providers working in the building, with a nurse/ treatment room connected to the sanitary facility. No demolitions would be required.

The 1958 typical floor was meant for big families with housemaid help: a home office (or extra bedroom) at the entry, a big living and dining room with balcony, a family dining room, a corridor to the children's and parents' bedrooms and bathrooms; a service access to the kitchen and pantry, to which the housemaid's bedroom and sanitary facility are connected. This bourgeois segregation is demonstrated by the Space Syntax (Hillier and Hanson, 1984) analysis map and graph that show a deep space (seven levels) and the maid's

Fig. 13

facilities quite segregated from the rest. Nevertheless, this can be an opportunity for intergenerational reuse: university students and older residents living together. This kind of experience, exchanging lodging for keeping company and provide casual help, is not new and has proven to be successful (Fundação para o Desenvolvimento Social do Porto, 2003).
Apartments would be organized into eastern and western sectors (Fig. 14): students would use 3 bedrooms, 2 sanitary facilities and the living room. Older residents would use the western spaces: the master bedroom now with an accessible private bathroom, the smaller living-dining room and kitchen, keeping in a short range the essential spaces for their daily living activities (Zimmerman, Sloane and Eckert, 2001), which we as architects must be attentive to (Buse et al., 2016). They would also keep the small bedroom to host relatives or a caregiver. Some spaces would be shared by all: the entrance hall, the kitchen, and the pantry. With very minimal interventions (connecting existing spaces in a different way), older and younger residents could have simultaneous activities without disturbing each other's privacy and yet, keep company by sharing the same big apartment.
Active and healthy ageing (WHO, 2002), implies that people should not remain indoors but rather keep active, going out and socializing (WHO, 2017). But for very old and fragile people, this could be a problem because often sidewalks are uneven or poorly maintained, thus a hazard and a risk (Machado, 2007). We propose an alternative use for the flat roofs (Fig. 15), demolishing the individual laundries (Fig. 6) to create outside terraces where residents can sit and socialize or exercise on the walking path (Fig. 16), as well as creating a restaurant (Fig. 17), a small gym (Fig. 18) and a lounge (Fig. 19). All these facilities would be managed by a professional team based on the ground floor office (Fig. 13), in an assisted living facility logic, also providing some health and psychological support, for which the vicinity (Fig.12) of the Nurse School and Psychology College is useful, facilitating internships and protocols to be celebrated with the residents' community.

Conclusion

In terms of reuse of modernist spaces, these three case studies can provide us some conclusions:
Urban space — the modernist option of transparent public spaces has proven to be a resilient solution, still used and appreciated today. A drawback might be thermal comfort, a contemporary concern and technical requirement which did not exist back then; but it can be overcome by the use of external insulation, given the fact that most of these modernist buildings use plaster for finishing, namely on the ground floor ceiling of piloti spaces, thereby exposed to climate variations. In terms of public space reuse, it will be easy to add some more public benches, drinking fountains, ramps (the outside pavements can be adjusted to reach the threshold level of building entrances to avoid architectural barriers), handrails on stairs, traffic lights with sound timers, zebra crossings. Some selected paths should be repaved with smooth, non-slippery pavements to connect the main points, namely the commercial spaces which are a plus for urban life and a flexible answer to unexpected needs.
Apartments — the modernist layout of interior spaces allows good accessibility for older residents, like the use of wheelchair or walking aids — fortunately, the modernist tendency towards wide and fluid circulation spaces provided avoided narrow corridors in most cases. Nevertheless, bathroom doors need to be replaced to open outwards and bathtubs should be replaced by roll-in showers with pavement drains. The other sanitary devices, if correctly located, will just need the addition of supporting bars. On the other hand, in the kitchens, accessibility and ergonomics are key, to reach out and get things from top or low shelves, requiring good furniture design, moveable and inclusive for wheelchair users whenever necessary.
Residential facilities — the existence of common spaces is the key to allocate the required services that will support the new needs of an ageing population. This way, new spaces such as a restaurant, a lounge, a laundry, or a treatment room could be introduced, reusing common areas such as the doorman's apartment, storage spaces, flat rooftop spaces. In bigger apartments, some intergenerational and cohousing experiences could be created, with younger and older residents match supervised and followed by psychology experts. This would avoid social stigma of "elderly homes" because different generations would share the same buildings throughout time, moving in and out like in any other building and yet, ageing in place in the most natural way.
Considering these different features, we would thereby conclude that the reuse of modernist spaces for older residents is a promising future for our ageing societies, preserving in new ways a highly qualified modernist heritage.

Bibliography

Buse, C., Nettleton, S., Martin, D. and Twigg, J. (2016). Imagined bodies: architects and their constructions of later life. Ageing and Society. Available on: CJO 2016 doi:10.1017/S0144686X16000362. [accessed on 28 September 2017].
Carvalho, A. (2013). Habitação para idosos em Lisboa: de colectiva a assistida. O caso de Alvalade. [Housing for the elderly in Lisbon: from multifamily housing to assisted living. The Alvalade case study]. PhD thesis. Instituto Superior Técnico da Universidade Técnica de Lisboa.
Carvalho, A., (in press). "Av. Brasil, Lisbon: Assisted Living for the Elderly — learning from practice, practicing on research", DR_SoM – Design Research, Series on Method: Building in Design Research, as noun and verb, n. 2. Delft: TU Delft. ISSN: 2468-5976.
CML- Câmara Municipal de Lisboa (1948). A Urbanização do Sítio de Alvalade. Lisboa: Edições CML.
Costa, J.P. (2002). Bairro de Alvalade – um paradigma no urbanismo português. Lisboa: Livros Horizonte.
Dischinger, M., Bins Ely, V.H.M., Piardi, S.M.D.G., (2009). Promovendo acessibilidade espacial nos edifícios públicos: programa de acessibilidade às pessoas com deficiência ou mobilidade reduzida nas edificações de uso público. Florianópolis: s.n.

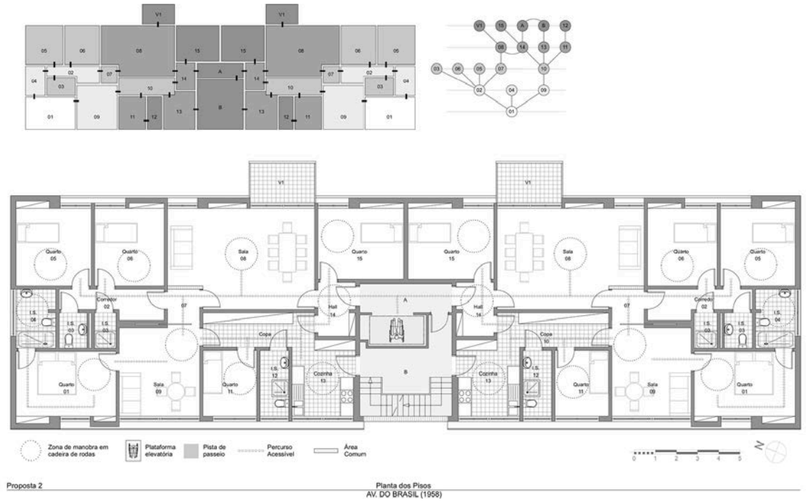

Fig. 14

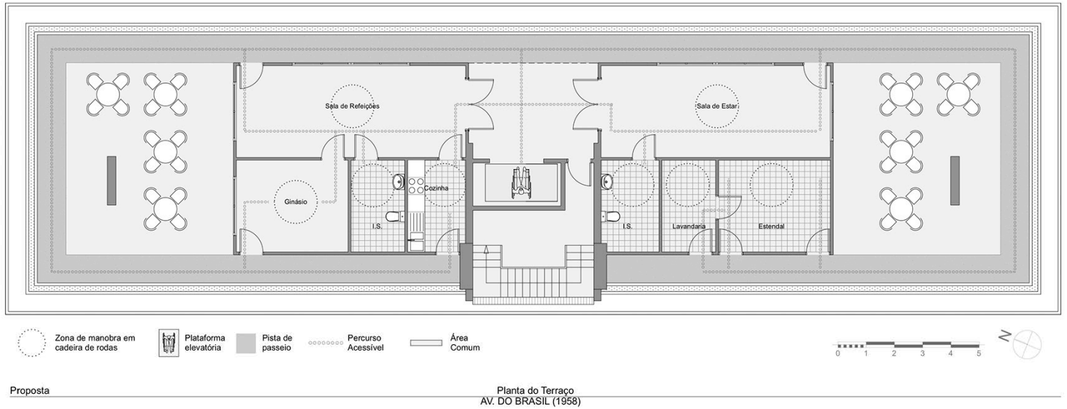

Fig. 15

Fundação para o Desenvolvimento Social do Porto, 2003. Regulamento do Programa Aconchego da Fundação para o Desenvolvimento Social do Porto [pdf]. Available at: www.bonjoia.org/files/Regulamento_Aconchego.pdf [accessed on 24 de July 2012]

Gonçalves, C., Carrilho, M.J. (2007). Envelhecimento Crescente Mas Espacialmente Desigual. Revista de Estudos Demográficos, Pages 21 - 37, N.40.

Hanson, J. (2004). The inclusive city: delivering a more accessible urban environment through inclusive design. In: (Proceedings) RICS Cobra 2004 International Construction Conference: responding to change. York.

Hillier, B. and Hanson, J. (1984). The Social Logic of Space. Cambridge: Cambridge University Press.

Machado, P. (2007). As malhas que a (c)idade tece. Mudança social, envelhecimento e velhice em meio urbano. Lisboa: Laboratório Nacional de Engenharia Civil.

Maguire, M. et al., (2011). Age friendly kitchens: a study based on social history and ergonomics. In: Include 2011 Proceedings. 6th International Conference on Inclusive Design: The Role of Inclusive Design in Making Social Innovation Happen. Royal College of Art, London, UK, 18th-20th April.

Moreira, M.F.C., 2008. O Envelhecimento da População e o seu Impacto na Habitação – Prospectiva até 2050. Master dissertation. Instituto Superior de Estatística e Gestão de Informação da Universidade Nova de Lisboa.

Pastalan, L., ed. (1990). Aging in Place: The Role of Housing and Social Supports. New York: The Haworth Press Inc.

Perry, C. (1929). The Neighborhood Unit. [pdf] Available at http://codesproject.asu.edu/node/11, [accessed on 1 October 2012].

UN- United Nations, Department of Economic and Social Affairs, Population Division (2017). World Population Prospects: The 2017 Revision, Key Findings & Advance Tables. Working Paper No. ESA/P/WP/248. New York: United Nations.

WHO - World Health Organization (2002). Active Aging: a Policy Framework. [pdf] Geneva: WHO. Available at: whqlibdoc.who.int/hq/2002/who_nmh_nph_02.8.pdf [accessed on 12 October 2012].

WHO - World Health Organization Regional Office for Europe (2017). Towards More Physical Activity in Cities. [pdf] Geneva: WHO. Available at: http://www.euro.who.int/en/health-topics/disease-prevention/physical-activity/publications/2017/towards-more-physical-activity-transforming-public-spaces-to-promote-physical-activity-a-key-contributor-to-achieving-the-sustainable-development-goals-in-europe-2017 [accessed on 12 May 2018].

Zimmerman, S., Sloane P.D. e Eckert, J.K., eds. (2001). Assisted

Fig. 16

Fig. 18

Fig. 17

Fig. 19

Living: needs, practices, and policies in residential care for the elderly. Baltimore: The John Hopkins University Press.

Endnotes

[1] MOD: 1-(adjective) modern; 2- (noun) especially in the early 1960s, a young person of a subculture characterized by stylish dress, the riding of motor scooters, and a liking for soul music; 3- (origin) abbreviation of Modern or Modernist. Source: New Oxford American Dictionary.

Image Credits

Fig. 1: "Alvalade Plan" designed by João Faria da Costa, 1945 (Source: João Pedro Costa, 2002).
Fig. 2: Aerial view of Bairro das Estacas. Photo: unknown author, 1950's. (Source: lisboadeantigamente.blogspot.com, 2018).
Fig. 3: View of the buildings open to the public garden. Architects: Ruy d'Athouguia, Formosinho Sanches, and Gonçalo Ribeiro Telles, 1949. (Photo: Armando Serôdio, 1959. Source: lisboadeantigamente.blogspot.com, 2018).
Fig. 4: Ground floor plan of Bairro das Estacas. (Source: Antonio Carvalho, 2013, after Ruy d'Athouguia, Formosinho Sanches, and Gonçalo Ribeiro Telles, 1949).
Fig. 5: Plan of typical floor in the buildings along the avenue. (Source: Antonio Carvalho, 2013, after Manuel Laginha, Vasconcelos Esteves, Pedro Cid, 1954).
Fig. 6: Aerial view of the buildings along the avenue, seen from South. Architect: Jorge Segurado, 1958. (Source: Google, 2018).
Fig. 7: Proposed Reuse of Public Space at Bairro das Estacas - ground floor plan. (Source: Antonio Carvalho, 2013).
Fig. 8: Typical plan of the apartments with accessibility and simplified Space Syntax analysis. (Source: Antonio Carvalho, 2013, after Manuel Laginha, Vasconcelos Esteves, Pedro Cid, 1954).
Fig. 9: Typical bathroom of the apartments (Source: Antonio Carvalho, 2013).
Fig. 10: Typical bathroom of the apartments adapted for universal use (Source: Antonio Carvalho, 2013).
Fig. 11: Proposal: typical kitchen of the apartments adapted for universal use (Source: Antonio Carvalho, 2013).
Fig. 12: Aerial photo (Google, 2015). Source: Antonio Carvalho, 2015
Fig. 13: Ground floor plan of the apartment buildings. (Source: Antonio Carvalho, 2013, after Jorge Segurado, 1958).
Fig. 14: Proposal of typical floor plan of the apartment buildings, organized into Eastern and Western sectors (Source: Antonio Carvalho, 2013).
Fig. 15: Proposal of new spaces - rooftop plan (Source: Antonio Carvalho, 2015).
Fig. 16: Proposal for rooftop: terrace and walking path (Source: Antonio Carvalho, 2015).
Fig. 17: Proposal for rooftop: restaurant space (Source: Antonio Carvalho, 2015).
Fig. 18: Proposal for rooftop: gym (Source: Antonio Carvalho, 2015).
Fig. 19: Proposal for rooftop: lounge space (Source: Antonio Carvalho, 2015).

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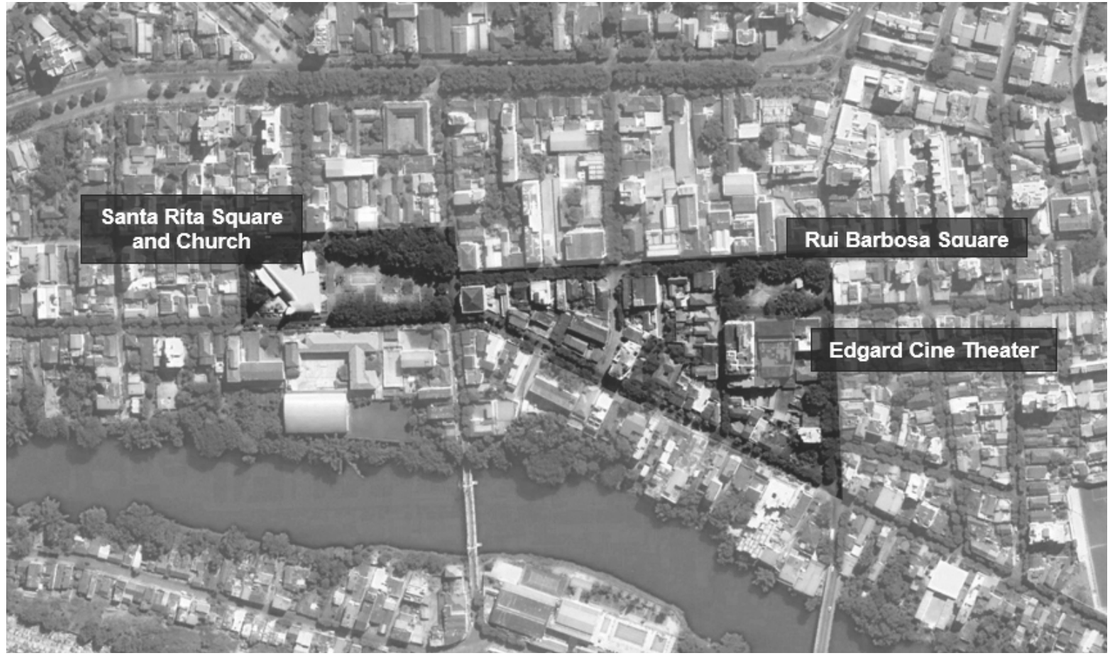

Fig. 1: Location map.

Cine Teatro Edgard: a modern building. Proposal for restauration and reuse of a modern movie theatre in Cataguases, Minas Gerais, Brazil.

Abstract

This work deals with the preservation of modern architecture from a specific case of a public building located in the city of Cataguases, Minas Gerais, Brazil. The building known today as Edgard Cine Theater was built in 1953 and listed by the National Historical and Artistic Heritage Institute (IPHAN) in 1994. It is intended to address the need to develop a design methodology to guide the decision-making around the restoration of the building that is in an advanced state of deterioration with the objective of reintegrating it to the daily life of the city.

Modern architecture // preservation // cultural heritage // street movie theatres

Introduction

This work stems from the concern about the growing state of abandonment of one of the most important public and cultural buildings in the city of Cataguases, located in the State of Minas Gerais, southeastern region of Brazil. The Cine Teatro Edgard, was designed by the architects Aldary Toledo and Carlos Leão in 1946 and inaugurated in 1953 and listed by the Institute of National, Historical and Artistic Heritage - IPHAN in 1994. The architectural features of the building contributes to its monumental character; its connection to the public space makes it an extension of the street, belonging, therefore, to the public realm. The building occupies the same grounds as the former Cine Teatro Recreio built in 1896 and since then, has been an important meeting point for residents and a place of countless cultural events from its inauguration to the date of its interdiction in 2013. In this sense, it is important to highlight the need to carry out a global project of restoration and re-use of the building to reintegrate it into the daily life of Cataguases. This article intends to point out some thoughts that may support this process. In this sense, we try to present a brief introduction that highlighting the importance of the building, and the values assigned to it from a historical, social, architectural and cultural point of view. We also present a intervention guidelines based on its actual state of conservation. In this case, it is sought to investigate the applicability of current preservation principles, considering the contributions of DOCOMOMO and the International Council on Monuments and Sites (ICOMOS), through patrimonial Charters, especially the Venice Charter (1964) and the Nara Document on Values and Authenticity (1994).

Cine Teatro Edgard: a modern building

The Cine Teatro Edgard is located in the central area of Cataguases, more specifically in the primitive nucleous that had been established in 1828 as a result of the Portuguese colonization campaing of territories that had not yet been occupied in southeastern Brazil. This central area is inscribed within the protected perimeter that was established by the Institute of National Historical and Artistic Heritage (IPHAN) in 1994 and has a great relevance in the socio-cultural context of the city. The main façade of the building faces one of the city's most significant public spaces, Rui Barbosa Square, which strengthens the building's public character.

Architectural characterization and autenticity

The Cine Teatro Edgard constitutes an important source of cultural memory to the city of Cataguases and its people. In this context it is important to the values assigned to this building from a social and cultural point of view. The social context of the construction of the building made possible the use of a vocabulary that was typical of modern architecture in Brazil during the second half of the 20th century such as the use of pilotis; the monumentality of the interior spaces; the use of transparency in the façades and visual permeability between the interior and exterior and the independence between the structure and interior walls. The internal spaces stand out by its enphasis on the void and the curved elements that runs through the interior spaces with fluidity in contrast with the orthogonality of the structural modulation. It is also important to highlight the attention to the visual continuity between the floors, the mezzanines that amplify the scale of the interior spaces and the transparency of glass windows and doors ensuring natural lighting and ventilation to the interior of the building.

Fig. 2,3,4: Main façade and interiors.

Project guidelines

These guidelines seek to point out the necessity of preservation of the material and immaterial aspects of the building. The material issues relate to the constructive aspects, infrastructure, property installations, surfaces, accessibility and furnishings, and the immaterial issues relate to the social aspects such as the integration to the adjacent public space of Rui Barbosa Square (Figure5). About the preservation of the building and its essential qualities, it is considered indispensable to maintain it as a democratic public and cultural equipment. On the aspects that are liable to change, the digitalization of the room is highlighted by taking advantage of the space destined to the projection booth; replacement of the stage flooring and other wood elements that are totally deteriorated; creation of mechanisms aiming at meeting the criteria of accessibility and fire safety in any way possible; update the sanitary facilities; repair of electrical, hydraulic and fire installations. It is also emphasized that the issue of accessibility is one of the biggest barriers to the full use of the building. The project proposal seeks to align itself with the restoration principles placed in the Venice Charter (1964) with special attention to additions and substitutions. In this sense, elements intended to replace missing parts or new elements inserted must be harmoniously integrated into the whole but distinguishing from the original parts so that the restoration does not fake the historical document. The additions should seek to respect the existing parts of the building, its traditional scheme, the balance of its composition and its relations with the environment.

Electric, lighting, hydraulic and fire installations

The upgrade of the installations should consider the minimum intervention in the building. The system of electrical installations should be replaced because they have a risk of fire and are extremely damaged by the lack of conservation and maintenance. The hydraulic instal-

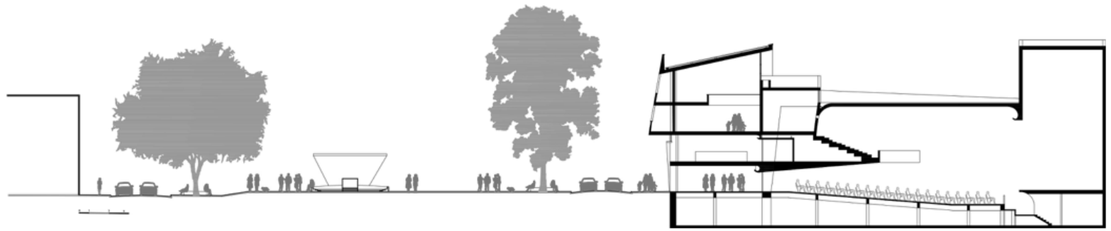

Fig. 5: Section through Rui Barbosa Square and the building.

lations must be rigorously inspected to detect the level of deterioration by proposing less invasive solutions as possible. The new air conditioning equipment should be on the rooftop avoiding the visual interference in the reading of the volumetric shape of the building. The lighting, projection and acoustic systems must relate in harmony with the original aspects of the building.

Surfaces and materiality

The texture, colors, dimensions and fitting patterns of the finishing and painting parts are important aspects of the authenticity and originality of the building, which express the passage of time and characterizes its identity. Therefore, it is indicated the maintenance of original flooring and finishes where they are in a good state of preservation and whenever it is possible to repair or restore, as an example, the marble floor of the foyer. The replacement of surface elements is indicated only in case irreparable damage. The elements destined to replace missing parts or new elements inserted, must integrate harmoniously with the whole, but distinguishing from the original parts so that the restoration does not fake the historical document. The additions should look for respect the existing parts of the building, its traditional scheme, the balance of its composition and its relations with the environment (Venice Charter, 1964).

Façade

It is important to maintain a controlled cleaning of the facade, with special attention and respect to the surface already altered by the time, treating the pathologies that are not to be confused with the marks of the passage of time, as the original materials and their textures and colors, the ceramic tiles lining the main staircase and the wooden and glass frames, all these elements together are the expression of the historicity and age of the building. In addition to these main guidelines, we suggest some specific interventions for the preservation of the building: wooden frames with irreparable damage are to be replaced preferably by new frames with in the same dimensions and design of the original parts. In places where the frames are not extremely damaged, it is recommended to restore the existing to maintain the original tissue of the building to the maximum. It is recommended to maintain the transparency of the facade and the visual permeability between the exterior and the interior, from the cleaning and repair of the metallic railing and the installation of glazing frames to maintain the air conditioning that should be installed for the purposes of greater thermal comfort inside the building. It is also proposed to insert a new system of brise-soleil to improve the protection of the interior of the building in relation to the incidence of sun rays and rainwater that has been causing damage on the existing hardwood floor. This proposal refers to the original architectural project but does not copy it. It is also proposed to build a roof cover to protect the posterior façade of rainwater and infiltration (Figure6).

Accessibility

Considering accessibility, interventions should complement and diversify the possibilities of access to the upper floors that now rely only with one main ladder. It seeks to solve the issue of accessibility proposing the installation of elevators connecting all the floors. It is emphasized that it is necessary to observe the limit of interventions, and, because it is a protected building, some requirements of the current legislation should be eased to keep the aspects and attributes that give the building its originality and authenticity.

Auditorium – furniture and acoustics

The volumetric shape and the spatiality of the auditorium must be respected and preserved. The wooden chairs must be restored; in terms of acoustics it was found that the main causes of noise inside the building are given by the precarious condition of the door and window frames, the lack of acoustic treatment between the roof and a covering slab and the discontinuity of lateral and frontal closures, which would serve as sound barriers. It is also possible to affirm that the high rate of reverberation perceived in the environment is given by the relationship between the characteristics of the spatial dimension of the auditorium and the materials used in its construction, which are mostly low absorption. There is no indication of any type of acoustic treatment aiming to decrease this high perceived reverberation index inside the building. To improve the acoustic performance of the auditorium, the new elements installed must be removable in order to preserve to the maximum its original form and spatiality. In relation to the external environment, the circulation of vehicles near the building are responsible for intense mechanical vibrations that are a constant source of nuisance and degradation of the building and becomes even more sensitive by being directly in contact with the street and due to its use that requires silence and concentration. Such vibrations are propagated through several sound sources, such as: the friction between the tires of the vehicles and the cobblestone floor, loudspeaker, cars of sound, high concentration of people in the square. It is therefore recommended to restrict car parking spaces immediately ahead of the building and acoustic treatment through removable panels on the interior surfaces of the auditorium aiming to dampen the impact of sound sources from the streets in their immediate surroundings to lessen the discomfort produced by these noises as preconized by heritage charters such as the Washington Charter (1987).

Final considerations

This work sought to present a series of guidelines for the restauration and reuse of the Edgard Cine Theatre emphasizing its historical and symbolic importance to the city, beyond its importance

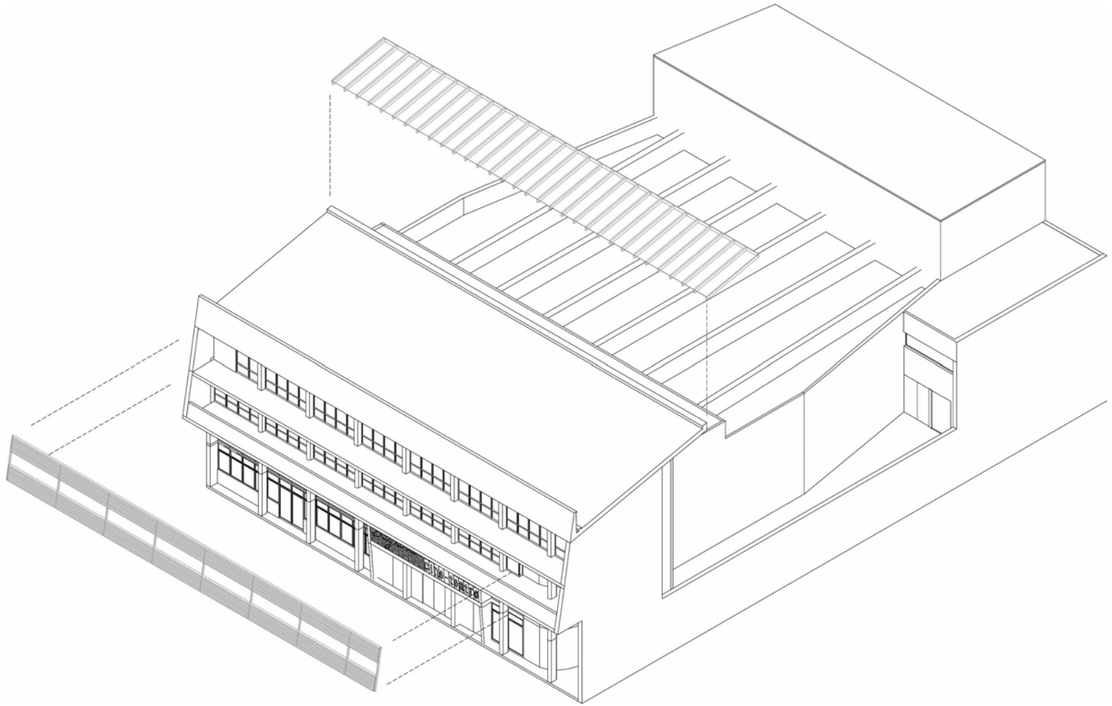

Fig. 6: Brise-soleil and new cover above the terrace.

as modern architectural heritage. It was also sought to expose the attributes and values intrinsic to the building that characterize its authenticity and originality. In this sense the material and immaterial aspects of the building were analyzed, highlighting the elements of volumetric and structural composition, as well as the characteristics of the coating materials, which express the marks of the time in the building. The immaterial and cultural aspects are given by the main actors and agents of transformation that occur with the passage of time. Considering the aesthetic and use values of the building, it is concluded that the permanence of the damage found causes significant losses, as well as endanger the physical integrity of the users, unable to fulfil their functions as shelter by compromising its use value. Finally, it is proposed a series of guidelines considering the recognition of values assigned to the building that carries the identity that is to be preserved. It is understood here that this identity is related to an architecture of generous spaces, which privileges the emptiness, transparency and visual relations between exterior and interior and that sought to take advantage of the technological possibilities of the time from the use of the structure in reinforced concrete. Such characteristics are fundamental to the apprehension of this building and should be preserved. It is concluded that, from the thorough understanding of the building and the premises and recommendations for the preservation of the cultural heritage present in the documents of ICOMOS and DOCOMOMO, it is possible to establish an intervention methodology for this building, guaranteeing, in large part, the safeguarding of the values of this heritage.

Bibliography

Alonso, P. H. (2010). A construção de um patrimônio cultural: o tombamento federal de Cataguases, Minas Gerais.

Alonso, P. H. (org.) (2009). Cataguases – arquitetura modernista. Guia do Patrimônio Cultural. Belo Horizonte: Instituto de Estudos do Desenvolvimento Sustentável.

INSTITUTO DO PATRIMÔNIO HISTÓRICO E ARTÍSTICO NACIONAL – IPHAN. Processo 1.342- T-94. Tombamento Cataguases. Rio de Janeiro. Arquivo Noronha Santos. 3 volumes.

Mello, F. A. O. (2014). Cataguases e suas modernidades.

Carvalho, C. S. R. (2006). Preservação da arquitetura moderna: edifícios de escritórios no Rio de Janeiro construídos entre 1930-1960. Tese de Doutorado. Universidade de São Paulo.

Oliveira, M. S. L. (2017), Projeto de Restauração e Readequação de Uso do Cine Teatro Edgard. Universidade Federal do Rio de Janeiro.

Image Credits

Fig. 1: Location map I Credit: Intervention by the author on Google Earth image, 2018

Fig. 2,3,4: Guide to the Cultural Heritage - Modernist architecture of Cataguases I Available in: http://sv2.fabricadofuturo.org.br/guia-modernista/

Fig. 5: Section through Rui Barbosa Square and the building. Prepared by the author, 2018

Fig. 6: Brise-soleil and new cover above the terrace. Prepared by the author, 2018

Session 2.0
RESEARCH on Reuse of Modernist Buildings

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FINAL TEMPLATE
4 equal fiches documenting the 4 stages of the site/building, allowing an integrated evaluation of the reuse project:

A. ORIGINAL PROJECT (the time of the construction)

B. SITUATION BEFORE REUSE PROJECT (the time of the deterioration)

C. REUSE PROJECT (the time of the regeneration)

D. CURRENT SITUATION (current evaluation)

NAME:

1. Identification
name:
architect/designer:
landscape/garden designer(s):
collaborators (engineers, consultants, etc.):
building contractor(s):
location:
town / country:
gps:

2. Chronology
commission/competition date:
design period (s):
construction:
completion/inauguration:

3. Status of Protection
protected by:
grade:
date:
valid for (whole area/parts of area/building):
remarks:

4. Description of the site/buildings
context remarks/brief introduction:
use/function:
urban morphology:
urban integration:
(access to facilities, public and green spaces, typology of buildings, mobility, etc.):
spatial organization:
(functional distribution, types of space, relationships between spaces (social, private, mediator, service), fire control systems, etc.)
physical and technical description:
(construction and structural systems, materials and devices, pathologies, seismic stability, etc.)
energy efficiency and environmental comfort:
(thermal performance, acoustic insulation, ventilation, lighting, etc.)
social description:
(user's behaviour, demographic and socio-professional structure, sense of belonging; security, etc.)
cultural relevance:
aesthetics:
...

5. Documentation
plans
drawings
photographs

6. Bibliography
books
articles
lectures
unpublished manuscripts
correspondence
websites
movies
...

Fig. 1

How to develop a Case Study Handbook on the Re-use of Modernist Buildings?

Abstract

In the framework of the Erasmus+ project Re-Use of Modernist Buildings, a case study handbook was developed in collaboration with architecture students of the University of Antwerp (Belgium). This case study handbook has to support future students of an International Master which will work on the theme of Re-use and Conversion of Modernist Buildings into Housing. This paper sheds light on the process, method and problems of developing such a case study handbook, facing a large amount of material and information. It suggests how projects can be selected, described, contextualized and visualized in a comprehensible manner.

Case study handbook // modernist architecture // mass housing // re-use // high-rise

Fig. 2

Introduction

The joint European Erasmus+ project Re-use of Modernist Buildings (RMB) started its activities in 2016. It is an educational collaboration between universities teaching in the field of architecture, involving partners from from the Hochschule Ostwestfalen-Lippe (DEU), Istanbul Teknik Universitesi, Istanbul (TR), the University of Antwerp (BE), Universidade de Coimbra, Coimbra (PT) and the Universidade de Lisboa, Lisbon (PT), the architectural organisation DOCOMOMO International and the Energy and Resources Institute TERI (IN). The main objective of the RMB-group is twofold: on the one hand, it wants to enhance student and staff mobility through a shared educational programme on master degree level; on the other hand, it focuses on transformation strategies for modernist buildings that are at play in all participating countries. RMB wants to develop an educational approach based on common definitions, approaches and methodologies. It takes its point of departure in existing research, educational practices and reference projects in the partner countries (DAA, 2016). In order to assemble knowledge and information about relevant modernist buildings systematically, and analytically, a Case Study Handbook of Modernist Buildings is being developed. This handbook should serve as a tool for students during courses of the RMB-master. It aims moreover to introduce, support and inspire students in the research of particular international modernist buildings and their suitability for adaptation into housing. Additionally, knowledge and information will accumulate through the course of the RMB-programme and in the end result in a work of reference, - not only relevant for RMB-students, but also for actors dealing with modernist heritage in other fields. In future perspective, the handbook will become a palpable and accessible means when communicating about and negotiating modernist heritage with authorities, promotors and others involved in transformations of modernist buildings. This paper sheds light on the process of developing the handbook in cooperation with architectural students, while it also includes a reflection on the process as well as on the results.

Defining the objective

At the first Transnational Project Meeting in Lisbon in Portugal (TPM 29-30/10/2016), the concept of case study handbook was discussed. It was evaluated positively and regarded as a significant asset for a successful development and accomplishment of the RMB curriculum. The purpose of the handbook is threefold: included cases can be used as point of departure for further examination during theory and history lessons; cases listed in the handbook can be employed in the design studios, serving as subject for design assignments; additionally, it allows registration of new case study projects, being a continuous work-in-progress.
At the meeting all partners agreed on a number of common guidelines that should be kept in mind when making the handbook and when selecting case studies (Heitor, a.o., 2016). First, case studies should focus on housing. As argued in the initial project description, there is an urgent need for suitable and affordable housing in city centres. The problem of urban agglomeration is increasing and cannot and should not, according to the RMB-group, be solved by new constructions only. Having a focus on modernist architecture, the RMB-project aims to address the need for housing in urban contexts by focusing on refurbishment of the existing housing stock, as well as conversion of building typologies, such as warehouses, schools, offices and public building into housing. Projects may include different scales and range from focus on interiors to neighbourhoods. Second, case studies should exemplify successful as well as unsuccessful interventions. Best practices as well as failures may generate important insights and allow to develop strategies for dealing with modernist architectural patrimony. Third, the handbook should contain specific examples of projects, illustrating innovative conversion concepts and approaches as well as adaptive re-use possibilities that transcend mere physical phenomena. In other words, the selection and analysis of the cases should not be limited to pure physical transformations, but may also include social transformations of a building project or housing estate. An example could be a high-rise housing block in which certain units are transformed into dwellings for co-housing. As such, another kind of inhabitants will be attracted. Fourth, selected case studies should, next to characterization of design and construction, emphasize various aspects and difficulties of conversion or adaptation in relation to current function, use and status. Finally, the handbook may also include so-called 'theoretical cases', projects which can shed light on good, exemplary and/or innovative technical and construction solutions, such as projects which demonstrate original transformation concepts.
The making of a general template for the handbook was initiated by the team from the University of Antwerp. Its Faculty of Design Sciences holds a long tradition of investigating Belgian modernist design and architecture, both through design studios as through research. Antwerp master students interior architecture and architecture have actively participated in the further development of the handbook. In this process methodology issues were addressed, such as: How to select projects? What sort of information should be included? How to find information? How should the handbook be structured and laid out?

Designing a template

The UAntwerpen team created a template that makes it possible for all partners to add case studies in an adequate and uniform manner. As a starting point, the template was based on the DOCOMOMO documentary record, The Modern Movement in Architecture. Selections from the DOCOMOMO Registers (Sharp, Cooke, 2000). This record from 2000 aimed to provide a global overview of characteristic architecture of the Modern Movement – and to call attention to its significance worldwide in order to preserve it from obsolescence and demolition. Much have happened since then. Now, almost 20 years later, the awareness and appreciation of modernist architecture has generally increased and many modernist architectural projects have been preserved, conversed or refurbished. The focus of the RMB Case Study Handbook is therefore a different one than the DOCOMOMO documentary record from 2000. Instead of focusing on canonical modernist architecture, depicting various periods within modernism, the RMB-group wants to concentrate on

modernist projects that already have been conversed or refurbished successfully as well as projects that potentially could be subject for alternation and re-use. The scope of the RMB handbook embraces projects exemplifying 'best practices' as well as less known modernist buildings that have not yet been transformed. This approach allows us to consider the large amount of housing projects which is constructed in the aftermath of WW II and which forms a substantial part of our urban housing stock.

While cases in the DOCOMOMO-edition only are introduced shortly, the RMB Case Study Handbook includes a more extensive description of the selected cases. This asset provides students a rapid and thorough introduction to the cases, which will speed up further elaboration. Besides evident parameters such as identification (name of the architect(s), date of design and building), status of protections, geographic coordinates of the sites, etcetera, other elements such as energy efficiency and environmental comfort, building-construction issues, maintenance, material and technology, as well as social aspects, are taken into account. (Fig. 1)

In consultation with DOCOMOMO International, which has experience in developing fiches for good conservation and restauration practices (Tostões, Ferreira, 2014, 15, 16, 17; Tostões, Kecheng, 2014; Costa, Landrove, 1996), the handbook will include four phases for each case, describing the original project, the project before re-use, the project after renovation (upgrading and repairing an old building to an acceptable condition, which may include works of conversion (Douglas, 2006) and the present state of the project. In this way each stage of the project can be documented in accordance with its changing character.

Selection and recording of the cases

For pragmatic reasons we decided mainly to focus on projects realized in Antwerp as we wanted to reassure that the students who collaborated on the handbook (see the subsequent paragraph) easily could visit the projects, more than once if needed. In order to assure an instructive and interesting assembly of architecture, the handbook contains cases of various scales and of different architects. In the first instance, we selected well-known buildings, such as the progressive social housing projects Kiel (1951-56) (Fig. 2), designed by architect Renaat Braem and Luchtbal (1951) (Fig. 3) designed by architect Hugo Van Kuyck, that were recently renovated (De Vos, Geerinckx, 2016). Besides social housing projects, the handbook contains furthermore commercial housing, namely high-rise mass housing projects that were built by private investors. These cases proved to be interesting as they share considerable similarities in stylistic features, organization, etcetera, while at the same time they have their particularities.

For the selection of theoretical cases, some cases from abroad were included such as the apartment block Tour Bois-le-Prêtre (1959-61) in Paris. This building, originally designed by the French architect Raymond Lopez, is included because its refurbishment by architects Frédéric Druot, Anne Lacaton and Jean Philippe Vassal serves as an instructive example of how to renovate and refurbish large scale housing. Finally, the category of the working cases, showcase high-rise modernist buildings that are not renovated yet. A number of design studios within the Antwerp Faculty of Design Sciences have already been working on these projects. Their output has been gathered and used in the handbook.

After having prepared the selection, the cases were documented. In this process various material was recorded: plans (floor plans and sections), drawings, renders, publications on the building, photographs, etc. Next to this material documentation of the cases, the handbook furthermore aims to register social aspects of the buildings and their neighbourhoods. For this purpose site visits are indispensable as they connect students with the physical appearance of the buildings as well as their users.

Fig. 3

Fig. 4

Eventually, it turned out that the final assembly of material was too extensive to be entirely implemented in the templates. In order to solve this problem and to keep all material available, a system of folders in the data sharing platform Novell-Fillr was set up. Through this device archival material and publications on the buildings and their renovation can be stored systematically in folders (one for each case) and subfolders (grouping each kind of material together, such as plans, drawings, pictures, etcetera). The files will be accessible for RMB students and professors who will be able to modify and extend the database by adding extra material to the existing cases, as well as creating extra folders with subfolders to document new cases. The platform furthermore makes it possible to share working documents, which will be practical when working on an international level.

Reflection on the results

The making of the RMB Case Study Handbook was implemented in the curriculum at the Faculty of Design Sciences at the University of Antwerp as a semester course on architectural documentation methods for master students in architecture and interior architecture (Figure 4). The course has been conducted during two semesters and has resulted in the recording of 13 modernist case studies. Due to the relative large number of applied cases, it has been possible to assure a variety in type of cases which makes it easier for future contributors to get a clear picture of how and to what extent the templates can be completed. The structure of the handbook allows its content to expand indefinitely. It becomes on the one hand a work in continuous progress for and by students; on the other hand, its content will in

the course of the RMB programme accumulate and eventually become a reference book, - not only for students, but (hopefully) also for authorities that deal with housing. In other words, the handbook provides a shared platform where profound knowledge about modernist buildings, well-known as well as less known, can evolve, increase and be exchanged. It will, for sure, enhance the assumption of the RMB- group, that there are yet numerous modernist architectural works, which could and/or should be considered in terms of refurbishment and conversion.

Future contributions of cases from the other RMB-member countries will possibly show and add new insights in the process of recording modernist housing projects. Climatological, constructional, social and ideological conditions can be different and therefore require additions and/or adjustments to the template. The selection criteria and the definition of modernist architecture might also differ. In a later stage of the programme, the format of the current template should be evaluated and modified if necessary.

On a pedagogical level, the exercise of making the handbook has been rewarding in a number of ways. Through the encounter with very diverse material, originating from private and public archives, from publications (newspapers, reviews, architectural magazines, …), interviews, observations, etcetera, students have become aware of the many-sidedness of the architectural project as a product of complex, coinciding elements, shaped by its historical context, time, original and current architectural visions, adaptations, material condition, users, etcetera; moreover, because of the large amount of material, students have been trained in tracing the global picture of a particular project as well as developing a method of fast selecting and ordering.

On the level of contents, the present selection of housing projects allows moreover to analyse the difference between social housing and private housing. It appears that housing experiments on a technological as well as on an artistic level took place in the sector of social housing. Once proven and approved, the private housing projects would implement identical properties. Another characterizing difference between social and private housing derives from the different profile of tenants. Contrary to the social housing projects, the private housing projects were provided with large parking garages, as the majority of its inhabitants owns one, or even two cars.

For the making of the handbook two different main methods have been applied. One is based on the production of visual material and summaries of other materials, as mentioned above. Another is less tangible and takes its point of the departure in interviews with users/inhabitants and other related actors, for instance the architect and developer, - essential for a diverse, global and critical understanding of the projects. Successfully re-use of modernist housing projects depends, not only on knowledge about functionality, construction methods and applied materials but also on notions of the spatial and environmental experience of users, personal perceptions of architectural qualities and/or failures for instance.

Whereas the first method is a familiar one, the second method -doing interviews - is new to most students. As an additional asset of doing interviews, students became aware of a discrepancy between ordinary people and architects when it comes down to the view on modernist architecture. Through interviews students realized that inhabitants of the visited modernist buildings not necessarily shared the same appreciation for modernist buildings as architects and architectural historians. This opposition became specifically clear in the recording of the social housing estate Kiel from 1951, designed by architect Renaat Braem. It has recently been profoundly renovated with respect for its architectural qualities. In the handbook it is categorized as a 'best practice' case. Despite its recognition and approval by architects and architectural historians, the project is in general not received positively by its inhabitants. While architects are recognizing Kiel for being an example of modernist ideology striving for social equality and social justice –and for implementing innovative modernists features like outdoor galleries, the so-called 'streets in the air', inhabitants lament the current, heterogeneous group of tenants for creating insecurity as well as the problems with dirt and garbage in the shared areas. Students have, however, due to the obtained knowledge about the project, been able to point out the discrepancy in perception as a matter of different viewpoints, considering different criteria. During a site visit at the Kiel building estate, students were confronted with the concerns of inhabitants of the area: The Corbusean pilotis of the Kiel building, the so-called 'block on legs', were regarded as something odd and some passengers-by even feared that the 'legs' would bend through. While pilotis, from an architectural point of view, are allowing a continuous open space beneath a building, improving the public space, they are by some people experienced as rather threatening.

Bibliography

Braeken, J. (ed.) (2010). Renaat Braem 1910-2001. Antwerp, Brussels: ASA Publishers, VIOE.

Costa, X. Landrove, S. (1996). Architecture of Modern Movement: Iberian DOCOMOMO register 1925-1965, Associação dos Arquitectos Portugueses, Lisboa.

CVAa (2010), Braemjaar, Website of the project: http://www.braem2010.be/tentoonstelling.

DAA Deutscher Akademischer Austauschdienst (2016), Erasmus + Strategic Partnerships. Summary of Funded Projects 2014, 2015, 2016, 15-16.

De Vos, E., Geerinckx, S. (2016). Modernist High-Rises in Post-War Antwerp. In: Cidades, Comunidades e Territórios, 33, 113-132.

Douglas, J. (2009). Building Adaptation. Amsterdam: Elsevier.

Heitor, T., Pipio, A., Melenhorst M., Kellner T. (2016) Minutes 1st Transnat. Meeting RMB.

Melenhorst, M., Pottgiesser, U., Dragutinovic, K. (2017). Re-use of modernist building. In M. Melenhorst, U. Pottgiesser, C. Naumann, T. Kellner (eds.) (2017) Detmold Conference Week 2017. RMB conference 2017, Detmold: Hochschule OWL, pp. 15-21.

Sharp, D., Cooke, C. (eds.) (2000). The Modern Movement in Architecture|Selections from the DOCOMOMO Registers. Rotterdam: 010 Publishers.

Tostões, Ferreira (2014-2017). Docomomo Journal, (no. 50-57), Docomomo International.

Tostões, A., Kecheng, L. (eds.) (2014). Docomomo International 1988-2012: Key Papers in Modern Architectural Heritage Conservation, (s.l.), China Architecture & Liu Kecheng.

Image Credits

Fig. 1: Template developed by the Antwerp RMB team, 2018.

Fig. 2: View on the Kiel building ('on legs') designed by R. Braem in 1951, © photo: Els De Vos, 2017.

Fig. 3: View on Long Blocks at Luchtbal designed by H. Van Kuyck in 1957, © photo: Els De Vos, 2016.

Fig. 4: Antwerp students preparing the case study handbook, © photo: Paul Wauters, 2018.

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Fig. 1

The Challenges and Opportunities of Access to Existing Modern Building Sites in Kuwait

Abstract

One of the fundamental aspects of architectural preservation education is having tangible and intangible access to historic building sites. This paper goes through some of the challenges and opportunities of access to modern historic architectural sites in Kuwait for the purpose of educational endeavours such as preservation teachings and interior architecture studio renovation projects. It explains and highlights, through case study approach, various avenues to which access to sites was made possible and the types of buildings that were associated with them.

Modern Heritage // Interior Architecture Education // Architectural Preservation // building Access // Kuwait

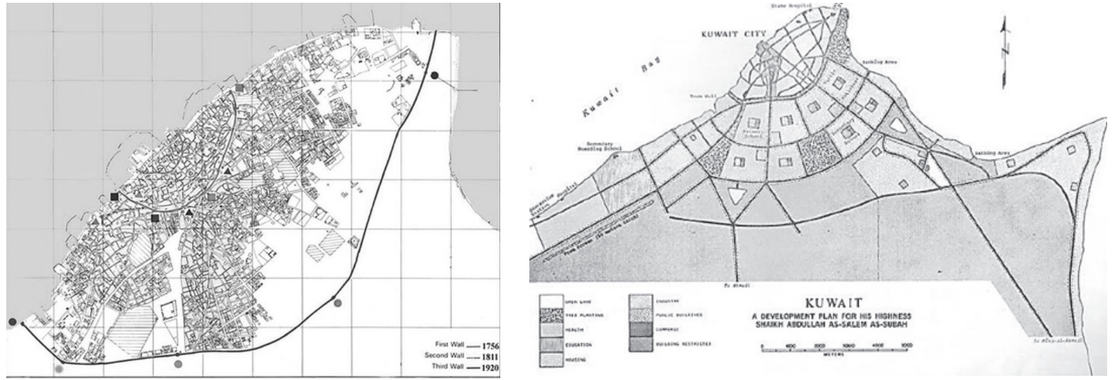

Fig. 2

Introduction

"It has been said that, at its best, preservation engages the past in a conversation with the present over a mutual concern for the future."
–William Murtagh

To begin with and for clarification, when it pertains to the historic preservation of buildings, Kuwait's laws of antiquity mostly concerns sites prior to AD1750 (source antiquity booklet). With the Modern period of Kuwait being predominantly classified between the period of 1950 to 1980s, therefore, they do not fall under the antiquity laws of Kuwait. In addition, currently there are no additional regulations set for the protection of modern buildings, against their demolition, and inappropriate renovation, use and management, especially those that are privately owned. The building regulations are concerned mostly with the new construction, such as built and open land ratio, building distance from road, and so forth.

Kuwait's built landscape today, consequently, consists largely of new construction (Fig. 1). The older pre-oil discovery built fabric of courtyard houses that was present in the early 1900s has largely been demolished today. There are few buildings still around, however, they are largely neglected or not used in their full potential. Similarly, applies to the modern buildings built from the mid 1940s to late 1960s. Due to their prime locations, majority of which were and are situated in the Al-Asimah Governorate their current states have attracted investors where they argue that their perceived minimal use and conditions are inefficient and unprofitable to the city and their neighborhoods locations. As a result, entities in power have been pushing since the 1960s for the act of demolition to continue to make way for newer and newer buildings, infrastructure and roadways.
In addition, Kuwait is currently undergoing plans for "New Kuwait" as part of the 2035 strategy (KUNA, 2017). The plan includes reforms through mega projects, including construction and urban development, and lead by the private sector. As a result, the story of new construction in Kuwait has been supported and encouraged by the Kuwait authorities since the 1950s. The new has been of greater priority since the early modern urban planning era, and modern buildings were the replacement of their earlier counterparts, the pre-oil courtyard mud houses. Consequently, the utilitarian use of land has been intertwined with the debate about the modernisation of Kuwait that today is affecting the modern buildings themselves.
The modern buildings were also an integral component of the modern era's urban constructed fabric that throughout the years have been lost and requires comprehensive study. The aim of this paper is to highlight the significance of proper access to modern building sites in Kuwait for architectural and interior architectural education purposes as they provide the necessary experiences for the students of the architectural designs, techniques, and innovations that was specific to the modern era of Kuwait's tangible and intangible heritage as well as of the architects and designers that were involved in envisioning and creating them. This type of engagement is fundamentally where Kuwait is lagging behind. The main argument in this paper is that modern buildings have important roles for educational purposes as they embody a significant period of history and built heritage of Kuwait that the new generations can learn from, engage with and document.

Existing types of Modern buildings	Example of buildings	Example of locations
Residential large scale	Al-Sawaber residential complex (Figure 5)	Al-Asimah and Hawali Governorates
Residential medium scale	2 and 3 storey housing such as in Figure 4	Hawali, Salmiya, Jabriya, Failaka Island
Residential small scale	Single storey or family housing	Al-Asimah Governorate, Early Suburbs of Kuwait, Failaka Island
Government institutions	The National Council for Culture, Arts and Letters	Sharq area, Kuwait City, Failaka Island
Iconic structures	Kuwait Towers, The National Assembly	Kuwait City, Salmiya, etc.
Educational institutions	Kuwait University campuses	Shuwaikh, Khaldiya, Adailiya, Kifan, Failaka Island
Commercial districts	old Salmiya commercial district	Hawali, Salmiya, Kuwait City, Failaka Island

Tab. 1

Building Laws and Regulations

The early contributing factors for the demolition of the pre-oil city built forms were to make way for the early Minoprio, Spencely and MacFarlane's masterplan of converting the old town of Kuwait to house the new capital, Kuwait City (Shiber). The residential areas were moved to the new suburbs as a result (Fig. 2a and b). The current contributing factor for the negligence and demolition of modern buildings are somewhat similar as to make way for newer high-rise buildings to accommodate for businesses, and the new higher density homes. Other contributing factors include the continuity of the resilience of programs such as mosques, and the abandonment of buildings and sites due to zoning and economy of land, in many cases waiting for land to appreciate.

Fig. 2 (left) showing the planning contrast between the old city of Kuwait with its 3 protective walls and intricate courtyard housing (Source: KOC), and (right) the early Minoprio, Spencely and

Fig. 3

MacFarlane's masterplan. (Source: Kuwait Municipality).

Consequently, majority of the modern building sites have been demolished with no proper documentations and as a result have ridden the opportunity for valuable educational interactions and experiences. Furthermore, the existing ones are waiting for their fate. There are several modern buildings that are unused, underused, or considered as derelect that are also not well documented and not available to access digitally or in textbooks. This paper argues that while these buildings may come across negatively to many, their unused statuses provides opportunities for positive educational engagement by local institutions such as higher education institutions.

The Urgent Need for Documentation

In recent years there has been an increasing concern expressed in local news outlets about the demolition of modern buildings, more recently the Kuwait Airways building in Kuwait City. The title of articles include"the disapearance of 1980s", "the disappearing iconic buildings of Kuwait" and so forth (Kuwait Times, 2017; 2018). All point out to the increased demolition of modern buildings and the concerns with the erature of a part of history Kuwait that was essential in the making of modern Kuwait.

The urgency for critical thinking intervention in historic preservation of modern buildings in Kuwait and the necessity of research is increasingly becoming important due to the scarcity of availability of documentation and literature in all its forms, archival or otherwise. There is very little that has been written in detail on modern buildings in Kuwait and accessing the little that is available is challenging. They are either situated in foreign libraries, written in foreign languages or are not available online. Part of these details include information about their original users, the intentions of their original use, the people who were behind the designs, and so forth. Furthermore, drawings do not always exist and are difficult to find or are incomplete due to lost materials and neglegence. The challenge and reason for the shortage of information is also due in part to the buildings being designed by foreign architects and designers.

Generally, modern buildings in Kuwait are not perceived as sites of historic and heritage values (as explained also earlier). This is evident in the ways that they are up-kept, renovated, neglected, and have been demolished throughout the years (Figure 3). There is a great role educational institutions can play in increasing appreciation of modern buildings, especially among the new generations of designers and architects.

Not all aspects can be alleviated through educational institutions. However, the documentation and engagement aspect can aid in bettering the situation largely through the engagement of the new generation of Kuwaiti residents. Stefano Francesco Musso (2009) wrote "let us also think of the need of really making the "Heritage" something belonging to everyone." The teachings and documentation engagement process can help with lessen the inavailability of visual and written information on the properties. It will also help with conducting of multiple studies for recording and forging the way towards critcal thinking and appreciation of the past among the new generation of designers and architects.

Case Studies of Modern Buildings

In order for educational institutions and members are able to access buildings are by obtaining permission from the entities that own them, whether private or government owned. The buildings that are government owned falls under the National Council for Culture and Arts (NCCAL) and the Amiri Diwan in Kuwait. The privately owned varies from ownership by members such as from the royal families, merchant families and others. The request for permission process can take up to several months to finalise with all the right signatures. From observational analysis, Tab. 1 shows current examples of surviving modern building types. The case studies focus on modern building sites built post 1950s.The table does not include their

Fig. 4

quantities, but provides examples of the buildings and the levels of engagements that are possible by students and educators. The level of engagements with the buildings vary depending on the types of access available to these buildings from the entities that own them and their engagement with their properties. Their presence, not being demolished in the first place, in all forms enable interaction regardless of the level of enagagement.

Tab.1 shows the types of modern buildings in Kuwait with examples (Source: created by author).

The nature of the interior architecture design studio entails a comprehensive analysis of buildings from the interiors. As a result, full access to the buildings and multiple site visits are vital during the early stages of the design process for documentation and data collection. The first example is the modern residential large scale Al-Sawaber complex in Sharq area of Kuwait City (Fig. 5).

Majority of the complex is empty and only a handful of apartments are still occupied. The complex is one of Kuwait's most recognizable and historic landmarks, built in 1981. The design was modified from the original 1977 proposal by the Canadian architect Arthur Erickson. Figure 6 shows the original perspective by architect Arther Erickson versus the existing perspective. Currently access to the complex site and buildings are possible due to their negligence. The property is not fenced as the complex is still being occupied by a few residents. However, it is a very risky site as the building is not well maintained and in dire state and condition with garbage and vandalism everywhere (Fig. 7). In Sawaber's case the site's location value supersedes other values, tangible and intangible. The ability to site visit freely and frequently has enabled students to interview the remaining residents and users and document how the building was used in the past and currently in use.

The second example is the modern educational buildings such as those owned and used by Kuwait University today. Architecture and interior architecture students have access to experience the university campus buildings, however, for proper documentation purposes permission is still required. An example is the kindergarten building units situated in Kuwait University's Adailiya campus (Fig. 8). The series of buildings are part of the main Adailiya campus and were for years unused and unmaintained. The main Adailiya campus is a prototypical modern educational complex inspired by the original early school design for Kuwait by the Swiss architect Alfred Roth (Fig. 9). In 2016, despite of the interior conditions the students were able to document and provide proposals of renovation ideas. It also enabled the students to get to know the history of their campus.

The third cases are the modern houses owned privately (Fig. 10). Today these quirky eclectic houses of the 1960s and 1970s era are being replaced by highly block-like new structures for maximum land profit. Its older counterpart's charm has been completely ignored and forgotten as a result transforming neighborhoods into dull compositions and identities. The type of engagement of the students with these buildings is highly dependent on the private owners and of their value in appreciating to allow for the education of the new generations of Kuwait on modern heritage. As a result, most studies have been of the exteriors through sketching and drawing activities (Fig. 11).

The few case studies show that level engagements that is available to educational institutions for accessing modern buildings in Kuwait. Despite of the dire state of exiting modern buildings yet with proper supervision their unused condition can provide the opportunity for proper study and documentation.

Fig. 5

Fig. 8

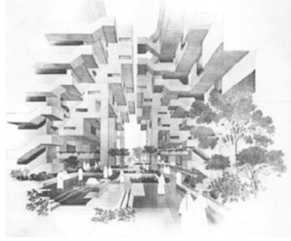

Fig. 6

Fig. 7

Fig. 9

Conclusion

Historic preservation is a challenging endeavour worldwide, especially in places where they are lagging behind due to cultural, political and financial reasons. In Kuwait's case, there has been a continued high rate of demolition of existing buildings, which have included buildings from pre-oil and modern eras. Although concerns about the situation have been expressed in both local Media and by activists, demolitions have continued in most cases particularly to buildings that are owned by private entities and individuals. As a result, access to these sites becomes ever so important for documentation purposes and for education and training of future generations of architects and interior architects of Kuwait's past architectural designs and innovations.

People are the true custodians of heritage and full engagements are constructive ways in resolving the years of embedded public's disengagements with their built forms. The examples provided show that engagement is crucial as it aids for the ways to create, recreate and provide transparency for resolutions.Furthermore, through education, the new generations can learn to better express their concerns of their tangible and intangible heritages and be active participants in the process of making of their built environment in the future.

Bibliography

"New Kuwait" in 2035 development vision. (2017, February 24). Retrieved from http://www.newkuwait.gov.kw/en/new-kuwait-in-2035-development-vision/

Government of Kuwait. (1960). Princely Decree No. 11 of 1960 Laws of Antiquity. Government Press of Kuwait.

Kuwait prepares programs to promote 2035 vision - minister. (n.d.). Retrieved from https://www.kuna.net.kw/ArticleDetails.aspx?id=2692119&language=en#

Musso, S.F. (2009). Conservation/restoration of built Heritage: Dimensions of contemporary culture, pp. 86-107, in: Bringing the World into Culture. Comparative Methodologies in Architecture, Art, Design and Science, edited by P. Lombaerde and L. Lee, UPA Editions, University Press Antwerp, Belgium.

Shiber, Saba. (1964). The Urbanization of Kuwait:. documentation, analysis, critique. Kuwait: Kuwait Municipality.

The Disappearance of 1980s Kuwait. (2017, October 19). Retrieved from http://news.kuwaittimes.net/website/disappearance-1980s-kuwait/

The Disappearing Iconic Buildings of Kuwait. (n.d.). Retrieved from http://www.athoob.com/blog/the-disappearing-iconic-buildings-of-kuwait

Image Credits

Fig. 1: Aerial view of Kuwait City today. (Source: photograph by author)

Fig. 2: (left) showing the planning contrast between the old city of Kuwait with its 3 protective walls and intricate courtyard housing (Source: KOC), and (right) the early Minoprio, Spencely and MacFarlane's masterplan. (Source: Kuwait Municipality).

Fig. 4: showing the contrast between the modern period and the new rental housing
in Salmiya, Kuwait. (Source: photograph by author)

Fig. 5: shows the Al-Sawaber Complex in Kuwait City. (Source: photograph by author)

Fig. 6: shows the original intended perspective by architect Arther Erickson (left) versus the built perspective of the Al-Sawaber complex (right). (Source: sketch on the left by Arthur Erickson and photograph on the right by author)

Fig. 7: shows images of the conditions of the interiors in Al-Sawaber Complex. (Source: photograph by author)

Fig. 8: (left) shows the view of the balcony in the Kindergarten building section of the Adailiya campus. (Source: photograph by author)

Fig.9: (right) shows the view of the balcony in the Kindergarten building in Adailiya campus. (Source: photograph by author)

Fig. 10: (left) showing an example of a privately owned modern house in Adailiya, Kuwait, and the sketch made during a university activity. (Source: photograph by author)

Fig. 11: (right) showing examples of sketched of a privately owned modern house by the students at Kuwait University. (Source: photograph by author)

Fig. 10

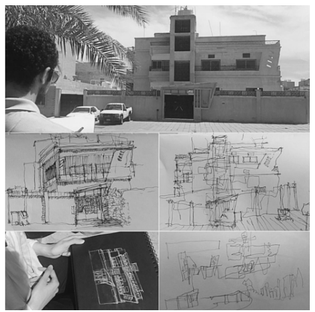

Fig. 11

Session 3.0
METHODS for Reuse of Modernist Buildings

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Fig. 1: Casa de Vidro seen from outside, 1950s.

Re-use Modern buildings in Brazil: three different stories and approaches

Abstract

This work focuses on three different works in São Paulo city: Glass House (Lina Bo Bardi, 1950-51), the SESC 24 de Maio (Paulo Mendes da Rocha, 2000-17) and the Prudência apartment (Andrade Morettin, 2001-02); a private house, a cultural and a leisure building and a renovation in a modern apartment. The text is about these buildings, its interiors and the transformations through which they passed along their natural aging process. From this observation it is possible, more than clear conclusions, raise some important issues for discussion, such as the differences in the preservation and/or renovation of interiors and buildings, public or private, smaller or bigger ones; the difficulties in protecting something alive and changeable like buildings and its interiors; the difficulties of understanding about interiors as an effective part of the heritage to be preserved, as an integral part of the architectural design, and differences between maintenance and renovation design practices.

Heritage // renovation design // Brazilian modern architecture

Introduction

This work focuses on three different projects in São Paulo city, Brazil: Glass House – Casa de Vidro (Lina Bo Bardi, 1950-51), SESC 24 de Maio (Paulo Mendes da Rocha, 2000-17) and the Prudência apartment (Andrade Morettin, 2001-02). A private house, a cultural and leisure building and a renovation in a modern apartment. The text is about these buildings, their interiors and the transformations which they passed through along their natural aging process. They were chosen more for their discrepancies than for their similarities, in order to create a broad representative picture of how modern heritage is treated in Brazil.

This observation makes possible, more than definite conclusions, to raise some issues for discussions, such as the differences in the preservation and renovation of interiors and buildings, public or private, smaller or bigger ones, as well as the challenges in protecting something alive and changeable like buildings and their interiors. It is also about the difficulty to understand interiors as an active part of the heritage to be preserved, as part of the architectural design, and differences between maintenance and renovation design practices.

Casa de Vidro stands on slender pilotis on a very steep slope almost devoid of vegetation at that time. The building is a rectangle composed of two parts nearly the same size: the social area, that is a spacious glassed-in room, and the private wing, consisting of two tracks of chambers separated by a courtyard. The access is below it, by an open and very light metal stairway that leads to the first floor, where the house is concentrated.

The social area, where three of its four façades are made of glass, is the glass case itself, organized into four spaces: a library, a living room, a fireplace and a dining area. The roof is a concrete slab divided into two plans slightly inclined, like a gable roof, and the glass façade is free from the pilotis, which are further inside the house perimeter. The framed windowpanes reach from the floor to the ceiling and slide like doors, yet there is not a balustrade.

When it was built, the house designed for her and her husband, the Marchand Pietro Maria Bardi, revealed an eclectic sensibility, combining contemporary furniture with valuable antiques inside the glass box. It displayed a stripped-down, balanced and restrained interior, even if somewhat diverse. The ambiance was naked, with a low density of objects and furnishing.

Over time, a gradual process of accumulation led to another arrangement in the social areas - the transparent box indeed. The images showing the collection of furniture and objects without concern for the formation of specific sets, placed on floral rugs arranged without much relation to the general layout, is from the 90s when the house was 40 years old. The Baroque statues and the original Renaissance Cassoni began to live side by side with everyday crafts, colonial artifacts, Art Nouveau vases, contemporary design furniture, ordinary furniture and even some knick-knackery.

The casing was the same, although a little worn, but the internal settings changed a lot - this transformation is remarkable in the social sector of the house, even because the bedrooms area hardly appear in the published images and the services remain almost unchanged. There was a density of objects and furniture which was impressive, especially when compared to the original version. House and architect aged, and as a result, we had two different versions of the same house, perhaps made by two different Lina Bardis as well. There was a change in the original the glass house. Considering Architecture as a total design, especially in this case, since the same

Fig. 1: Casa de Vidro seen from outside, 1950s.

Fig. 2: The living room, 1950s.

author did building and interiors, the project changed as a whole.

In 1990, forty years after the house opening, the couple founded an Institution (the Instituto Lina Bo e P.M. Bardi), based in their home, to spread the knowledge of Brazilian art and culture internationally. Lina died in 1992, and much of the content of the house was taken away after the death of Pietro Maria, in 1999. Although protected as a national heritage, in 2009, the house that is now the headquarters of the Instituto Lina Bo e P.M. Bardi is, in fact, the third version of Casa de Vidro, very different from the previous two ones. The building remains the same externally, but it is no longer a house.

SESC 24 de Maio was inaugurated last year, in the heart of São Paulo downtown. Abandoned by the upper classes since the 1970s, this area remains highly vital and accessible, punctuated by remarkable structures and significant cultural institutions. Paulo Mendes da Rocha led the long design and construction process assisted by MMBB Arquitetura e Urbanismo principals, the architects Marta Moreira and Milton Braga.

The architects did not raze the existing 12-story department store, but they changed it a lot. They stripped it down to the bare bones to create a U-shaped volume. In the hollow between its legs and crossbar, they inserted four pillars to support a new terrace featuring a vast swimming pool. They also decided to put a theater in the underground and floor slabs defining alternate single and double height spaces, in tune with rational zoning that superimposes reception, administration, food court, lounge, exhibitions, dental offices, and sports. The lateral setback, facing 24 de Maio Street, accommodates elevators, stairs, balconies, and lighting wells.

The lateral setback, facing D. José de Barros Street, accommodates ramps that propose a vertical promenade, articulated with the circular route in the various pavements. Floor slabs supported by two new columns were added to the original rounded corner, increasing the built area and sharpening the created volume. The 8-story commercial

Fig. 3: The living room as it was in 1990s.

Fig. 4: The ramps inside the SESC 24 de Maio.

building, in the narrow adjacent lot, was bought, demolished and replaced by a service tower.
At SESC 24 de Maio, the ratification of the almost complete occupation of the parcel -and of the corresponding urban block- amounts to a critique of the freestanding building floating in open space as a universal solution. The ground floor became permeable, cut diagonally by a public gallery/square, with the reception sector sheltered at the corner in a chamfered triangular volume. The reception volume is set back from the edges and the ceiling, leaving visible from the street the tops of the old peripheral columns and the entirety of the new corner columns. The triple-height balcony prolongs and contrasts with the spacious and low-ceiling lounge on the fourth floor.
The terrace on the eleventh floor is also double height but recedes to allow a reflecting water mirror extending along the two frontages. At the top, space both delimits and opens the view on all sides of the pool terrace. Inside, sheet metal and tubular steel furniture are one of the highlights of the project. Outside, the curtain wall reflects the nearby commercial galleries, but it does so by distorting them.
Prudência building is a project of the architects Rino Levi and Roberto Cerqueira Cezar (1944-1948). It is located on Higienópolis Avenue, in the neighborhood of the same name. The lot is in the middle of the block, and the building is a unique and loose volume in the shape of a "U," creating a patio oriented towards the courtyard.
In the strip between the path and the entrance of the building, there is a garden designed by Burle Marx, with a couple of winding ramps that lead to the entrance hall, half a floor above the pedestrian's level. One at each end of the volume parallel to the street, the ramps lead to two independent entrance halls, where Burle Marx also designed the facing tiles. These spaces are the only closed volumes on the access floor, marked by the fluidity of the pilotis set.
Above the ground floor, there are nine floors, with four apartments each, and one more floor with two penthouses. The residences' dimensions are very generous, between 315 and 360m2, and each axis of vertical circulation serves two of them. The prestigious areas turn to the street or the sides of the lot, while the working spaces open to the courtyard.
The original project consisted of a free floor, where the owner would receive an apartment without internal partitions, but the idea was not well accepted, and only one neighbor agreed to the proposal. Then, almost all the plans were the same, with four principal bedrooms, a dining room, and a living room. There were two different entrances; the main one led to a hall followed by a passage that divided two distinct parts: the family area, and the servants' area. Instead of walls, the space of the corridor was configured by carpentry and already appeared in the original project.
The solution of the structural system allowed flexibility in the use of all the spaces, but this was only availed in the social and private areas. In the zone occupied by the kitchen, laundry and oriented towards the inner part of the "U," there were a series of small rooms, such as bathrooms, servants' rooms, and storage rooms, in a hard, intricate setting.
Prudência was listed in 1994, but only its external envelope, as in most cases in Brazil – the building is considered worthy of protection, while the interior is not. Thus, the internal modifications do not require any control beyond the regular ones, applied to any ordinary renovation. In this context, in 2001, Andrade Morettin office, from São Paulo, was hired to renovate one of these apartments. The clients were a couple with only one daughter, and the changes were made to adapt it to the family lifestyle. In addition to the central family nucleus, a nephew was going to live with them for a period. The requested program was a suite (for the couple), three bedrooms (for the daughter, nephew, and guests), integrated living and dining rooms, the kitchen connected to the social space, a small office, a lot of cabinets and shelves, in addition to the modernization of the installations.
The synthesis of the architects' proposal was the insertion of one great equipment in the corridor, to completely transform the relationship among the internal spaces, mainly between the family and servants' areas. This relationship, previously rigid and very limited, became fluid and changing.
This element is composed of panels that move and allow the integration of all spaces. Also, it assumes different roles as infrastructure, shelves, display of art objects, and this sort of things. This large piece of furniture is made of bent and pre-painted steel sheets and tempered glass sheets. The idea is that it does not touch the old apartment. More than a layout solution, it identifies and makes very clear what is designed by Andrade Morettin and what is original of Prudência.
This is an example of a much broader phenomenon that happens in many Brazilian capitals, of the renovation of apartments in buildings of the 1950s. Regarding the internal space, these renovations convert the original apartments into even more modern ambiances than at the time of their construction. The integrated layouts and fluid spaces, visually connected to the outside, that were idealized by Modern Architecture, appear in the works of the 2000s, and not in the original occupations. In the 1950s the box was much more "modern" than its content. It seems that these apartments have only been completed fifty years after their construction when the interior tunes to the exterior and together they become a harmonious whole. Finally, they manage to be modern indeed.

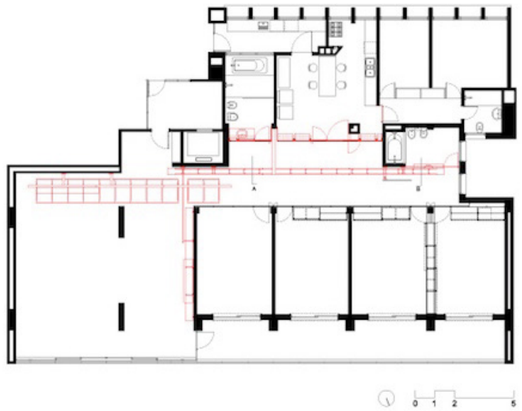

Fig. 5: The renovation plan of Andrade Morettin with the equipment.

Conclusions

The Prudência renovation shows that good buildings from the 1950s can become better fifty years later. Without changing their domestic use, they are examples of an excellent private practice, carried out with private funds, which values the original heritage and creates contemporary products, instead of untouchable historical artifacts. These renovations are everyday jobs, even if they are based in exceptional buildings – Prudência was listed in 1994. It is a very different strategy from the transformation of modern houses into museums of their own, like Casa de Vidro.

The house, which was born modern, became "demodernized" over time, by densifying and continuously transforming its interior. And this change was made by Lina Bardi herself. After the couple´s death, the interior of the house – especially the social areas - was quite disfigured, although transformed into heritage. Today, as the headquarters of the Instituto Lina Bo e P.M. Bardi, the house suffers from the same lack of money suffered by most cultural institutions in Brazil. SESC (Social Service of Commerce) case is a non-profit entity maintained by trade leaders. Their headquarters host leisure, sports and common facilities of significant proportions and usually are very successful ventures. Its predecessor, SESC Pompeia (1977-82), designed by Lina Bo Bardi, is an excellent example. The renovation remains in great shape and popularity, showing that even outstanding architecture depends on enlightened policies and efficient administration to be experientially successful.

Three different scales, programs, circumstances and stories, with their benefits and problems. We must understand and observe these cases and work to make modern heritage known and respected.

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Fig. 1: Albuquerque, F. (1951)
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Fig. 5: Retrieved February 14, 2017 from the http://www.andrademorettin.com.br
Fig. 6: Peixoto, M.S. (2017)
Fig. 7: Peixoto, M.S. (2017)
Fig. 8: Retrieved February 14, 2017 from the http://www.andrademorettin.com.br

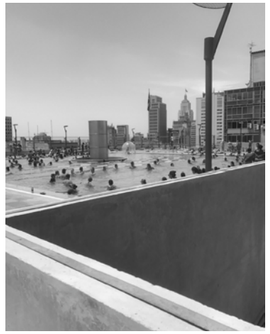

Fig. 6: The water mirror and the pool terrace.

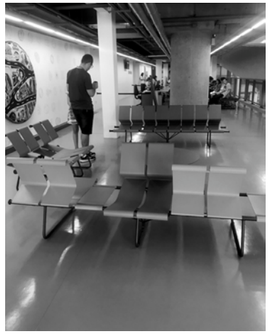

Fig. 7: Furniture in different areas.

Fig. 8: Inside the apartment.

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Her research field is the Critical History and Theory of Contemporary Architecture, focusing on the relationship between European, Asian, African and American cultures. On this topic, she has published books and essays, curated exhibitions, organised scientific events, coordinated research projects, supervised theses, taken part in juries and committees, and given lectures worldwide.
She coordinated the research project Exchanging World Visions focused on Sub-Sahara African architecture during the Modern Movement period, which was published and awarded the Gulbenkian Prize 2014, and currently coordinates the research project Cure and Care_the rehabilitation.

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Currently doing her PhD, in Técnico – University of Lisbon and the Ecole Polytechnique Federale de Lausanne, on the preservation of post-XXII sites and neighbourhoods, with a FCT Doctoral Fellowship.

Fig. 1

License to live in the Barbican Estate

Abstract

"It was like a dream to live here – and, as we know, dreams come true".

Barbican resident in Adam Thow, Residents: Inside the Iconic Barbican Estate - A Photographic Study, 2016.

The Barbican Estate is a mixed use residential estate built between 1963 and 1982, in London, following a competition launched by the City of London Corporation, in 1951, to develop a high-quality housing scheme in the north area of London Wall, with the aim of encouraging people to move back to the city after the devastation of the WWII.
The design from Christof Bon (b. St. Gall, Switzerland, 1921-1999), Peter Chamberlin (b. London, 1919-1978) and Geoffry Powell (b. Bangalore, India, 1920-1999), approved in 1959, proposed the creation of a high density urban center still alive today and much-loved by its residents. With clear definition of functions and circulation systems, it comprises more than 2,000 flats with around 4,000 residents, schools, arts center (with concert hall, theatre, cinemas, library, art gallery, conservatory, restaurants and offices), car-parking, gardens and canal.
As a prominent symbol of brutalist architecture, the entire estate was listed at Grade II, in 2001.

The Barbican Listed Building Management Guidelines, published in 2005 and revised in 2012, were created to guide the implementation and management of change in the Barbican estate, while preserving its character. For that end, an extensive consultation program, with public meetings, was undertaken, involving the work of different experts and institutions (Avanti Architects, the City of London Corporation's Department of Planning and Transportation, the English Heritage, the Twentieth Century Society, etc), together with residents. All interested parties were able to contribute for the development of the document, which keeps being under regular revision, through an inclusive approach, connected with different disciplines. Working as a manual for assuring best practices, this methodology endorses a systematic approach to change in the entire Barbican Estate, cultivating the general maintenance while promoting a variety of transformation solutions.
This paper aims to reveal how these guidelines, now in service of the British estate, may act as a tool for sustainable preservation strategies of large scale post-war housing estates.

Preservation // Post-WWII housing // modern architecture // Barbican Estate

Introduction

London was devasted during the WWII: more than 50 thousand dwellings were destroyed and over 2 million were damaged. The urgent need to rebuild the British capital gave the London County Council[1] the opportunity to plan the city on a scale that didn't happen since the Great Fire of London (1666): the Greater London Plan (1944) was developed by Sir Leslie Patrick Abercrombie (1879-1957), following the County of London Plan written one year before with John Henry Forshaw (1895-1973). The plan gave priority to housing, population growth, employment, industry, recreation and transport. Simultaneously, the welfare state post-war period promoted massive state investments and new policies. Public housing initiatives were one of the main protagonists of the desired construction of a new society. Housing become a strong field of experimentation for the Modern Movement ideals. Promoted by the City of London Corporation[2] in the 1950s, the Barbican Estate would rise out of the ashes as the biggest reconstruction project in Europe at the time.

The Barbican Estate

The Oxford English Dictionary defines Barbican as "the outer defence of a castle or walled city, especially a double tower above a gate or drawbridge". It could be an appropriate metaphor to name the 130,000 cubic meters of concrete that outlines the worldwide known Barbican Estate. Coincident it might seem, in fact Barbican identifies the area, in London, where it used to stand a watchtower of the ancestral Roman walls of the city, and where, between 1963 and 1982[3], was built the Barbican Estate.

Conceived to be a high-quality housing scheme, it was designed by the architectural firm Chamberlin, Powell & Bon[4], following a competition launched by the City of London Corporation (1951) with the aim of encouraging people to move back to the North area of the city deserted by the WWII destructions.

The Barbican Estate is a high density mixed use estate still very much alive today and loved by its residents. It comprises more than 2,000 flats with around 4,000 residents. It includes three 43-storey tower blocks, thirteen 7-storey terrace blocks, two schools, a church, a hostel, and the famous Barbican Arts Center. As the largest performing arts centre in Europe, it includes concert hall, theatre, cinemas, library, art gallery, conservatory, restaurants and offices.

The Barbican Estate is a complex structure with a quite distinct separation between private, community and public domains and between pedestrians and vehicles circuits, within landscaped gardens and lakes. It stands for the honest use of materials, the expression of form, the functionality of space; for a strong balance among all the layers and systems.

As a prominent symbol of brutalist architecture, and as one of the most ambitious post-WWII housing estates in Europe, the entire estate was listed at Grade II[5], in 2001, being the largest built object ever listed in the British Isles.

Licence to live: the Listed Building Management Guidelines

"Listing is not intended to fossilise a building. Its aim is to ensure that the architectural and historic interest of the building is carefully considered before any decisions are made about the future of the building and before any alterations – internal or external – are undertaken".[6]

"How is it possible to apply the procedures and protocols of listing to several acres of London accommodating over 4,000 people, the majority of whom are now owners of their apartments?"[7] was the main question posed.

Fig. 2

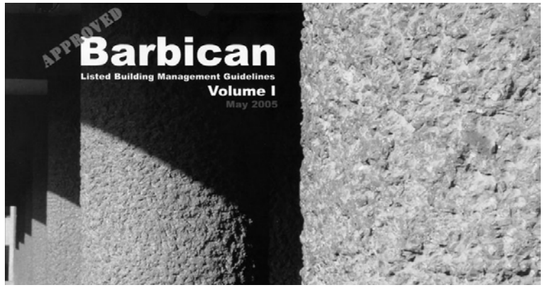

Fig. 3

In the United Kingdom, there are several policy instruments to assist listed buildings[8], but are the Listed Building Management Guidelines (LBMG) the ones that, in the last two decades[9], are considered to be the most appropriated for assist change in the post-war listed estates where owners were already used to have freedom in what concerns to alter their own properties, and where it might be impossible to get agreement from all the owners and rely on enforcement.

The Barbican Listed Building Management Guidelines, published in 2005 and revised in 2012, were created to guide the implementation and management of change in the Barbican estate, while preserving its character. For its development a Working Party was established, with representatives from the Barbican Estate Residents Consultation Committee[10], the Barbican Association[11], the English Heritage[12], the Twentieth Century Society[13], the Corporation of London's Department of Community Services and Department of Planning and Transportation, the Barbican Estate Office[14], owners, residents and independent consultants, Avanti Architects Ltd, who were commissioned to draw up the Guidelines for the residential buildings.

During a long process of 93 weeks, public meetings were held, with presentations, questions and discussion. Different versions of the draft circulated for comments, feedback and further improvement. This inclusive process, taking everyone's views and ideas into account, was the vehicle to achieve consensus, to promote trust among all the parties and ownership sharing of the document.

In the end, LBMG set out the agreements made among all the parties concerning the degree of change that may be acceptable, without losing the character and special interest of the buildings, being intended to be used by those stakeholders, from residents to conservation agencies.

Analysing the different goals of the Guidelines, we might say they have the clairvoyance of being able to be structured as follow:

Heritage protection

- to record and analyse the character and special interest of the

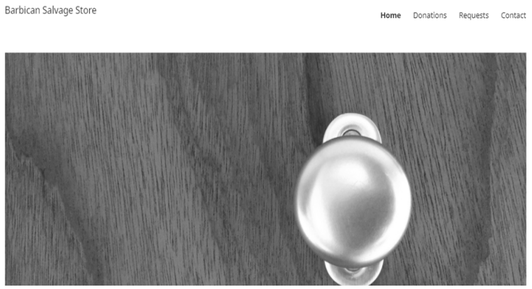

Fig. 4

buildings,
- work for protecting it,
- and for maintaining it.

Management of change
- to provide a framework for managing change,
- to help the occupiers, managers, agents and decision makers understand how change can be done,
- to provide a working manual of best practices for that end.

To be a collaborative, inclusive and continuous process
- through stakeholder consensus,
- where all interested parties can contribute,
- and that must be regularly reviewed.

To educate for the future
- promoting the understanding of the estate,
- working as a model for other projects,
- to enhance listing as a mode of active conservation.

Currently, the LBMG are organised in two volumes. Volume I, produced by the City of London Corporation's Department of Planning and Transportation, covers the estate as a whole. Volume II, produced by Avanti Architects, regards the residential buildings. Further volumes are planned, subject to funding means: Volume III, devoted to the Arts Centre, Schools and Other Buildings, and Volume IV dedicated to Landscape.

For the development of Volume II, historical and archival research regarding the original design and its evolution through time was undertaken, together with site surveys and visits to the apartments. It provides detailed guidance concerning alterations and management of the residential buildings, describing the formal procedures that should be followed in connection with the Listed Building Consents (LBC) that might be demanded to acquire.

For that end, a "traffic light" system was proposed. The document is structured in three different groups: "external elements", "common areas" and "flat interiors and private terraces and balconies". Each of them is organised in four different colours (green, amber, red and black) according to different levels of conditions concerning the LBC requirements. Each category is accompanied by guidance notes (in blue) making reference to the "Best practices" chapter where detailed advice is given, for "roofs and terraces", "redecoration and self-finish exterior elements/common parts", "services and wiring", "the Garchey system" and the "palette of colours".

At green are works that not require a LBC application, as they are not considered to have an impact on the character of the building and that can be locally undertaken without the input of a specialist contractor. Among examples for this section are general routine maintenance not involving invasive cleaning of elements; local maintenance; removal of graffiti; emergency repair works or stabilization of unsafe details where health and safety might be at risk; exterior replacement or repair of the railings, freestanding planters and signage; like-for-like repairs or identical replacement of fixtures, fabrics, finishes, decorated elements and technical installations both in the common and interior spaces. Even being interventions of no great impact, there are specific rules for maintenance in what regards, for instance, methods of cleaning – "should be tried, tested and approved" –, best practices for redecoration, and a palette of colours that must be followed. Emergency interventions must be reversible.

At amber are works where advice should be sought to determine whether a LBC application is required, when further information is needed to evaluate the potential effect of the intervention in the building. For example: adaption works to accomplish DDA (Disability Discrimination Act) requirements, programmed or cyclical redecoration of a specific element of surface belonging to particular blocks, changes to ironmongery in the solid external doors, removal and replacement of duct and service rise casings; in the interior of the flats: insertion of new suspended ceilings, works to internal glazed screen sets, removal of original skirting details.

At red are considered the changes that clearly will have an effect on the character of the building and therefore require a LBC application. In these cases, a formal evaluation need to establish whether or not the impact will be detrimental. In the exterior and common areas: alterations to exposed concrete structures, brickwork elements, frames, doors, windows, ventilation grilles; removal or replacement of paving slabs to the private balconies and terraces, stair guarding; surface treatments; replacements and alterations of existing services that would have a visible aspect. In the flats, changes to internal layout (size, shape and location of kitchens and bathrooms; removal of walls, internal glazed screens, sliding doors, staircases and guarding; addition of mezzanine or other height partitions) and to ironmongery and door furniture are subject to a LBC application.

In black are the proposals for which a LBC application is required – since will almost certainly affect the character of the building – but where consent is unlikely to be granted. It includes any change to structure and its elements, to connections between adjacent residential units, to the location and configuration of staircases, extensions to the original line of the walls, windows, doors, roofs and screens, changes to the appearance of windows and its frames, external doors, railing design, guarding and any other item with a significative impact on the image of the buildings.

For a more generic understanding for the Guidelines, it was created a Guide for Residents and Guidelines for Home Improvements.

Through a structured framework, LBMG works as a tool for informed decisions, allowing a participative and collaborative management of buildings. It must be consulted before any work of repair, alteration or maintenance.

But it is not all: in the framework of these guidelines, Avanti Architects proposed several recommendations as part of a broad conservation strategy, to be pursued when it is possible:

- The establishment of a "salvage store"[15], which is already up and running, as a way to recycle fixtures and fittings for the sake of the protection of the original interiors of the flats: it receives the donation of any original unwanted items (sinks, drawers, cupboards, tiles, mirrors, plug sockets, switches, light fittings) plug sockets, switches, light fittings) taken out from flats and redistribute it to other's residents flats requested for replacement or reinstatement. This was a recommendation given in the 2005 LBC and accomplished in the meantime.
- The selection of some flats to be designated as "heritage flats"

Fig. 5 and 6

to be kept in their original condition and able to be visited for educational purposes and citizen awareness.

- The systematic documentation (drawings and photo survey) of the original fabric of the Barbican Estate.
- The creation of a visitor centre with a permanent exhibition about the Barbican Estate, for educational purposes and global dissemination. The 2011 revision indicates the Museum of London as a possible location for it.

Social endurance: a global conservation strategy

In addition to this set of legal procedures, the exceptional amount of residents initiatives in what regards the Barbican Estate is symptomatic of their astonishing sense of belonging, concern, willing to care and pleasure of living there.

The Barbican Association (BA)[16]

Founded in 1969, the BA is an independent organisation created and managed by its residents, in a volunteering way. As the tenants' association, the aim of the BA is to represent the interests of their residents, in what concerns what is not related to landlord – the Residents Consultation Committee (RCC) was created in 2004 with the responsibility of taking the lead on that. Both BA and RCC work together and represent the resident's views to the City of London, the owner and manager of the Estate.

Creating sub-committees on specific areas according to current needs, it actually comprises the ones on sustainability (air quality[17], energy use[18], heating and recycling[19]), access, licensing, noise and security.

The BA produces two quarterly publications, the BA Newsletter and the magazine Barbican Life, delivered free of charge to all the residents. 60% of the residents are members. Membership offer a lot of discounts in local restaurants and service suppliers.

The Barbican Life Magazine

Barbican Life is a A4 glossy quarterly magazine, published by the BA since 2011, focused on the Barbican lifestyle. Articles present facilities and activities available in the Estate and in its surroundings, with news concerning restaurants, decoration and design, health, arts review and theatre previews, giving also updates on the property market with advice on finances and investments. It features cases of renovation works undertaken in some flats, revealing its versatility and the global interest of the residents for design questions.

It is a powerful marketing tool, as it sent to potential buyers to show them how it's to live in the Barbican, and for advertisers, as considering the huge buying power of the Estate residents, it is a convenient place for advertisement.

Barbican Life – The Website for Barbican Residents[20]

Barbicanlife.com is the sister website of the Barbican Life magazine. There we can also find information on the several Barbican Groups – Barbican Mums, Barbican Art Society, Barbican Lawn Tennis Club, Photographic Society, Singing in the City, etc. It promotes an active communication among the residents through Twitter and a talk forum. The recent publication by Anton Rodriguez, Residents: Inside the Iconic Barbican Estate[21], documenting [22] flats and their residents, is also evident of the global satisfaction of Barbican inhabitants on living there: "We could not imagine living anywhere else in London".

A model for the future

Working as a manual for assuring best practices, the Barbican Listed Building Management Guidelines have been proofing to be a successful tool for the conservation of modern buildings, endorsing a systematic approach to change in the entire estate; cultivating the general maintenance while promoting a variety of transformation solutions.

John Allan, from Avanti Architects, states that "the project has served as a powerful consciousness-raising process, and it seems fair to say that there is now a greater awareness both within the resident community and within the various departments of the Corporation itself of the unique history and significance of the Barbican estate. This can surely only favour the cultivation of a virtuous cycle of improvement"[22].

The Barbican is believed to be the first experience of such a technique, conciliating conservation and change, of this scale in the UK. Its success led to the equivalent exercise in the Golden Lane Estate, designed in the 1950s, by the same architects.

We believe these guidelines, now in service of the British estate, may act as a tool for sustainable preservation strategies of large scale post-war housing estates, not only in UK but beyond.

Fig. 7

Bibliography

Barbican Listed Building Management Guidelines, London, 2012, vol. I-II.

David Hills, Barbican: Modern Conservation?, Postgraduate Diploma in Building Conservation, London, Architectural Association, 2014.

John Allan, "Points of Balance. Patterns of Practice in the Conservation of Modern Architecture", Journal of Architectural Conservation, 2007.

Rodriguez, A., Residents: Inside the Iconic Barbican Estate, London, Barbican Centre, 2016.

The Barbican Association: http://www.barbicanassociation.co.uk.
The Barbican Life: http://www.barbicanlifeonline.com.
The Barbican Salvage Store: https://barbicansalvage.org.
Tostoes, A. and Ferreira, Z. (ed.), Adaptive Reuse. The Modern Movement towards the Future, Lisboa/Matosinhos, Docomomo International/Casa da Arquitectura, 2016.
Tostoes, A. and Ferreira, Z. (ed.), Docomomo Journal, n. 54 – Housing Reloaded, Lisboa, Docomomo International, 2016.
Tostões, A., Kecheng, L. (ed.), Docomomo International 1988-2012: Key papers in Modern Architectural Heritage Conservation, Beijing: China Architectural and Building Press, 2014.

Notes

[1] London County Council was the first London general municipal authority and was the main local government body of the County of London, between 1889 and 1965. Between 1965 and 1986 it was replaced by the Greater London Council, covering a wider area of the city. In In 2000, the Greater London Authority was estabished as the main administrative body of the Greater London.
[2] The City of London Corporation, named in 2006 as Corporation of London, is the municipal governing body of the City of London.
[3] The Barbican Estate was constructed in six phases: 1) 1963-1966 – Public Services Buildings (Milton Court), demolished in 2008; 2) 1963-1969 – City of London Girls School; 1971 – The Postern, Wallside, Mountjoy House; 1973 – Thomas More House, Defoe House; 1974 – Lambert Jones Mews, Seddon House, Lauderdale Tower; 3) 1969: Speed House, Gilbert House, Andrews House, Brandon Mews; 1971 – Willoughby House; 1973 –Cromwell Tower; 4) 1972 – John Trundle Court; Breton House; Bunyan Court; 1973 – Bryer Court; Ben Jonson House Commercial areas; YMCA Hostel Block; 5) 1971-1982 – Arts Centre, Frobisher Crescent, Guildhall School of Music and Drama; 6) 1976 – Shakespeare Tower.
[4] Christof Bon (b. St. Gall, Switzerland, 1921-1999), Peter Chamberlin (b. London, 1919-1978) and Geoffry Powell (b. Bangalore, India, 1920-1999).
[5] There are 3 types of listed status for buildings in England: grade I (buildings of exceptional interest), grade II (particularly important buildings of more than special interest), grade III (buildings that are of special interest, warranting every effort to preserve them).
[6] Barbican Listed Building Management Guidelines, London, 2012, vol. I, p. 42.
[7] John Allan, "Points of Balance. Patterns of Practice in the Conservation of Modern Architecture", Journal of Architectural Conservation, 2007.
[8] 1) Conservation Plans: "produced by specialist consultants who identify the key heritage values of the buildings and recommend appropriate measures for good stewardship (…), used to help justify or steer planning and/or grant applications for significant changes"; 2) Management Agreements: "set out the concordat that has been agreed between individual owners and occupiers, the Local Planning Authority, English Heritage and other relevant parties about the degree of acceptable change within a listed building (…), usually employed in cases of buildings where there is a single owner of a building, such as a public or corporate owner; 3) Management Guidelines: "offer guidance on the special architectural or historic interest of a building or group of buildings, the types of changes that may or may not require Listed Building Consent, and the conditions in which these may be acceptable", prepared by the Local Planning

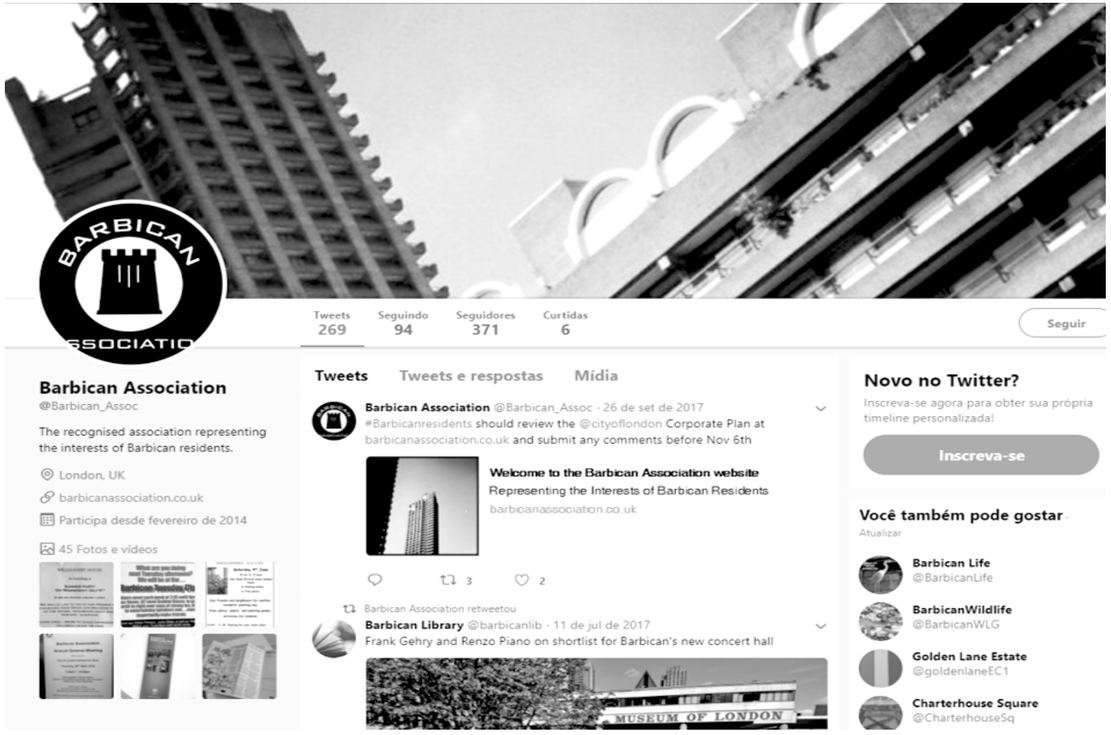

Fig. 8

Fig. 9

Authority, with owners, residents, occupiers, the English Heritage and amenity societies. They are adopted as supplementary planning documents by the Local Planning Authority. In Barbican Listed Building Management Guidelines, op cit..
[9] The first ones were produced in 1992, for the Willlis Corroon Building (Foster Associates, 1970-1975), in Ipswhich.
[10] The Barbican Estate Residents Consultation Committee is responsible to enable consultation and the flow of information between the Corporation of London and tenants and to work towards a partnership approach to management.[11] See the chapter "Social Endurance: a Global Conservation Strategy" of this paper.
[12] The English Heritage, established in 1983, also known as the Historic Buildings and Monuments Commission for England, is the Government's statutory adviser on the historic built environment.
[13] The Twentieth Century Society, founded in 1979, is the statutory consultee on listed 20th-century buildings.
[14] The Barbican Estate services are managed by the Barbican Estate Office which is a division of the Community & Children's Services Department of the Corporation of London.
[15] https://barbicansalvage.org.
[16] http://www.barbicanassociation.co.uk.
[17] The BA is "mapping for change air quality monitoring project", which surveys the Nitrogen Dioxide concentration of the air. "Diffusion tubes to measure NO2 were installed and activated on 53 locations on resident's balconies or roof terraces and 13 street or Podium level locations".
[18] The BA presents 7 cost effective ways to reduce residents personal energy consumption, after having been tested in some flats.
[19] The BA is developing a study on the costs and impact of maintaining or removing the Garchey units from kitchens.
[20] http://www.barbicanlifeonline.com
[21] Anton Rodriguez, Residents: Inside the Iconic Barbican Estate, London, Barbican Centre, 2016.
[22] John Allan, "Points of Balance. Patterns of Practice in the Conservation of Modern Architecture", Journal of Architectural Conservation, 2007.

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Fig. 1: Ana Salvado
Fig. 2: Ana Salvado
Fig. 3: Barbican Listed Building Management Guidelines
Fig. 4: Barbican Salvage Store
Fig. 5: Barbican Association Newsletter
Fig. 6: Barbican Life magazine
Fig. 7: Barbican Life magazine
Fig. 8: Barbican Association (twitter)
Fig. 9: Harry Mitchell

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Fig. 1 and 2: Padre António Vieira Secondary School, Lisbon, Entrance and classroom-block.

Reuse of Modern School Buildings from the 1960's

Abstract

The purpose of this paper is to analyse the conceptual strategies and design principles adopted in the renovation process of two modern school buildings built during the 1960s in Portugal addressing the adaptation of the original buildings to current functional, environmental comfort, accessibility, seismic and safety requirements, the rectification of constructive problems and the improvement of the conditions of use.

School building // Refurbishment // Reuse // School Architecture // Modern Movement // Architectural Identity // Environmental Comfort

Fig. 3 and 4: Santa Maria Secondary School, Sintra, 2007.

Introduction

In the 1960's, the paradigm of school architecture in Portugal shifted from a traditional to a more experimental educational approach. The adoption of rational procedures in school building construction, influenced by the North-European experience, enabled the construction of a great number of schools, and contributed to the pursuit of the right to education to all children, at a minimum public expenditure. This new methodology relied on industrialized and rationalised building production systems, that are both cost and planning effective. The widespread use of reinforced concrete structures and the improvement of technical expertise led to a continuous trend to normalize construction. In addition, two events: National Congress of Architecture in 1948, and the Inquiry into Regional Architecture in Portugal (started in 1955); national magazines 'Arquitectura' and 'Binário', and the access to international architectural dissemination (magazines, congresses, seminars, meetings, internships) raised awareness to and informed international production, which was reacting against the functionalism of the modern period – influences from North-European countries, Italy and English Brutalism.

The purpose of this paper is to analyse the conceptual strategies and design principles adopted in the renovation process of two modern school buildings built during the 1960's in Portugal addressing the adaptation of the original buildings to their current functional, environmental comfort, accessibility, seismic and safety requirements, the rectification of constructive problems and the improvement of the conditions of use.

The analysis of the renovation processes of two school buildings provided the opportunity to discuss the adaptive capacity of modern buildings to assimilate contemporary requirements, while keeping their modern identity. It is also an opportunity to understand different issues raised by the preservation of modern schools still in use: the methodological approach of the initial planning stage, and the cultural significance of the schools' values.

The main research question focuses on the adaptive capacity of modern school buildings to assimilate the current legal and educational requirements, while keeping their original identity. In this process it is important to understand the methodological procedures and outcomes. Documentation analysis, historical research, and on-site survey informed the design team at an initial approach on the recognition of the core values to be maintained in the schools. It is assessed how the renovation processes dealt with these recognized values, and, consequentially, identified the constraints and vulnerabilities of their preservation, suited them to contemporary educational challenges, programmatic requirements, environmental requisites, or safety directives and, ultimately how the atmospheres, interiors and identity of the building and its surroundings were affected.

This paper deals with the renovation of two modern school buildings in Portugal: Padre António Vieira Secondary School, in Lisbon, and Santa Maria Secondary School, in Sintra. Both schools date to the 1960's.

Padre Antonio Vieira Secondary School (PAVSS)

Liceu Padre António Vieira (1958-1965), was designed by Ruy d'Athouguia, and materializes the late modern period in Portugal, which dates back to the 1960's. The functional uses were separated in three buildings: the three-floor classroom block, facing south, located on the slope and slightly elevated by pilotis from the ground, created a covered area under the building, meant to serve as a playground; the

entrance and the sports facilities block, at the north side of the plot; and a wide concrete block, that connects the entrance and classroom block by a ramp.
Both exterior and interior spaces took advantages of the authenticity of the materials. Concrete, masonry, iron and wood elements are assumed and displayed in each building. This design option contrasted with the surfaces used in the previous modern period characterized by the hygienic environments and plastered surfaces.

Methodological approach to preserve modern identity

Upon the refurbishment process, the initial planning stage comprehended document analysis, historical research, and on-site survey to determine the physical and spatial values that ought to be maintained to preserve the identity of the school. The design team retrieved core elements to be preserved: spatial and formal solutions, the original materials, construction techniques (based on reinforced concrete), and aesthetical modern values. Other features were valued like the original passive environmental performance, the interconnection with the outdoor space, or the linear typology.
Simultaneously spatial and construction vulnerabilities related with the daily use of the school building were identified. The modern functionalist principles that guided the design of the buildings were based on rationalization of space, space fluidity and continuity. Many spaces were designed for a specific function decreasing their spatial flexibility. Besides functional flexibility there also lacks construction flexibility: the buildings were rationally designed and built at the limit with thin and delicate components like walls, slabs, or window frames. In addition, the lack of technical knowledge of reinforced concrete construction in Portugal at the time led to deficient construction and structural solutions.
In 2008/9 Teresa Nunes da Ponte was the architect responsible for the renovation of PAVSS. Two main strategies guided the intervention:

1. Preservation of the modern identity of the existing buildings and its spatial, formal and construction features, restoring, as far as possible, the original spaces and functionalities. This implied demolishing non-original, temporary constructions.
2. Construction of new buildings to house new programmatic needs: library, ICT rooms, labs and covered games fields (and promoting its use to the community).

The process included the restoration of the existing buildings and its spaces; the compliance with new educational demands, the demolition of added temporary constructions; the replacement and update of technical infrastructures (HVAC network and lighting infrastructures); the reinforcement the original structure with a metallic one to assure seismic resistance and the amendment of construction problems; compliance with the safety and accessibility demands, the improvement of construction solutions to repair and prevent exposed concrete components; the redesign of window frames for better efficiency; the improvement of outdoor spaces and the openness of school to the community.
For the structural reinforcement the premises expressed in the Principles for the Analysis Conservation and Structural Restoration of Architectural Heritage (2003) were complied, implying that “each intervention should respect, as far as possible, the concept, techniques and historical value of the original or earlier states of the structure and leaves evidence that can be recognized in the future”. The concrete elements that presented signs of decay were replaced according to its original design. A new metallic structure was introduced, cross bracing the original concrete structure, while strengthening the system as a whole. In the entrance and gymnasium blocks, the seismic reinforcement was executed in both directions and fitted inside partition walls, thus minimizing its impact. In the classroom block, only one brace frame was introduced in each structural module across all the floors, positioned longitudinally in the wall between the classrooms and the corridor. These new elements painted in white, are assumed as new additions.
In order to simplify and lighten the need of heavy machinery each classroom comprehend its own independent technical infrastructures. A Computerized Building Management System (BMS) was installed to optimize the facilities management. Despite the increase of technical infrastructures, the classrooms preserved the original identity by concealing them in the suspended ceilings and in technical cabinets. The new classroom ceiling, which incorporates lighting and acoustic isolation, does not occupy the complete area. The ceiling’s margin in its perimeter enables the preservation of the original height of the windows. New cabinets hide independent HVAC and electrical switchboards in each classroom, to avoid large equipment and ducts. Along the corridors a suspended cable tray was installed, concealing electrical, telecommunications, water and fire safety systems with lighting fixtures integrated below, thus avoiding the destruction of the existing walls and floors.
Given the importance of the window frames for the image and aesthetical value of the original building, a new window frame system was designed in aluminium. In spite of adopting a new material (originally in iron), the same frame thickness was maintained and current energy efficiency and comfort requirements are met. The passive ventilation system was preserved in the corridors allowing the upper windows to open when necessary.

Santa Maria Secondary School (SMSS)

Santa Maria Secondary School (1968-1972) was designed by Maria do Carmo Matos, ten years after PAVSS. It expresses a new design philosophy and methodology to increase school construction efficiency, effective cost and planning control procedures, based on industrialized and rationalised building production systems. The widespread use of reinforced concrete structures and the improvement of technical expertise led to the use of normalized materials and components.
The school is organized according to a new typology – the pavilion type. The programme was distributed among the pavilions: communal pavilion, classroom’s pavilions, laboratories’ pavilion and gym. Each pavilion is connected by covered walkways. Over the time, new pavilions were added to the original construction, without following the original design premises. Also, new covered walkways and roofs were designed to add new spaces to the school and protect passages between the pavilions.

Methodological Approach to preserve modern identity

Upon the refurbishment process a similar methodology was undertaken by the design team; the initial stage comprehended document analysis, historical research, and on-site survey.
The design team retrieved the following key challenges: the reduced dimension of the plot for the proposed functional programme; the

lack of spatial and construction flexibility of the pavilion typology, regarding the compliance with current educational and comfort requirements; the mischaracterization of the original buildings, due to the adding of temporary constructions; and poor construction systems specifically window frames, roofs, and concrete components.
In 2008/9 the architects João Appleton and Isabel Domingos led the renovation of Santa Maria. The core design principle was to value the original design by Maria do Carmo, returning to the original coherence of their spaces (pavilions and walkways by the demolition of the provisory constructions and the design of new pavilions to house the new programmatic needs: library, auditorium, labs and covered sports field (and promoting its use to the community). The library building creates a new street front, it welcomes the community in and clearly determines the entrance to the school.
Three strategies guided the intervention:

1. To perceive the system as a whole instead of fragmented parts, by the design of a sequence of outdoor spaces (yards) and exterior covered spaces that link all the pavilions. These outdoor space were designed as educational and recreational spaces instead of residual spaces;
2. The use of simple construction solutions and low cost materials (tiles, micro-perforated concrete, shale in the roof, birch);
3. The improvement of technical infrastructures.

The choice of linking all the pavilions provided a cohesive solution to deal with the existent fragmented layout. This design solution qualified different outdoor spaces, like yards, covered passages or gardens, conferring to each its own identity.
The use of low cost construction solutions was important to meet budget requirements.
The technical infrastructures were incorporated in the rooftop. This design solution enabled the disguise of the heavy machinery and redesign the rooftop. This fifth elevation is particularly relevant, given the topography of the city, where the school plot is extremely visible.

Reuse of Modern Schools - Recognition of Modern Values

It is of the utmost importance to recognize the modern values that give cultural significance to the buildings at an initial planning stage, as values to be preserved. The recognition of such values involves documentation analysis, historical research, and on-site survey. The preservation must be carefully balanced with intrusive solutions such as the resolution of seismic resistance and construction problems or the compliance with environmental and comfort demands.
An intrusive approach?
The modern functionalist design, characterized by the lack of spatial and construction flexibility, could require the use of intrusive solutions to comply with safety and comfort standards. The rational monofunctional spaces, space fluidity and continuity have an impact on the lack of spatial flexibility of modern schools. Also the rationalization of constructions solutions and the lack of construction flexibility challenge designers to include updated solutions in thin and delicate components like walls, slabs, window frames, without compromising their original identity.
The restoration of the original conditions of the building should take into account that current technical infrastructural requirements and the corrections of construction and structural problems, may demand intrusive solutions, jeopardizing the original spatial identity and affecting atmospheres and interiors.

Educating for living in a modern school

Given their specificity, school buildings are subjected to intensive and demanding use. These users demand robust, cost-effective, and low maintenance solutions, which are often incompatible with the preservation solutions of modern construction and materials. Also, it is necessary to raise awareness for using a modern building. The school community often ignores the heritage value of the building that they use daily. Actions of awareness about its own heritage in parallel with the recognition of user's behaviour and efficient management strategies should be promoted.

Acknowledgments.

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Bibliography

Alegre, A. (2012), Arquitectura Escolar. O Edifício Liceu em Portugal (1882-1978), Lisboa: Fundação Calouste Gulbenkian.
d'Athouguia, R., (1958). Memória Descritiva, Lisboa.
Heitor, T., (2011). Parque Escolar 2007-2011: Intervention in 106 Schools, Lisboa, Edição Parque Escolar E.P.E.
ICOMOS Charter (2003), Principles for the Analysis Conservation and Structural Restoration of Architectural Heritage, 2003.
Macdonald, S. (2016), "Preserving the Ephemeral": capturing what Makes the Eames House Special through Conservation Planning", Docomomo 14th International Conference Proceedings, Lisbon, 305-311.
Mendes, J.; Pinto, R. (2011), Escola Secundária de Padre António Vieira, Seismic Strengthening of School Building, Lisboa: Edição Parque Escolar E.P.E., 156-163.
Tostões, A., (2015). A Idade Maior, Porto: FAUP, 2015.

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Fig. 4: Santa Maria Secondary School, Sintra, 2018 © ASAP-EHC, Maria Bacharel

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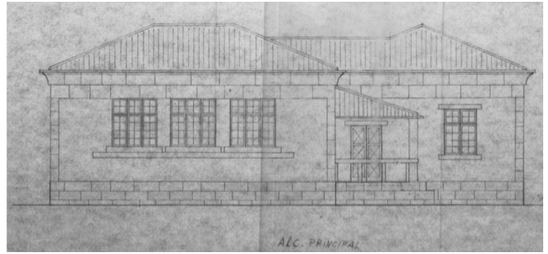

Fig. 1: Facade of the school.

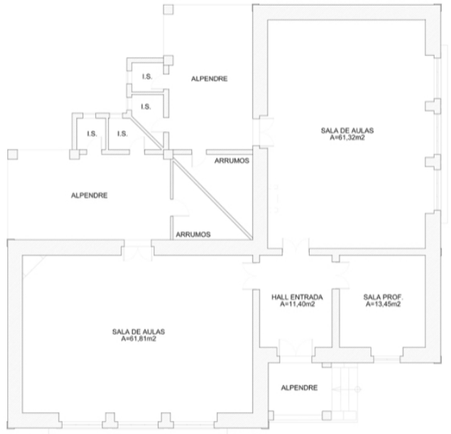

Fig. 2: Plan of the school.

Rehabilitation and Extension of Figueiró da Granja Primary School

Abstract

The Primary School of Figueiró da Granja building - located in a small village of Fornos de Algodres municipality - is a 1923 exemplar of the national campaign that built modern primary schools based on several prototypes designed centrally, which changed the Portuguese national primary school system in the first half of the XX century.
At the end of twentieth century, after decades of functioning as school buildings for several generations of students, the Portuguese state started to progressively organize the educational system in scholar centers due to financial optimization and demographic dynamics. In consequence, the smaller of those schools were closed and some of them are now hostels, community centers or administration facilities.
But the strategy of the municipality for the Figueiró da Granja Primary School building was diverse. To fight against its closure and consequent interior desertification, the municipality wanted to increase the number of students in the school and asked us to make a project for the rehabilitation of the original building adapting it to primary and pre-primary education. To face the current legislation a new multipurpose room was needed, so the building was also extended.
The follow paper will discuss the conception process of the rehabilitation and extension of the primary School of Figueiró da Granja building, as a modern school building, iconic to its community and central to its urban context.

School // Modern Architecture // Rehabilitation

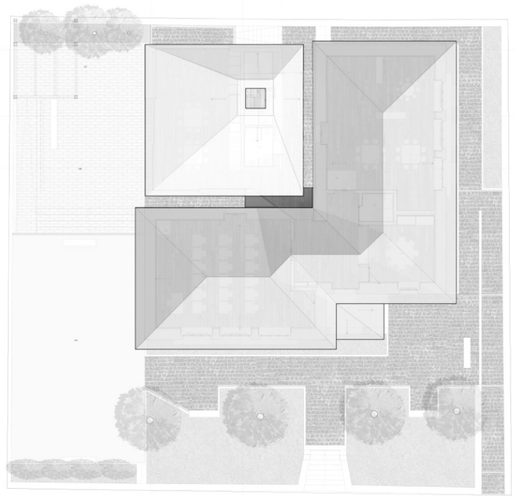

Fig. 3: Roof plan.

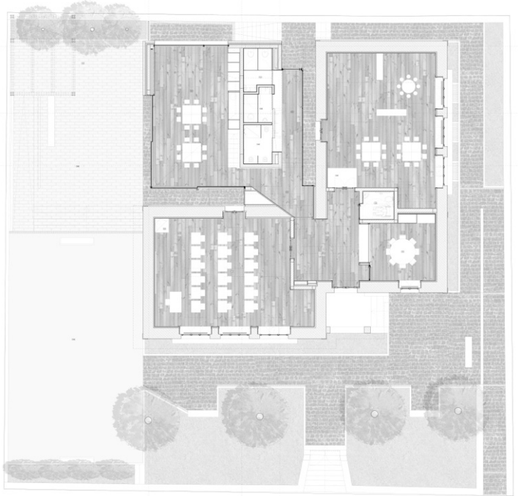

Fig. 4: Ground floor plan.

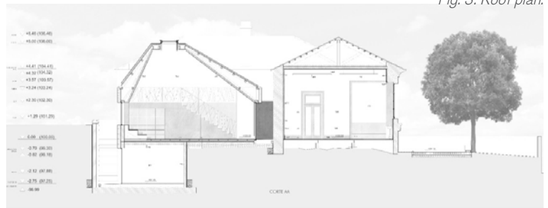

Fig. 5: Section A-A.

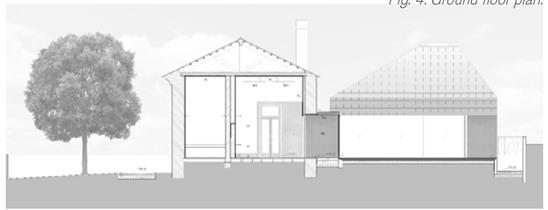

Fig. 6: Section C-C.

Introduction

In the imagination of several generations of Portuguese born in the twentieth century, the idea of a public building - and the idea of architecture - is associated with his experience in a primary school. In the first half of the twentieth century several public and semi-public buildings stablished a network of primary school buildings that have reasonably covered the entire national territory. The importance of this public network - unique and fundamental to the country development - aroused the state attention to its architecture, promoting it as an identitary image of a specific idea of portugality.

Our conviction is that, despite its architectonic style – mannerist or connected to the national tradition – the way the Portuguese state promoted and built this network was, after all, modern. When one looks to the inventory promoted by the Ministry of Education Muitos Anos de Escolas (1999), where potentially all school buildings are represented, we verified that, in the first half of the twentieth century, virtually all the schools were conceived from some prototypes which established the different typological necessities – depending on the number of students – and the different architectonic styles – depending on the region, or the needs of a specific national identity.
Generally, these prototypes were represented by a plan – showing the articulation between the needed typology – and by the main façade – expressing political values through architectonic elements. Through these drawings and a quasi mass production of architectonic elements was financially possible to build this unique network of public primary schools.

Using a prototype of two classrooms, Figueiró da Granja Primary School is a 1923 example of this process. The prototype has two classrooms arranged in 90º angle connected by the entrance hall and the teachers room. Each classroom has a tripartite window and a door for direct access to the backyard.
Figueiró da Granja Primary School has the exact shape of the prototype, having been built later a porch and bathrooms in the backyard.
This was what we found in 2016 when the Town Hall asked us to develop a rehabilitation and extension project for the school.

The Project

At the end of twentieth century, after decades of functioning as school buildings for several generations of students, the Portuguese state started to progressively organize the educational system in scholar centers due to financial optimization and demographic dynamics. In consequence, the smaller of those schools were closed and some of them are now hostels, community centers or administration facilities.
But the strategy of the municipality for the Figueiró da Granja Primary School building was diverse. To fight against its closure and consequent interior desertification, the municipality wanted to increase the number of students in the school and asked us to make a project for the rehabilitation of the original building adapting it to primary and pre-primary education. To face the current legislation, a new multipurpose room was needed, so the building was also extended.

Descriptive and Justificative Memory

This project main goal is to rehabilitate and extend the Figueiró da Granja Primary School, with the follow program: a pre-primary school

classroom, a primary school classroom, a teacher's room, a multipurpose room, and the general modernization of the complex.
This is a 1923 building, based on the prototype Type VII-nº7 according to the inventory promoted by the Ministry of Education Muitos Anos de Escolas (1999) that was used in several schools namely in Unhão, in Vila Nova da Barquinha Municipality, and in Gondar and Orbacém, in Caminha Municipality.

As it is therefore an historic building, with architectonic value and social affectivity, we propose an entire restauration of the building original characteristics – the volumetry, and the main architectonic details, such as windows frames, masonries, roof tiles and woods – and the modernization of the infrastructures such as the heating system and ventilation system.
A new volume will host the multipurpose room and the toilets in the backyard.

Detailed Program
In the existing building we propose to keep one room for the primary school and the other to the pre-primary school. We also keep the teachers room and with minor changes install a toilet in the entrance hall. This building keeps its originals 194.50m2.
In order to reach the contemporary schools exigencies, will be built a new volume in the backyard, connected with the existing building through the main entrance hall. This volume, formal and structurally divers from the original, will host the multipurpose room, a library in the mezzanine and the student's toilets. The spatial solution seeks a great flexibility so it can be used by the community as a social center. All main infrastructures and storage rooms are placed in the basement.

Constructive Solutions - Existing building
Engineering tests showed that the granite walls were in a good condition, the roof structure needs minor intervention and the tiles need to be replaced.
We decided to insulate the granite walls from the inside so it was possible to preserve the exterior integrity of the building improving its thermic conditions. The interior walls will be replaced by acoustic brick walls.
Due de poor condition of the woods (floors, doors, plinths, etc.) new ones will be made. The windows will be also replaced, since the existing ones have nothing to do with the original ones.
The heating radiators will be embedded in the furniture to minimize their visual impact.

New building
In order to minimize the impact of its construction, the new building will be made in a metal structure keeping about 1m from the existing building, except in the connection between them in the atrium. The structure will be covered by walls of white ceramic bricks as well the roof in pyramidal shape with skylight to assure its right natural illumination and ventilation.
In the basement will be used concrete on the walls and floor.
Figure 07 Render of the pre-primary classroom

Exterior works
The existing materials will be generally kept but the constructive systems will be reinforced. Thus, the exterior paths and the games zone will be in granite microcube, and the transition to vegetal masses will be in a 10cm granite stone. Near the new building the floor will be in ceramic bricks to ensure the visual continuity between interior/exterior.
A system of ramps will be built outside for the access of disabled people to all school areas.

Fig. 7: Render of multipurpose room.

Fig. 8: Render.

Conclusion
This rehabilitation and extension project will thus serve all social actors interests and will allow the defense of a building with a unique patrimonial value, nor only for its history but also for the emotional relation established between building and local population.
The potential flexibility of the proposed spaces seeks to open the school to all community of Figueiró da Granja ensuring the survival of the building towards the uncertainties of the future.
At this moment, the construction works are starting.

Bibliography

Beja, Filomena; Serra, Júlia; Machás, Estella; Saldanha, Isabel (1999) Muitos Anos de Escolas. Ensino Primário. -1941. Centro de Documentação e Informação, Ministério da Educação, Lisboa

Image Credits

Fig. 1: Câmara Municipal de Fornos de Algodres Archive
Fig. 2-8: (c) OAC arquitectos, 2017

Session 3.0
METHODS for Reuse of Modernist Buildings

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Teresa Heitor is Full Professor of Architecture at University of Lisbon, Instituto Superior Técnico (IST). Currently she is the chair of Architecture at IST. She has been teaching post- and undergraduate students in Architecture for the past 20 years and supervised a large number of PhD students as well as dissertation projects from Master programs.
Her research interests combine complex buildings, learning and workplace environments and space usage with an emphasis on practical real-life problems and evidence-based enquiry. She has research expertise in the area of spatial analysis within the theoretical and analytical framework known as 'space syntax', and on the development of models of form and function capable to simulate the implications of new social demands as well as on self-assessment tools to be applied along the programming, design & occupancy stages of the building process.
She has been involved with the OECD Directory of Education through the Centre for Effective Learning Environments (CELE) in different research and consultancy activities in the field of educational buildings performance and quality. Since 2005 she integrates the Group of National Experts on Evaluation of Education Facilities (GNEEEF) and coordinated the International Pilot Study on the Evaluation of Quality in Educational Spaces (EQES) (2007-2010). Between 2010 and 2012 she served as the Portuguese Delegate to OECD-CELE.

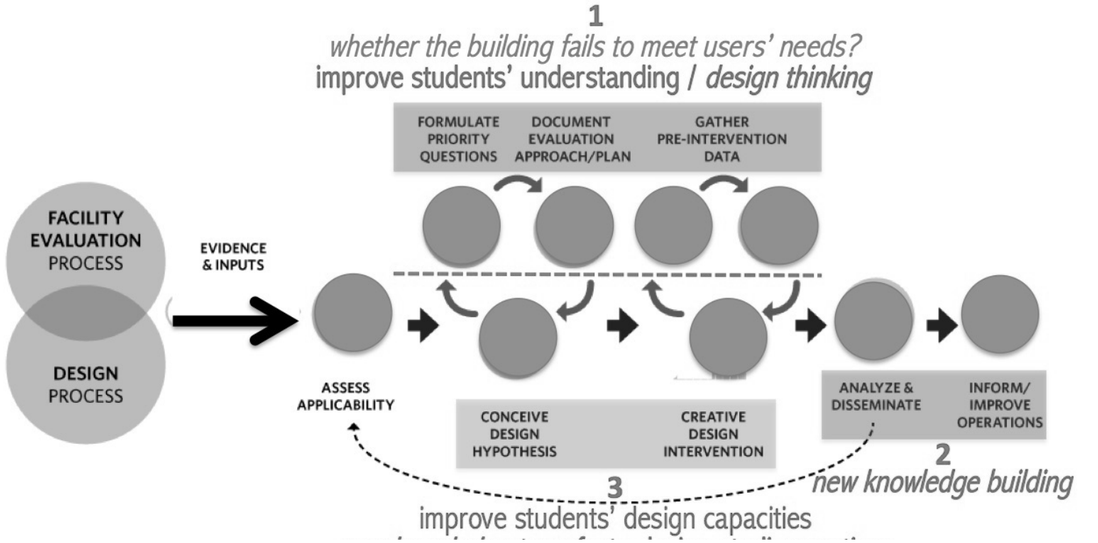

Fig. 1: Methodological approach.

Reuse of the existing: teaching and theoretical investigations

Abstract

This paper describes a didactic experiment developed in the context of an elective course entitled Building Performance Evaluation taught to 5th year students of the Integrated Master in Architecture at Instituto Superior Técnico for over 10 years. A late modern artist studio-building complex in Lisbon built in the late 1960's was selected as the case study. Multiple methods of data collection and analysis, combining archive surveys with field and desk research were applied in order to provide a better understanding of the performance of the studio-building complex.

Building Performance Evaluation // Elective curse // Post Occupancy Evaluation // Student-centred // learning-by-doing' approach // late modern artist studio-building complex

The context of Building Performance Evaluation course

"What can architecture be other than concerning oneself with situations in daily life as lived by all people? It's rather like clothing, which must after all not only suit you well, but also fit properly. (…) Architecture, indeed, everything that is built, cannot help playing some kind of role in the lives of the people who use it, and it is the architect's main task, whether he likes it or not, to see to it that everything he makes is adequate for all those situations. (…) So we are not in fact free to go ahead and design exactly what we please – everything we do has consequences for people and their relationships. (…) The art of architecture is not only to make things beautiful – nor is it only to make useful things, it is to do both at once – like a tailor who makes clothes that look good and fit well." (Hertzberger, 1991, p. 174)

The elective course on Building Performance Evaluation (BPE) is taught to 5th year students of the Integrated Master in Architecture at Instituto Superior Técnico for over 10 years. Typically it runs in the first semester over 14 weeks and is delivered through 14 sessions of 3 hours. Each session covers two intertwined modules: one focused on the physical-constructive condition and the other one on the spatial-functional condition.

The main aim of the course is two-fold: to develop student's knowledge, skills and capacity to understand and evaluate building performance and to design buildings that perform as intended. Fundamental to BPE is the development of students' research and critical thinking skills. Emphasis is placed on the students' understanding of the conceptual knowledge required to conduct Post-Occupancy Evaluation (POE) including that relating to evaluation frameworks, research methods, data analysis and reporting the findings.

Post-Occupancy Evaluation - POE – is the process of systematic collection of data on occupied built environments, analysis of these data and comparison with performance criteria (Preiser et al. 1988). Its historical context goes back to the late 1960s as an environment-behaviour approach developed from the confluence of architecture and urban disciplines and the social and behavioural sciences.

Early POE studies attempted to develop empirically-based understandings of the reciprocal interaction established between the built-environment and human behavior and to apply such understandings to the better planning and design of the built environment. They were mostly focused on individual building types and one-off case study evaluations targeted at assessing users' needs and their individual goals and perspectives as well as the extent to which the built environment meets the needs of its users.

Subsequent developments in POE, involving other building design disciplines, have shift the focus to building performance and usability themes while claiming the need for a more holistic approach and process-oriented evaluation to the issues that drive building quality and to develop the tools that can most effectively measure these issues along the building life-cycle (Preiser, 2002). These advances also reflect the critical role of stakeholders – not only the users or occupants of the building but facilities managers, clients and designers and maintenance professionals – in driving the evaluation process, ensuring feedback loops, and ultimately improving building delivery and operation. (Baird, et al., 1996; Preiser and Vischer, 2005).

In spite of some efforts, POE has not been fully accepted by the architecture profession and was left as an academic research topic for many years. Recently, some regulating bodies, including the building construction industry have started to acknowledge the feedback that POE provides to design professionals, and to recognise the need to actively involve architects in practice-based enquiry (RIBA 2017) in order to enable user-oriented design and provide effective investment in the field. Learning from previous projects systematically is being recognized as fundamental to improve building performance and to contribute to a built environment that better fits user needs, wider society and the environment. Besides delivering tangible value to architectural practice, POE is a way to demonstrate the benefits of pursuing high-quality design.

Also in Architectural education, POE is increasingly recognized as a fundamental topic that should be embedded into undergraduate teaching and MArch design studios to engage students with actual performance of buildings in-use from a socio-technical perspective. The goal is to improve students' understanding of the complex interactions between the built fabric, design specifications and the users behavior, goals and perspectives and to training them to transfer the learning gained from the direct experience of studying buildings in-use into design studio practices.

Fig. 2: Location of Corucheus Art Studio Complex within Alvalade neighborhood.

The methodological approach

The course relies on the faculty experience and skills related to POE research they have previously and currently conducted and follows a student-centred 'learning-by-doing' teaching and learning approach based on an experiential learning methodology. Students general attributes are developed through the learning of conceptual principles and the subsequent application of this knowledge in a specific case study (practical exercise) in order to assess how well the physical environment match users' needs, and to identify ways to improve their design, performance and fitness for purpose.

A set of lectures, workshops and field visits are organized as well as readings of the POE literature and related research methods in order to consolidate and refine student's skills in planning, designing and implementing POEs.

The practical exercise

The practical exercise adopts the diagnostic POE model as proposed by Preiser (2002). It is a comprehensive and in-depth evaluation, often using comparative evaluations of other buildings of the same type. It involves the compilation and analysis of detailed data related with the

Fig. 3: The Corucheus Complex.

building life-cycle combined with informed feedback and subjective opinions from a set of interested groups or stakeholders. Findings are aimed at improving not just the building under evaluation, but creating design guidelines for other (existing or future) facilities of that type.
The tutor in cooperation with the building owners/managers and designers collects fundamental information about the case study. This is called an initial screening and helps to address the main research question: whether the building fails to meet users' needs?
Students in groups of three or four conduct POE of a building, thereby developing skills in team-work and collaboration. The final report consists of two parts, firstly a comprehensive description of basic aspects of the building in use, and secondly a "differential analysis" that positions the building within a field of reference solutions by identifying out- and underperformance aspects of the design. The differential analysis will encourage students not to focus entirely on average standards, but to research the potential of outperforming these standards through innovative concepts.
Design reviews and archive surveys complemented with visual inspections and the morphological analysis of the buildings by means of space syntax techniques were the primary methods used to describe the building life-cycle. The broad goal was to better understand the impact of early design delivery decisions on long-term efficiency and effectiveness of the building.
The Design review allowed students producing evaluations in a way familiar to the way architects and planners frame a design task, which facilitates the transfer of the results into practice. Archive surveys and techniques for the analysis of spatial configurations such as space-syntax permited incorporating features that are not as immediately understandable or visible on site, by depicting working drawings and incorporating morpho-tipological descriptions. These procedures helped to make explicit the performance–based-standards and value systems used by architects and clients in terms of architectural space, form and function.
Performance-based standards state a desired result without providing specific, measurable standards. Therefore they were based typically on the stated design intent and criteria contained in or inferred from the functional program and included indicators related to organisational and occupant performance, such as occupants satisfaction, safety, and security, but also included measures of building performance as perceived by users such as air quality, thermal comfort, spatial comfort, ergonomics, privacy, lighting comfort, noise, and aesthetics (Preiser, 2002).
Observational walkthroughs with interest groups were applied to collect subjective opinions and to bring the user perspective into focus. This technique, also named participative walkthrough uses direct, unmediated experiences of facility users as the basis for evaluating how a facility works for its intended use. These are visits with a group of users, typically involving an interview and a guided tour, during which both positive and negative performance aspects are pointed out and recorded on notepads, voice/video recorders and photos. Such visits are complemented with survey questionnaires and face-to-face (individual or group) interviews administered to a stratified sample of occupants.
Information collected in Observational walkthroughs were complemented with Behaviour mapping, which involved the systematic watching and recording of factual uses at different hours of the day and different days of the week to ensure major and minor periods of use were covered.

The 2017-2018 academic year edition case study

A late modern artist studio-building complex in Lisbon, built in the late 1960's by the city council was selected as the case study for the 2017-2018 academic year edition. This municipal building complex, named CORUCHEUS ART STUDIO COMPLEX is located in Alvalade: a large-scale urban operation, occupying an area of about 230 acres planned during the second quarter of the 20th century to promote the northward expansion of the city centre in response to the housing shortage affecting the city and to integrate a population of 45,000 inhabitants and total of 12,000 dwellings promoted by the public and private sectors.
Alvalade considers eight cells or 'neighbourhood units', each of them containing a range of community amenities, including shopping facilities, primary schools and public open spaces. Public facilities are distributed to be accessible by through comfortable and short paths, which occasionally cross the main arteries. Within each cell, local streets provide direct access to buildings.
Corucheus Art Studio Complex is located in the interior of an urban block without being seen from the main streets. There is a sense of isolation and the public spaces around the complex came to lack a sense of 'ownership' by residents, including the art studios occupants.
The Complex was designed by Fernando Peres Guimarães. The design brief considered a total of 50 art studios (sculpture, painting and ceramics); a restaurant, and a dwelling for the housekeeper ("guardhouse"). Construction works started in 1966 and the complex opened in 1971.
During the construction phase it was decided to reconvert the restaurant into an art gallery, which was in operation from 1973 to 1995. It was an active art centre, working in close relationships with the artists based in the complex and promoting inter-generational artistic dialogue. In 2009, The City Council reassumed the management of the gallery and integrated it into the network of Municipal Art Galleries aiming at providing and promoting new contemporary artists.
The complex plan consists of a L-shape access-gallery building with three and four story high, surrounding a pre-existent building (old mansion) and giving shape to a sculpture garden. Strong horizontal

forms dominate the design, which has projecting concrete balconies continuing the plane of the 1st story flooring.
The art gallery and the guardhouse as well as the sculpture studios are accommodated at the ground floor with direct access to a private courtyard. Only the ground floor areas are fully 'visitable' for people with mobility problems.
External galleries access Art studios located at upper floors. The size of studios varies between 39 m2 and 90m2. Each studio has a large open working area and a small WC. At moment 12 studios were vacant waiting to be remodeled and rented.
The initial screening revealed that: (1) The art studios were popular for many years, but as social and cultural circumstances have changed and the physical condition of the blocks gradually deteriorated, they have become increasingly less popular among artist. Visually they appear tired and unappealing; (2) The public areas round the Complex have become difficult to maintain and secure, and have for many years a reputation as a focus for anti-social behaviour. They are certainly poorly landscaped and forbidding to visitors; (3) studio spatial layout is very versatile and the city council allows occupants to make alterations; (4) the most common alterations made by occupants are the rearrangement of the layout to increase storage space often by means of a mezzanine; (5) comfort conditions are in general good, in particular the natural lighting conditions, due to large openings, as well as, because windows open totally (180º), offering good ventilation (6) constructive anomalies are mostly related to the durability of the materials and to weather agents. There are many areas with moisture problems and detrition of coatings.
Renovation works are being carried out by the city council since summer 2017 for restoring the original look of the façade, repairing the roof and various concrete sections, replacement of the balustrade elements, and removal of pipes, containing toxic materials, from studio spaces in multiple locations. The roof drainage located inside the flat roof was overhauled, and, in the process, the existing roof incorporated and the length of the top cover layer shortened. In the areas below, the existing drain was taken out and replaced by a large drainage area with new inlets and connections to the drainage pipes.
Up to the moment studio areas were not intervened. The city council is now preparing an action plan to comply with contemporary energy efficiency standards, which includes the steel windows renovation.
Regarding the art gallery, the large steel window pannel was refinished, cleaned and the closing mechanisms were refurbished. In order to create a more appealing scenario, a new exhibition wall was built, allowing to divide up the space so that it could be used to different purposes or separate exhibitions. The guardhouse was also reconverted into an office and is now being used by the art gallery staff.

Final considerations

Over the last 10 years, several students have learned POE techniques during their BPE studies at IST Integrated Master program in Architecture. Some of them have applied these techniques to their graduation projects. Generally, they have found POE training to be a useful contribution to their student design efforts, in particular because it allows: (1) feedback to be collected by studying the existing situation and analogues before a new building design is carried out at the Design studio; (2) to develop insight during their design project by reality checking and managing expectations of the building users and stakeholders; (3) to link consequences of design decisions and specifications with actual outcomes.
The experience shows that aligning the BPE teaching with design studio teaching provides an opportunity to address the performance gap that occurs between design intent and actual reality.
But what happens after graduation, when students are released into the 'real world' of architectural design practice, where they find a totally different playing field? When newly architects face issues such as time and budget constraints imposed by the client, the design team and other consultants, multiple stakeholders, and so on?
Effectively it is vitally important to make the effort to show that POE is a useful tool in generating the evidence and feedback needed for learning lessons from buildings. Also it is critical to educate the client and the design team on how to use evidence-based sustainable building design solutions. Otherwise, POE experiences and results will be worthless.

Acknowledgements

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Bibliography

Baird, G, Gray,J., Isaacs, N., Kernohan, D., McIndoe,G. (1996) Building Evaluation Techniques Publisher: New York : McGraw-Hill, 1996
Hertzberger, H. (1991) Lessons for Students in Architecture, Rotterdam : Uitgeverij 010 Publishers
Preiser, W. and and Vischer, J. (ed), 2005 Assessing building performance F. E.. Published. Oxford : Elsevier Butterworth-Heinemann
Preiser, W. Wolfgang F.E. Preiser, W., Hardy,A. and Schramm, U.(1988) Building Performance Evaluation: From Delivery Process to Life Cycle Phases Cham, Switzerland : Springer
Preiser, W, (2002) The Evolution of Post Occupancy Evaluation: Towards Building Performance and Design Evaluation Federal Facilities Council, National Academy Press, Washington (2002), pp. 9-22
RIBA (1962) The Architect and His Office Royal Institute of British Architects, London
RIBA (2013) Plan of Work, 2013 Overview https://www.architecture.com/-/media/gathercontent/riba-plan-of-work/additional-documents/ribaplanofwork2013overviewfinalpdf.pdf
RIBA (2017) Post Occupancy Evaluation Policy paper; Building Knowledge: Pathways to Post Occupancy; Post Occupancy Evaluation Primer
https://www.architecture.com/knowledge-and-resources/resources-landing-page/post-occupancy-evaluatio

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Fig. 1: Lelé's works at Brasília and Bahia, at the 1970's.

About the legacy of Lelé:

from the recovery of a building to the teaching of architecture by practice

Abstract

This work presents two experiences in architecture design and teaching, made from the material and immaterial legacy of the architect João Filgueiras Lima, known as Lelé, between 2015 and 2017 at the Faculty of Architecture, Federal University of Bahia (FAUFBA). They are the Germano Tabacof Pavilion Rehabilitation Project, at School of Fine Arts (EBA-UFBA); and the Curricular Activity in Community and Society - Pre-Fabrication in Architecture (ACCS ARQB13) - which consisted of a reuse and an experimentation about techniques and methods for pre-fabrication using reinforced mortar.

In these two activities, the system and methods created by the architect are applied in different rehabilitation projects and, through the practice, proved valid in relation to its own and different building technologies.

Reuse // Lelé // Architecture // Technique // Pré-fabrication // Teaching // Recovery // Participative-design

Introduction

Just over a few years ago, we lost João Filgueiras Lima, Lelé, one of the most important Brazilian architects from his generation. Lelé was born at 1932 and graduated in 1955 at the National School of Architecture of Rio de Janeiro and, still as a young architect, worked together with Oscar Niemeyer in the construction of Brasília, the Brazilian dream of modernity.

At Brasilia, Lelé developed his first investigations of streamlined construction processes, starting a brilliant career dedicated to public facilities, especially urban infrastructure, schools and hospitals.
The search for the construction's efficiency and the rationalist architecture was some of his most important compromises. Starting with practices of construction's rationalization, the architecture's industrialization has marked his central search for technological solutions, specially designed to attempt for the humans needs of functional spaces and beauty.

At this article and study's stage, our attention goes to Lelé's experience on the coordination of the Communitary Equipment Factory – FAEC, also called Factory of Cities. At this phase, working to the municipal administration of Salvador, Lelé produced school buildings to the city's poor neighborhoods and implanted them all, besides the kindergartens and community centres, in Salvador peripheral areas, especially in slums. The schools units built in the 1980's, constructed with ferrocement prefabrication system designed by the architect, have our attention because of its architectures, social insertion, spatiality, arrangement possibilities and constructive technics.

Image 4 and 5: Lelé's scholls from FAEC, Salvador, Bahia, at the 1980's.

The Germano Tabacof Pavilion Rehabilitation (PGT-EBA) and the Curricular Activity in Community and Society - Prefabrication in Architecture (ACCS ARQB13), are two activities offered since 2015 to the students of the Faculty of Architecture at the Federal University of Bahia, with attention to Lelé's works from 1986 to 1989 at FAEC, Salvador, Bahia.

Main text

PGT-EBA – A participatory rehabilitation project of one of his buildings, following the method and system created by the architect
The first design and teaching experience mentioned was the rehabilitation of the Germano Tabacof Pavilion, a preserved sample of the prefabricated architecture produced by Lelé in the 1980s. It started with the study of the design method and the characteristic elements of this phase of Lelé's work. The teachers led the students to study the system, the design of the pieces and fittings and the conservation conditions of each element. The objective was to list the pieces' types and quantities to replace for preserving the original general configuration - only possible by the characteristics of this industrialized prefabricated architecture. From this study and with attention to users' demands, the recovery project was developed, adapting the initial building to the current needs of EBA-UFBA and the current legislation.

For the Germano Tabacof Pavilion Rehabilitation, the teachers involved were part of a Work Commission, invited by the Director of

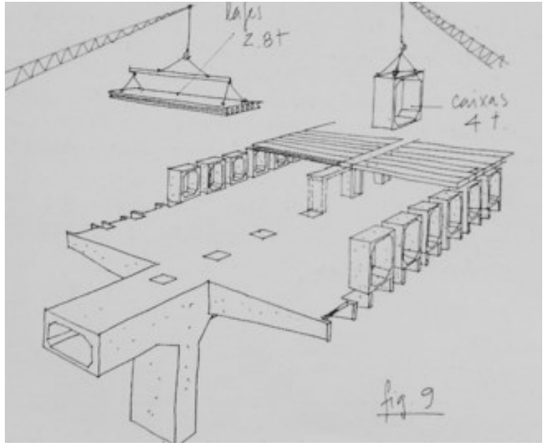

Fig. 2 and 3: Lelé's works at Brasília and Bahia, at the 1970's.

the School of Fine Arts of UFBA, with the objective of recovering the building. The project, developed as an extension activity, had the participation of Architecture and Engineering students from UFBA, as well as technical and postgraduate students.

The work started with a careful evaluation of the state of conservation of the pieces in armed mortar constituents of the building. These pieces, according to the system proposed by Lelé, should be replaced as periodic maintenance, according to the needs over time.

The system also provides for and admits additions, extensions, and adaptations to new programs. It was importantly considered by the teachers, who proposed new elements and details, consistent with the new legal requirements, technologies, and materials available, especially considering the more than thirty years since the original building.

From the development of the rehabilitation project, an agreement was proposed to be signed between UFBA, the City Hall in Salvador and DESAL.

As a product and complementation of the actions for the preservati-

Fig. 4 and 5: Lelé's scholls from FAEC, Salvador, Bahia, at the 1980's.

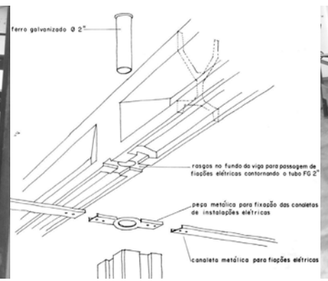

Fig. 6-8: Lelé's scholls from FAEC, Salvador, Bahia, at the 1980's.

on of João Filgueiras Lima's architectures in Salvador, this work was presented in the Colloquium of DOCOMOMO Bahia, entitled "The place of the preservation of the modern patrimony in the contemporary city", organized by the Faculty of Architecture of UFBA, in 18 in May 2017. In this event, the participants were invited to sign an undersigned for the recovery of the Germano Tabacof Pavilion. The importance of preserving this production phase of Lelé was explained and hundreds of signatures were collected.

ACCSARQB13 – The study of the architect's system and method for the production of prefabricated elements in armed mortar applied to the project of recovery of a derelict industrial building
The second academic activity here described, the ACCS ARQB 13- Prefabrication in Architecture, is an extension activity allied to field research, started in 2015 following the announcement of Lelé's school buildings demolition by the City Hall of Salvador.
In the first two editions, ACCSARQB13 visited and documented, with the students' collaboration, some of these schools still in use. From the record of its several possible configurations, confirmed the efficiency of this constructive system, precisely allied to the demands of the communities where it was built.

The ACCSARQB13 consists of a unit of theoretical-practical investigation created with the objective of studying the school buildings constructed with the use of the pre-fabrication system in armed mortar designed by the architect. The teachers created this unit aiming to introduce the participants to these schools' design and construction system and to facilitate its recovery/maintenance by creating a book of elementary principles for responsible employees and administrators to use when any intervention is needed.

From the visits, we studied the feature of schools urban insertions and the ways of space appropriation by the communities, seeking to identify the purposes of eventual adaptations made over the years, as well as to evaluate the conservation status of these buildings.

In the first two semesters in which the unit was offered, schools buildings were studied in the districts of Nova Sussuarana, Bonocô, Doron, Cajazeiras, Boca do Rio, Plataforma, São Cristóvão and Engenho Velho da Federação, as well as some examples found at Campus UFBA – Faculty of Architecture, Faculty of Fine Arts, Faculty of Philosophy and Human Sciences. The buildings inside the campus were studied as a starting point, to enable the students to get familiar with the construction system adopted.

From 2016 onwards, the ACCS ARQB13 - in collaboration with the Vazios Construídos research study, from Lugar Comum research group, FAUFBA's Postgraduate Program – works with a closer approximation with the prefabrication process, by molding elements for the recovery of an industrial building in ruin at Lobato, a railroad suburb of Salvador.

In its third edition, ACCSARQB13 proposed an experimentation based on the technology of armed mortar, combining studies and researches on the work of João Filgueiras Lima. Design and constructive experiences were performed, contributing to the capacity of students, professionals and members of the community involved.
From this stage on, the activity gained characteristics more focused

on the practice of architectural design and production of prefabricated elements, with the objective of collaborating with the rehabilitation of the Toster Lobato Factory, occupied since 2007 by the participants of the Movement of the Homeless in Salvador - MSTS, having about one hundred and fifteen families.
Our collaboration to the group consisted in the experimentation of the technology of armed mortar in the design of housing modules and/or elements to apply in the recovery and reuse of this old factory's spaces, aiming to meet the community's demands.

The activity sought to stimulate and propose new objects of research and innovation, as well as the technological development from the contact with problems of the community and society. It combined academic teaching and research with the development of social technology aimed to the search of the equation of the framework of the urban dispersion and of the underutilization of the already available infrastructure.

ACCSARQB13 involved a socially and urbanistically vulnerable community, the courses of Architecture and Urbanism and Civil Engineering at UFBA, in these two years of activity. It succeeded by contributing academically and socially, through projective and technological experiments in the classroom, in the laboratory and in the field, starting from the survey of demands whose low-cost precast technology and good constructive quality could meet.

We seek for the elaboration and development of constructive elements, techniques and methodologies as well as the technical qualification through the participation of students and community members in the whole process, aiming at effective possibilities of solutions.

The exercise consisted of developing the design of armed mortar elements by using wood forms, followed by production, always with the purpose of using them in the spatial restructuring of the old factory and for community use.
Articulating the University and society, the activity made compatible the technical knowledge developed with a view to training the participants to act in the processes of social transformation. Furthermore, we also provide technical qualification, aiming at the professional exercise participant in the development of community and society.
In addition, in July 2017, we offered the Workshop Architects in Construction, at the Faculty of Architecture of UFBA, along with other initiatives focused on constructive practices in architecture, in which students from other universities participated by moulding reinforced mortar elements.

The products of the research work were exposed in Salvador/Bahia from the opening of the Congress "URBBA 2017 - Urbanismo em Comum", held from 7 to 10 November 2017, in the exhibition Vazios Construídos, which lasted until December 17 of the same year in the Jequitaia Space, in downtown Salvador.

At its third year on, the activities planned for the continuity of ACCSARQB13 consist of the theoretical and practical speculation for the possibilities of using the armed mortar technique with new materials and methods. The work was based on previous experiences and existing researches, as well as on investigating possibilities and

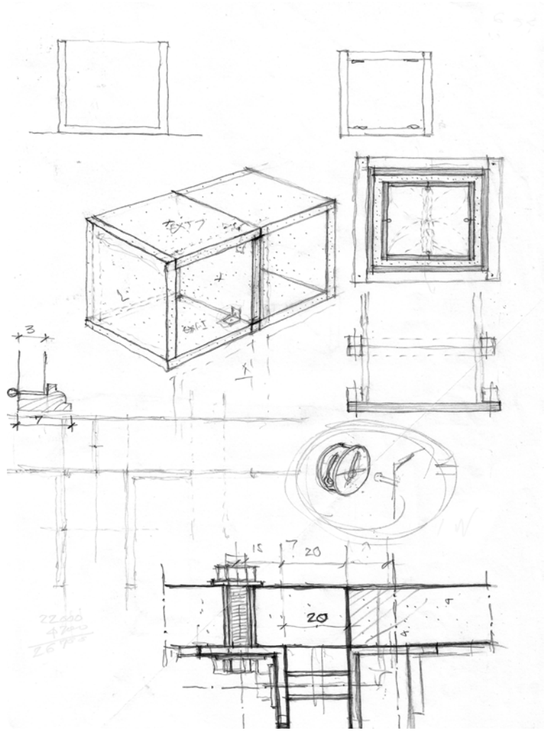

Fig. 9-11: Drawings, moulding and mounting of ACCSARQB13, 2017.

Fig. 12: ACCSARQB13 at the Vazios Construídos Exposition, Salvador, 2017.

Fig. 13: ACCSARQB13 at the Vazios Construídos Exposition, Salvador, 2017.

hypotheses that arise during the development of the experiments.
Therefore, ACCSARQB13 continues the practical and theoretical investigation to contribute to the advances about the technique of armed mortar, an issue that has been brilliantly faced by João Filgueiras Lima and remains open to new alternatives that respond especially to problems related to the metallic reinforcement, sea spray and other corrosive effects in time.
Our current research purpose is to find materials that can replace the steel mesh that composes part of the armature of the pieces. The study has been developed from the analysis of the conservation status of the Iansã Module - annex produced by Lelé at the Faculty of Architecture of UFBA - and of the actions developed in ACCS ARQB13. At this point, along with students of the architecture and civil engineering courses, teachers developed the design, molds, and casting of prefabricated elements as well as carry out tests to verify the strength of the pieces.

Conclusion

Aiming at greater knowledge and preservation of his legacy, we present these two approaches to the study of João Filgueiras Lima's architecture: the rehabilitation project of one of his buildings in disuse and the application of the constructive system that he developed, in practice and with the students to collaborate with the rehabilitation of an industrial building.

It is our concern that, despite their very importance and efficiency, some of Lelé's architectures at Salvador are today at serious risk of disappearing.

Therefore, this study aims to affirm the value, adaptability, and efficiency of Lelé's architectural concepts to date, presenting his own system as a valid option to the refurbishment of buildings, and also to affirm the importance of persisting in his technical investigations, construction of knowledge and immaterial heritage.
By recognizing its importance, was born and raised in us the interest and sense of duty as architects, professionals who worked with Lelé, teachers, and citizens, to help make his work survive as it deserves: as a way to understand and make architecture.

As the deeds of a man transcend his very existence, it is necessary to think about realistic efforts to ensure the preservation of Lelé's architectural ideas, considering his works as a legacy to the future.

Bibliography

CARDOSO, Ceila Rosana Carneiro e GUIMARÃES, Ana Gabriella Lima. In+tangible Heritage: the schools of João Filgueiras Lima, Lelé. 14th International DOCOMOMO Conference. Adaptive Reuse – the modern movement towards the future. Lisbon: DOCOMOMO International, 2016.
LATORRACA, Giancarlo (org.). João Filgueiras Lima, Lelé. Giancarlo Latorraca (org.). São Paulo: Instituto Lina Bo e P. M. Bardi; Lisboa: Editorial Blau, 1999.
LIMA, João Filgueiras. Escola transitória. Brasília, MEC/CEDATE, 1984.
PORTO, Claudia Estrela (org.). Olhares – Visões sobre a obra de João Filgueiras Lima. Brasília: Editora da Universidade de Brasília, 2010.
** All images used at this article are from the João Filgueiras Lima's or from the Author's archives.*
*** We thank for the collaboration of the students Pablo Cal and Gabriel Ribeiro.*

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Fig. 1: Aerial photo of the whole of The Miracles.

School of Nuestra Señora de los Milagros, Luis Laorga Gutiérrez, Safeguard Project

Abstract

The Rehabilitation Project of the School 'Nuestra Señora de los Milagros', an original project of the modernist architect Luis Laorga Gutiérrez, is developed by applying a methodology learnt during the safeguard studies of the modern and contemporary built heritage in the Institute of Architecture of Geneva's University.

There, we learnt how important it is to know the constructive part as well as its circumstances, and for that deep knowledge it is necessary the implementation of a method.

Firstly, a deep historical study of the author is developed, his biography and a summary of his works with an explanation of the socio-economic situation of the country and the period the building belongs to. Influences and relations that are reflected on the work will be sought. The building is studied from several perspectives, from the development of the programme to how it is built. It is important how and why the materials are used and the design of its facilities.

Certainly, to carry out this study is necessary to gather the most possible information, going through archives [City council, Property, Architects], having conversations with the author and examining the archive of the study. Any contact with those who were related with the project could give us sensitive information. All this information can provide data to understand how the project has evolved.

A study about the original use of the property must be conducted because in many cases, it is where further research takes place, trying to find relations of its architecture with modern programmes and pedagogical issues in its configuration.

Finally, we get to the study of specific elements related to the rehabilitation of the building, initially a pathologies catalogue, a systematic study of the degradations and its direct consequences. Meanwhile it is studied the material, its thermal and acoustic problems and present needs, its future demands and an also adaptation to a new programme will be reconsidered.

Performing this study, evidences show the use of two opposite materials, with two different placement methods [artisan and industrial]. Eventually we can see that they complement each other, while the stone which is a traditional element that gives us a closed volume, the concrete which represents modernity, gives us open spaces and a better ventilation and lightning.

Finally, we focus on the typological study to talk about the modulation and adaptation. Laorga aims to improve the lightning and ventilation within a maximum freedom of space for the students, both indoors and outdoors.

Architecture // Didactic // Method // Modern, // Safeguard, School

Introduction

Located in Ourense, Galicia, Spain, the School “Nuestra Señora de los Milagros”, of Luis Laorga Gutiérrez, was used until the 90’s but now, it is abandoned. For that reason, as we studied in the postgrad of Safeguard of the modern and contemporary built heritage in the Institute of Architecture of University of Geneva, if we want the continuity and the conservation of this building it is as important to provide a new utility as well as to know the building and its author.
As professor Bruno Reichlin says, “the ancient architecture is always indisputable, unlike the modern architecture that is always questioned independently of who its author is”[1] (Reichlin, 2001, 2-4)

While an ancient building can be preserved as a monument without being used, with the modern ones that is no possible, a great cost of maintenance may suppose its demolition. That’s the reason to tie the modern rehabilitation to its economic viability.

Now the postgraduate course has disappeared, but I propose to apply its method of study to the building, which gave me a reason to start my investigation in the school architecture. It shows through different modules a method to achieve a deep knowledge, which is absolutely necessary for the rehabilitation of the Modern Movement buildings.
When I found out about the School of “Nuestra Señora de los Milagros” I started to investigate about its author but also about the situation and the history of the place. Two books of Eligio Rivas, about the sanctuary,[2] let me know how the project started. It was the result of the towns’ agreement of the region to request a Secondary School to the Department of Education. The priests already had a school, which was opened until the summer of 1969, when the new college was inaugurated. That’s why they were in charge of this new school, and they kept it working until the first years of the 90’s. (Fig. 1)
The project was assigned to Luis Laorga Gutierrez in 1965, because he was making another school for priests in Andujar, Jaén. He proposed to organise the building in an H shape, like he had already done with the college of the Jesuits in Chamartin (Madrid).
To recognize the Influences and relations that are reflected on his work, its necessary to conduct a deep historical study about him, his biography and a summary of his works. With an explanation of the socio-economic situation of the country and the period the building belongs to.

Laorga’s work has three phases that are not limited to a period of time, they are an evolution and a continued research, and we can show this work as the result of it.
Luis Laorga finished the architecture studies in 1946, in Madrid. He is not very well-known, even though he has gained four contests with his first works, one with Manuel Martínez Chumillas, the others, with Francisco Javier Sainz de Oiza.

On the contest with Oiza, the project of Aranzazu’s Sanctuary [Oñate, Euskadi] stands out. This project marks his work and the professional relation between them. We know that Sainz de Oiza had an international repercussion years later. Laorga remained working in a more limited area, with an important work, but never recognized. In a period of six years (1951-1957), he finished the church of “Nuestra Señora del Rosario” (1951) in Madrid, the main building of the Mariana University Congregation (1952), a country house in the urbanisation “the Peñascales” (1954), where he also designed a church and the master plan for Caño Roto. After that, in 1959, he started collaborating with Jose Lopez Zanón. (Fig. 2)

Laorga and Zanón produced about thirty projects of an excellent quality, namely two urban plans in Zaragoza and Madrid (1959) and several households, like Concha Espina or Pirineos in Madrid.
But, it’s important to highlight their portfolio of educational buildings. In Galicia, they conducted two projects together: The School of Science of Navigation in Vigo (Pontevedra, 1963), within the series of Nautical Schools that were made by project contest, like the ones in Portugalete (Biscay, 1968), Cadiz, Alicante, Tenerife and more; and they did a Labour University “ Crucero Baleares” (Culleredo, Coruna, 1961-64) which was also gained by contest as well as another one in Madrid but it was never built, so in exchange they received the commission of two other labour universities, in Huesca and Caceres. (Fig. 3)

They worked a lot with modular spaces, which they defended basically for the possible evolution of the educational curriculum and the usage changes of school buildings, with a limited budget.

Influences

When I studied Luís Laorga and its influences, continuing with the method, the investigation let me divide most of his work into two functional types: religious and educative. He did the first one almost by himself, but sometimes with the help of Sainz de Oiza, and the second one for the most part with Lopez Zanon.

With this simplification I try to present a division of his influences, the

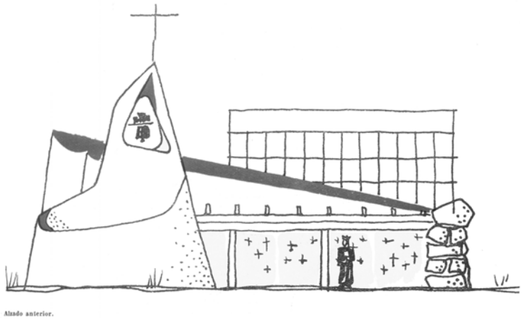

Fig. 2: Project of chapel in Los Peñascales, 1957.

religious projects are strongly influenced by the German architecs, Paul Bonatz, Dominikus Bohm, Rudolf Schwarz or even by the Swiss Dustus Dainden, or Lecorbusier
The educational architecture, especially in Labour Universities, is inside the new European artistic movements of the post-war period. In this typological group, we can also find a German influence. But if there is another important influence in the way of developing his school typology, it is the American High School, which comes to them by the projects for the housings of the American military, in Zaragoza, when they encounter the work of Neutra and Breuer. (Fig. 4)

Building

The college “Nuestra Señora de los Milagros, is constructed in a simple form and the decoration is basic, following the path of the ecclesiastic architecture of the moment. There are spaces that

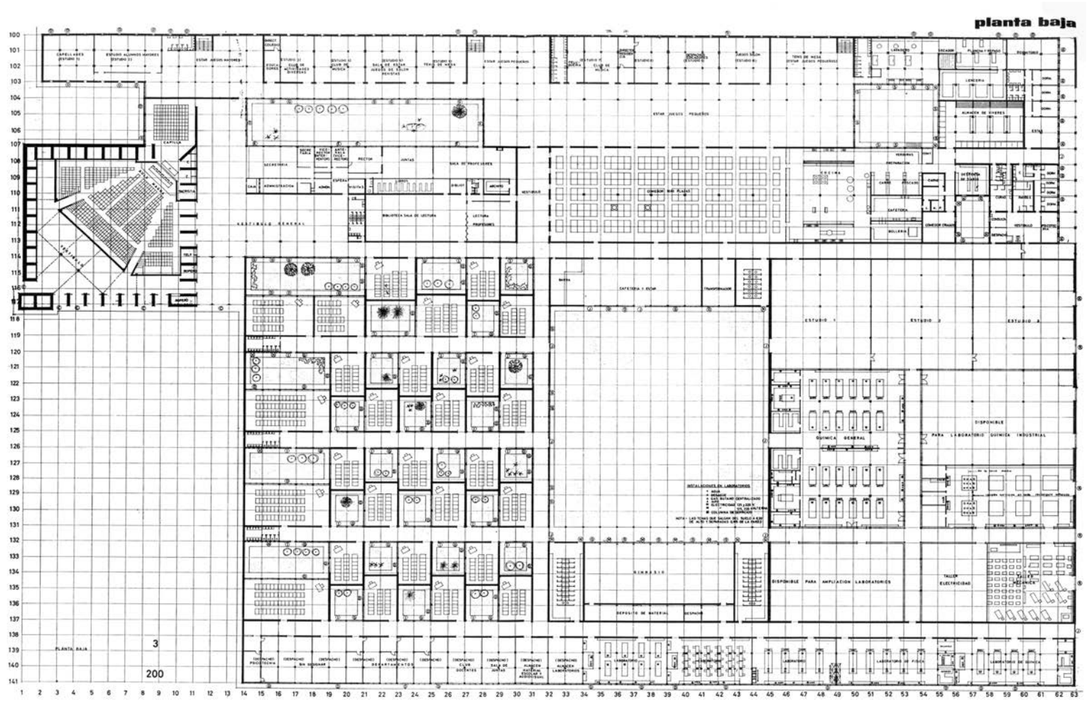

Fig. 3: General plant of the Labour University of Huesca, 1967.

impress for the treatment of the light and the materials. Every volume corresponds to one use and they relate with each other on the basis of a study of paths and an organizational chart developed during his years of research in the architecture school.
The school with the different branches of classrooms and the residence, on the opposite side, are joined through the other services that are used as accessories to complete the composition. These central elements put a discordant note in a regular and monotonous group. But they have a great value and are treated as important volumes inside the game, with variations in height that identify the set.

Materials

For the development of this program and the concept of simplicity of the volumes it is important to analyse how the materials are used, besides the design of the facilities. Therefore it is important to continue with the study of the building, from all the possible perspectives.

This study shows the use of two opposite materials, with two different placement methods [artisan and industrial]. Eventually we can see that they complement each other, combining its properties. The stone, traditional element, gives us a closed volume; and the concrete or steel, which represents modernity, gives open spaces and a better ventilation and lightning, especially in the classroom area.

Laorga uses the most economical solution without giving up the modernity of the materials, learning from the local architecture. The challenge consists in offering to this material, the traditional ones, granite, a current reading, and he obtains it with the modulation of the hollows and division of spaces. For that reason, we have a volume of bedrooms that offers us a compact image. It is measured with the piece of stone from the module of 50 cm. The small hollows, a square, inserted on the module between 50 cm. to 1 meter maximum. But the south façade is different, the ground floor is totally opened, there are big hollows and the windows are lengthened in the area of the gym and changing rooms, returning to the module at the first and second floor.

In the classrooms, the construction answers to the examples of the epoch, two types of windows, the first one is in a lower place to be able to look outdoors and it is 90 cm. high, with solar protection. The heating is placed under the window taking advantage of the parapet. The other ones are ventilation windows and they are 30cm high, they are placed above not to produce insane currents, faced to the opening in the corridor and in the opposite front, following the rules about the space in school of the modern architecture of the moment. (Fig. 5)
In the central space the constructive system is used to improve the entry of diverse types of light in the living rooms. The dining room roofing in two different heights and windows on all four sides of allow ample sunlight even without a line of sight. In both the church and the conference room the zenithal light is placed according to the use, with a light entry upon the altar in the church, focused on the sculpture of the Crucified Christ while in the conference room the light entry is placed in the entrance to avoid disturbing the conferences or projections. This creates a set of covers in the middle of the building that, as I previously said, identify the compound.
Research

Fig. 4: Housing for American military in Zaragoza, 1955-57.

Certainly, to carry out this study is necessary to gather as much information as possible, going through archives [City council, Property], having conversations with the author or his family and also examining the archive of the study if it is available. Any contact with those who were related with the project could provide us data to understand how the project has evolved. That's the way of arriving to the original project and any modifications done after, perfectly documented so we access to three different projects.[3]

Program

The program facilitated for the accomplishment of the project foresees the following necessities: A Teachers' Residence with 22 rooms, a Pupils' residence with capacity for 200 pupils, the reception, 18 classrooms and other facilities: the kitchen, living-room, etc, which were modified. With an additional residence for women teachers, basement for laundry room under the kitchen, or without them, which lead to the project that redraws following the method of investigation. We can see, in the scheme, that it exist a great independence between the pavilions with different functions. The volume composition in a superposition of the uses is where the functional and typological research takes place, where its significance is, trying to find programs and pedagogical issues in its configuration.

Once decided the scheme and determined the heights that every block must have, in consideration of its capacity and extension of the area available, it is made a composition of volumes that gives expressiveness to the set. They clearly translate the function from each one from the elements that constitute it, emphasizing the Chapel as the domineering element at the centre of the composition.

The school typology, which Laorga and Zanón repeated in their projects, is based on a few fixed instructions that were described as universally accepted, which were inside the worries of the modern architecture of this epoch, and that nowadays, on my opinion, should continue taking part in the basic Decalogue of a school project. Simple issues, as "accurate and regular dimensions, Uniform lighting, transverse ventilation, limited number of floors, maximum concentration and minimal distance, hierarchic organization of the different nucleus and functions and centralization of the living areas"[4] (Laorga y López Zanón, 1979, pag 40-43)

Project

Finally, within the method, we get to the study of specific elements related to the rehabilitation of the building, initially a pathologies catalogue is made, a systematic study of the degradations and its direct consequences. At the same time it is studied the material, its thermal and acoustic problems and present needs that may appear during the construction, as for its present location as for its future demands and adaptation to a new program will be reconsidered.

The building is preserved according to the original project. Many problems come from of a bad conservation of the impermeable isolations, but it does not have any serious fault in the structure. Its only problem is the lack of thermal isolation, for that reason this building isn't adapted to the current standards of comfort, even when the inertia of the stone wall allows an acceptable comfort, it has a high energetic demand for the thermal area in which it is situated with high temperature variations.

When we face the rehabilitation project, we already know a lot about the building and its intentionality, so depending on where we focus the intervention, other projects can give us some clues for its proper execution without any quality distortion.

When we have to amplify areas, windows or renew some services, other projects will show us how to do it. For example other scholar projects indicate how are enclosed more services or volumes, because the author already talks about modulation, adaptation and growth. It also shows how enters the light and how to extend the windows if we take a look to other projects done with similar materials, like the elders residence, which Laorga completes later, also in Ourense.

But as said in the beginning in this case looking for a new use is almost as important as analyse the building and its author. A religious boarding school is an idea in disuse nowadays, difficult to sustain, especially far away from a big village. This type of centre is more associated with academic or sport achievement, for higher education. But Ourense's county is one with the least population in Spain, therefore to give it a new use is complicated.

Three options were studied in this project, according to the intervention levels and the viability, the most economic one to maintain the elements and give them a separate use, as a school and tourist accommodation, or as a residence and elder's day-care centre the third option and the most ambitious one was to use it as a high-performance centre for athletes. The alternatives go accompanied with an implementing budget.

One of the disadvantages of the building is the closed design in the dorm's module, adjusted to past use as a monastery, with small high windows not suitable for the new necessities. If the matter is to adapt it as a elders' residence, they have to be able to see the outside from their beds. If it is adapted for athletes, the dorms would have to be modified as small apartments, but the light is insufficient. To each project it is attached a catalogue with solutions to solve these issues, such as place new windows or expand the existing ones, how unify and merge elements and how increase some services, always honoring the author's original idea.

In the building itself it shows us that opening a window is as easy as combining materials. The square hollow of the stone module combined with concrete allows to lengthen the gap in vertical position for the elders' residence, or in horizontal for the athletes' apartments, always maintaining a proportion and an order or sequence on the façades.

The sequences are the guides, also in the extension in the ground.

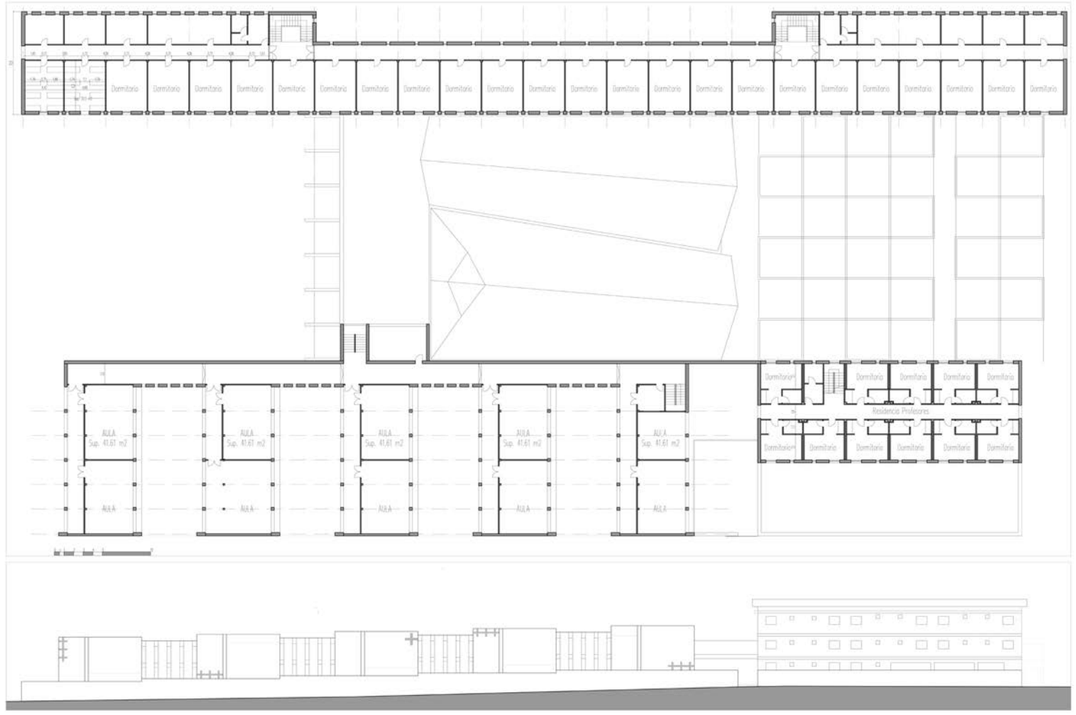

Fig. 5: Ground floor and front access and class room of the Colege of Los Milagros.

It can be expanded in herringbone or squared mesh, if we need the volume of the classes to grow for a day-care centre or for a school. In the case of the residence its expansion is more difficult, but in none of the projects was necessary, and it was only needed to merge some rooms or to decrease the number of beds-.

Conclusion

In this case none of the options were followed up. But it is not an architectonical problem, because we know that a deep knowledge gives us the necessary tools to find the proper solution to any issue of space or constructive defect.

The problems with this project are social and financial, finding the needed commitment of the administrations and promoters to place value on the design even penalizing the economic investment. Finding the tools of rehabilitation of the Modern Movement is easier with knowledge, but the conservation needs something else, we must justify that it is irreplaceable and necessary.

Notes

[1] Bruno Reichlin. (2001). Introduction. Faces, 10-11, 2-4.
Bruno Reichlin has been professor of architecture at the University of Geneva since 1984 and He was the director of the postgrad. He wrote about the oportunity and duty of reuse the Modern architecture, at Faces Magazine and during the VI Congress DOCOMOMO, Cadiz, 2009.
[2] Eligio Rivas. (1983). Historia del Santuario de Nuestra señora de los Milagros, Ourense: Sanmartin.
Eligio Rivas. (1991). Santuario de Nuestra señora de los Milagros , Montemedo, Ourense. León: Everest.
[3] I document also different modifications of later interventions especially in the covers. This is part of DOCOMOOMO Registers documentation.
[4] Laorga y López Zanón. (1979). Escuela Superior de Ingenieros de Caminos, Canales y Puertos, en Madrid. ARQUITECTURA, 219, 40-43. Zanón returned to the idea at the Conference to the Buildings of education.

Image Credits

Fig.1: Aerial photo of the whole of The Miracles, from the Sanctuary archive, 70s approximate date.
Fig. 2: Project of chapel in Los Peñascales, 1957, Luis Laorga Gutierrez Archives
Fig. 3: General plant of the Labour University of Huesca, 1967, Luis Laorga and Jose Lopez Zanón, archives of Zanon.
Fig. 4: Housing for American military in Zaragoza, 1955-57, Picture from the"Brilliant 50's", Carlos Sambricio
Fig. 5: Ground floor and front access and class room of the Colege of Los Milagros, own file.

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Penn State University
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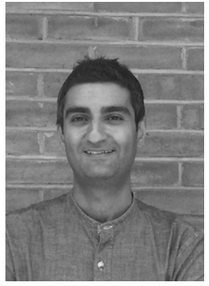

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José Pinto Duarte

Penn State University
Professor

José P. Duarte is Professor of Architecture and Landscape Architecture at Penn State University where he is Chair in Design Innovation and Director of the Stuckeman Center for Design Computing. He has worked at the Massachusetts Institute of Technology and at the University of Lisbon, where was Dean of the Faculty of Architecture before joining Penn State. He also was President of eCAADe, the association for education and research in computer-aided architecture in Europe. His research interests are in the use of computation to support context-sensitive design at different scales from urban design, to architecture and materials design.

Fig. 1: Hajjar House I, built in 1951.

Shape Grammar of Hajjar's Hybrid Domestic Architecture: A Methodology for Analyzing Local Adaptation of Modern Architecture

Abstract

The purpose of this study is to analyze William Hajjar's single-family houses in State College, PA, using shape grammar as a computational design methodology. The underlying hypothesis is that the work of Hajjar is the result of a hybridity phenomenon between European modernism and traditional American architecture that will be traced through a computational design methodology. As part of a larger study, this paper demonstrates that how shape grammar can be used as a method for analyzing local adaptation of modern architecture.

shape grammar // modern architecture // American architecture // William Hajjar // single-family houses // local adaptation of modern architecture // historic preservation

Introduction

The residential architecture of A. William Hajjar, a faculty member at Penn State and a practitioner in the mid-twentieth century incorporates many of the shapes, rules and features of both European modern architecture and traditional American architecture. On the basis of this hybridity between modern architecture and traditional American architecture in the work of Hajjar in State College, PA, in the mid-twentieth century, in this study, this architectural phenomenon is compared and contrasted with both the modern architecture of the time and the traditional American architecture of the local context. Via computational design methodology, this comparison will provide information to identify and establish the single-family architectural language of Hajjar and to verify and describe the hybridity between modern architecture and traditional architecture in his work.

Shape grammars are used specifically to verify and describe the influences of modern architecture as defined by Hitchcock and Johnson (1932) and traditional American architecture in the area on Hajjar's domestic architecture. The first step in this endeavor is to establish the single-family architectural language of Hajjar, which is briefly described in this paper. Future steps will aim at verifying and describing the hybridity between modern architecture and traditional architecture in his work by comparing Hajjar's grammar with grammars encoding modern and traditional architecture. It will also be argued that shape grammar can be used as a useful tool in the process of analyzing and reusing modernist buildings.

The notion of hybridity between modern architecture and traditional architecture, or the duality between modern and traditional, international and local, and designed and vernacular in architectural practice has already been addressed in the literature. Terms or ideas such as "high style" versus "popular" architecture in the mid-twentieth century (Devlin & Nasar, 1989), "Brazilian popular modernism" (Lara, 2008), "critical regionalism" (Frampton, 1983), and "vernacular modernism" or the contrast between vernacular traditions and the twentieth-century built environment (King, 2016) all refer to this duality, in various geographic locations or time periods. Also, the idea of mixing elements of European modernism with traditional American elements in architectural practice happened earlier in the twentieth century, although not in domestic architecture. As scholars like Leland Roth note, most skyscrapers built in the 1920s combined selected elements of the International Style with traditional revival styles such as Renaissance and Gothic typologies (Roth, 1979). In a U.S. college town such as State College in mid twentieth century, a key question on this point pertains to whether this hybridity can be described, and if yes, whether shape grammars as a computational design method can be used to verify and describe it.

The theoretical outcomes of this study answer the following central questions in regard to the methodology and the context: Can shape grammars be used to verify and describe the possible hybridity between modern and traditional architecture in Hajjar's work? And, more broadly, can shape grammars be used to describe architectural hybridity phenomena in general? Can it be used as a useful tool for the process of reuse of modernist buildings?

The larger scale study, in which Hajjar's domestic architecture is compared with the modern and traditional architecture of the time, is conducted in the following steps: (1) Tracing Hajjar's life and practice to identify likely influences on his work; (2) Developing a shape grammar for the houses he designed in State College; (3) Identifying or developing grammars for some of his likely influences; (4) comparing Hajjar's grammar to the grammars of these influential works to determine the nature and extent of such influences; and (5) identifying aspects of the social and technological context that may explain such an influence—i.e., trends in regard to lifestyle and available technology.

Shape grammars in computation are a specific class of production system based on an initial shape, or a set of finite shapes, and transformational shape rules (Stiny & Gips, 1971). Since the 1970s, as a design computation method, the concept of shape grammar has been used in architectural analysis when a pattern in design characteristics or a stylistic repetition of shapes in architecture is evident. This method has been used to analyze examples of historical architecture, such as the Palladian Villas by Stiny and Mitchell (1978), Frank Lloyd Wright's Prairie houses by Koning and Elizenberg (1981), Bungalow houses by Downing and Flemming (1981), Queen Anne houses by Flemming (1987), Alvaro Siza's houses at Malagueira by Duarte (2001), and many more. Given that the work of the proposed study's focal architect shows some evidence of shared shapes and transformation rules, the shape grammar methodology is appropriate for testing the hypothesis. For example, many of the houses designed by Hajjar can be considered in reference to shapes and rules as follows: a wing (i.e., a garage), connected through a breezeway (the connector, usually the main entrance) to the main volume. This main volume in his early work is a simple shoe box, which regardless of size (small or large) and orientation (parallel with or perpendicular to the main road), usually has a low-pitched roof. The main volume sometimes

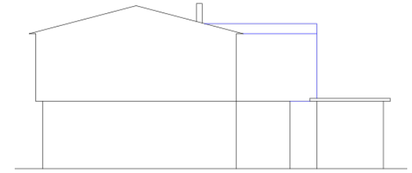
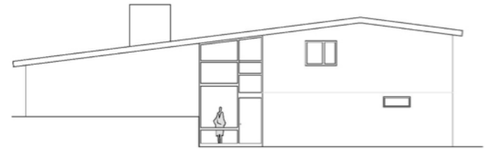


Fig. 2: Hajjar House I, built in 1951. A simple diagram of the house façade in its current situation. The blue lines show an addition built above the breezeway



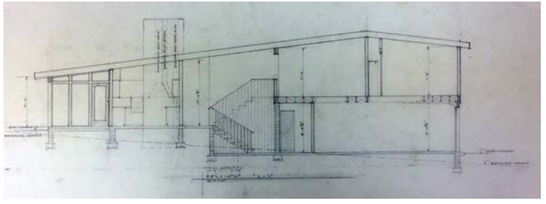


Fig. 3: Eaken Residence designed by Hajjar in 1955; reproduction of front elevation & Hajjar's section drawing.

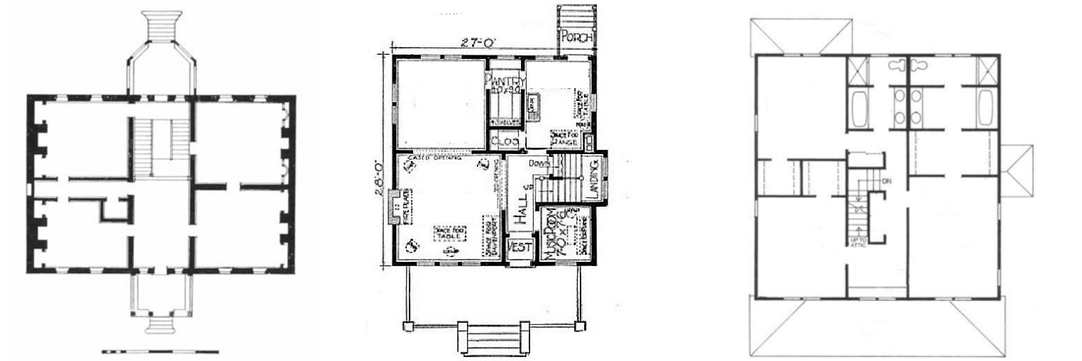


Fig. 4: Gunson Hall, Lorton, VA, example of a Georgian villa. Plan as it appeared in the early 20th century, prior to restoration (left); a typical American Foursquare plan (catalog house) (center); and a developed foursquare plan (right).

comprises two stories: the bottom story is usually the main living area (living room, dining room, and kitchen) and the top story is usually the sleeping area. Depending on the orientation and slope of the site, the bottom story may be a garage whereas the main living spaces may be located in the wing, the latter of which consists of one or two stories. This work is on the footsteps of previous work by other authors. In 1994 Knight showed how stylistic evolution in art and design may be explained by the evolution of the underlying grammars. Knight illustrated her argument by describing the transformation of Frank Lloyd Wright's Prairie houses into Usonian houses. In 2001 Çolakoğlu used this idea to propose a methodology to design contemporary houses from vernacular Turkish Hayat houses, while in 2005 Chase and Ahmad used grammatical transformations to understand hybridity in design. Then in 2011, Eloy and Duarte proposed the concept of transformation grammar to adapt an existing house type to contemporary living needs. In the same year, Kruger et al (2011) advocated the use of transformations to study Alberti's influence on Portuguese classical architecture. More recently Benrós (2018) used transformations in design to study the phenomenon of hybridity in architectural languages.

William Hajjar

Abraham William Hajjar (1917-2000), the focus of the proposed research, was born on February 11, 1917, in Lawrence, MA, the youngest of a large immigrant Lebanese family. He received his bachelor's degree in architecture from the Carnegie Institute of Technology (now Carnegie Mellon) in 1940 and his master's degree from MIT in 1941 (Hadighi et al., 2016). Hajjar joined the Department of Architecture at the State College of Washington in 1942, and in 1946, he moved to State College, PA, to join the architecture faculty at the Pennsylvania State College (Penn State). When Hajjar moved to State College, PA, most single-family residences in the area were in the Georgian revival, Colonial revival, Tudor, and Cape Cod styles, although ranch and split-level houses were also starting to appear. With more than thirty single-family houses that he designed and built in the area, Hajjar, significantly influenced the architectural language of the houses built in the mid-twentieth century in the area, especially in neighborhoods adjacent to the Penn State campus. In doing so, he contributed to the stability and popularity of localized/Americanized modern architecture by reshaping mid-twentieth century modernism in the area and to some extent in the United States.

While Hajjar was at Carnegie, the school's philosophy of design was dominated by the Beaux-Arts, similar to most of the other programs in the country. MIT was probably where Hajjar was introduced to modernist architecture given that proponents of modernism, such as Lawrence Anderson, who worked directly with Hajjar as his supervisor, were teaching there at the time. Lawrence Anderson not only designed the first modernist buildings on an American campus (MIT Alumni Pool-1939), but also tried to bring a modern outlook to MIT's program in the late 1930s. He advocated for Alvaro Aalto's appointment as a Research Professor in Architecture at the school in 1940. More importantly, it is likely that Hajjar was influenced by modernist ideas propagated by the German émigrés: He was at MIT during the time Gropius and Breuer were at Harvard when students from the two schools attended lectures together and when Anderson often invited Gropius, Breuer, and other outside critics to MIT to review the students' work (Anderson, 1992).

Hajjar designed and built thirty-two single family houses in State College, PA, in two neighborhoods close to the Penn State campus. Many of these houses blend in the neighborhood with traditional houses based on their exterior building materials, volumes, and roof shapes. However, they have very unique and modern interior organizations. The broader scale study includes an analysis of the formal structure of the houses in relation to the exterior and socio-technical context in order to understand aspects that may affect Hajjar's interior spatial relationships.

Hajjar's first design in State College was his own family home in the College Heights district adjacent to the university. The house consisted of a simple shoebox and a garage connected to the main house via a breezeway (Figure 1). With cement blocks for the base and wood cladding for the top part together with a sloped roof, Hajjar's first design in the neighborhood seems to be similar to other houses in the area. However, there is no front porch and no entrance in the front façade. In fact, the front façade seems to be a side façade in comparison to the appearance of other houses in the area. Most of the Colonial revival houses in the area have a garage at the back of the building. Hajjar rotated the organization of the house in a way that made the garage part of the front façade with the main entrances hidden in the side and through the breezeway. While at Penn State, Hajjar designed and built more than thirty single-family houses in the area, many of which designed with the same strategy as his own family house.

Hajjar took advantage of the sloped sites of the College Heights

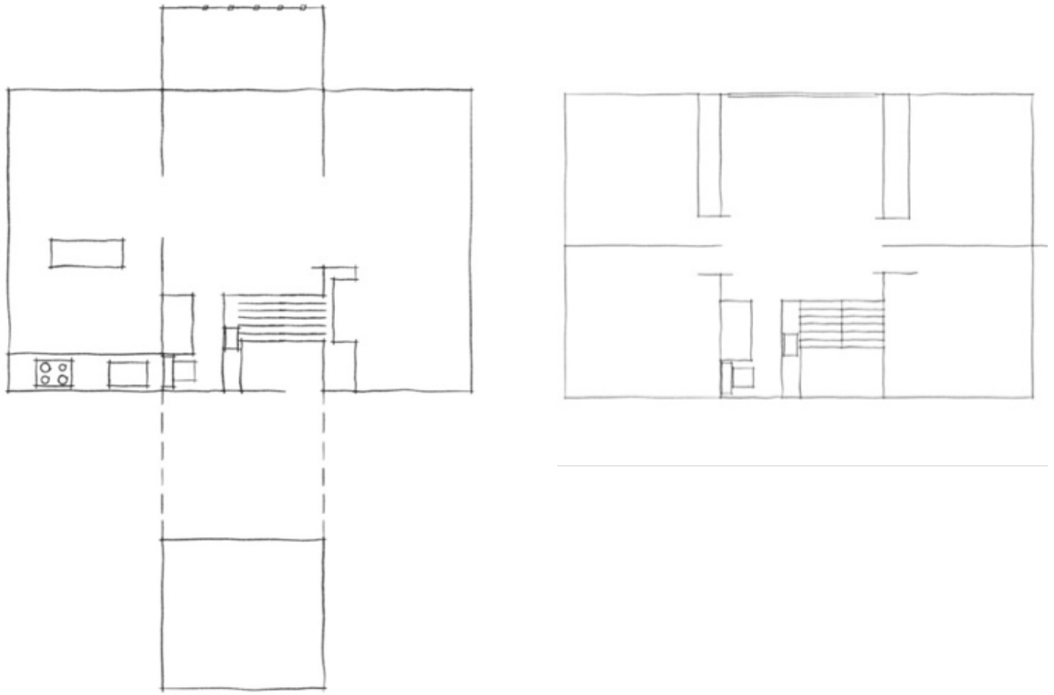


Fig. 5: Diagrams of Hajjar's classic house. Garage connected to the main house through the breezeway (left) and a second floor with four bedrooms (right).

neighborhood by situating the entryway of the homes in between the two main levels of the houses (Figure 2). A feature that can be read as an adaptation of the mid-century split-level effect. Although in section and façade there are similarities between Hajjar's architecture and mid-century split-level houses, in terms of the interior planning, design, organization of the fenestration, and the slope of the roof, there are differences. Hajjar's interior planning leans toward a modernist idea of open plan, especially in the public part of the house (living room-dining room-kitchen). Specifically, typical midcentury split-level houses still had a room organization with the living room facing the street, whereas Hajjar's designs were open with the kitchen facing the street and the living room at the back of the house with large openings between the various functional areas of the house.

In the plans, the entryways to Hajjar's houses are generally in the middle open space, which could include a hall and a family/sitting room or area. Hajjar was interested in the placement of windows: his houses often featured window walls opposite the entryway (on both levels). Hajjar's typical plan can be read as a modern plan with an open space in the center, rooms organized on both sides, and the service spaces, including the bathroom, staircase, and hallway in the middle. However, it can also be read as a very traditional plan used in the Georgian period and the Georgian Revival as a developed hall-parlor organization or as a developed foursquare design (Figures 3 and 4).

Through a consideration of the spatial relationships and main features of Hajjar's single-family houses in the area, five subtypes in his plans have been identified: (1) tri-part organization, where inhabitable space is connected to the garage with a breezeway and consists of a lower floor serving as the living space and an upper floor serving as the sleeping area (sometimes with a basement as well); (2) split-level organization, where the sleeping area is a half floor above the living area; (3) butterfly or cross-shape plan organization; (4) compact organization, where a square-shaped plan reflects Hajjar's idea of a core area in his architecture; and (5) horizontal/linear organization.

Hajjar's Grammar:

Grammar of Hajjar's single-family architecture in the State College area was developed based on the five subtypes of his houses. The generic vocabulary, relationship between vocabulary elements, and shape rules schemata that generate Hajjar's single-family house plans are extracted from the analysis of houses that were designed by Hajjar and built in the area, especially, spatial analysis of interior planning and relationships of exterior volumes.

To define a grammar that generates Hajjar houses, four phases or groups of rules are introduced:

(1) Rules related to the way in which Hajjar situated his houses in the lots;

(2) Rules that describe the formal relationships between mass volumes;

(3) Rules that describe the spatial relationships of the interior planning or the way in which room were organized. These rooms, especially in the common area of the house, can be imaginary, since they were part of a larger open space; and

(4) Rules that generate details such as placement of closets, wall

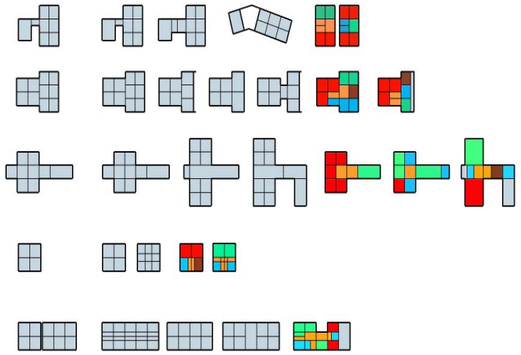


Fig. 6: Subtypes of Hajjar's single-family houses in State College.

thicknesses, etc.

Figures 7 shows derivation of a design in the corpus used to infer the grammar. In addition to all the houses designed by Hajar included the corpus, the grammar can generate Hajjar-inspired houses—solutions generated by the grammar that were not designed by Hajjar. For facilitating the generation of designs and eliminating human input while applying rules to generate Hajjar-inspired houses, a computer program has been developed. The code was written in the Python scripting language for Rhino. Like the grammar, the codes proceeds by dividing the main inhabitable space into rooms and then joining and dividing these rooms based on both Hajjar's ideas regarding spatial relationships and user needs.

Conclusion

As noted earlier, this paper is part of a larger study that aims to analyze Hajjar's hybrid architecture by developing a grammar of his work and comparing its shape rules with those of grammars for the work of modernist architects and traditional American architecture. The selection of modernist architects and traditional American architecture with which to compare Hajjar's work was based on a careful analysis of his personal and professional life, which suggested likely influences. Among them are the works of immigrants like Gropius-and Breuer, with whom Hajjar contacted while at MIT, and of Frank Lloyd Wright, who Hajjar's son pointed out during an interview as an important influence on his father's work. It is important to note that a shape grammar of Wright's Usonian houses has already been created (Knight, 1994) based on a transformation grammar of Wright's Prairie Style houses (Koning & Eizenberg, 1981). The grammar of Gropius and Breuer's architecture in the United States needs to be developed, though. In terms of traditional American architecture, it is necessary to identify house types or styles that might have influenced Hajjar's architecture and develop the corresponding shape grammars. Preliminary analysis suggested some possibilities in this regard but further work is needed to confirm them. In any case, a grammar for the Buffalo Bungalow houses was developed by Downing and Flemming (1981) and this will be considered in the analysis.

An important question in comparing shape grammars is how detailed the grammars need to be. This question can be answered by finding where hybridity exists, whether in the functional organization (layout), the building system, or in the decoration, following Habraken's definition of house type (1988). At this stage, Hajjar's grammar is used to describe the spatial relationships in his interior layout and the volumetric relationships in his overall design, mainly because preliminary analysis suggest that hybridity might exist particularly at this level. The next step is to determine the extent to which the rules of the respective grammars are similar or different. By comparing the rules of Hajjar's grammar to those of other grammars, we may be able to determine which rules might have been maintained, changed, deleted, or added. In this regard, it is important to note the grammars must be developed in a way that enables comparison, as shown by Benrós in her comparison of Palladian Villas, Wright's houses and Siza's homes (2018).

In the present paper, Hajjar's single-family houses were analyzed via a shape grammar that was developed manually. However, there is considerable potential future work in a related direction. The python code written based on the grammar can be developed as a basis for producing Hajjar-inspired houses for future construction. The grammar/computer program can also be used as a design guideline for future preservation, rehabilitation, or reuse projects.

The proposed study makes a contribution to the field of architecture not only by presenting shape grammars as a tool for verifying and describing hybridity between modern and traditional architecture, but also by describing the work of Hajjar, a local architect who contributed to the stability and popularity of modern architecture in the United States. Further, it is our hope that the study will show the potential of shape grammars as a complementary tool that architectural historians can use to verify formal and functional similarities between styles in a rigorous way.

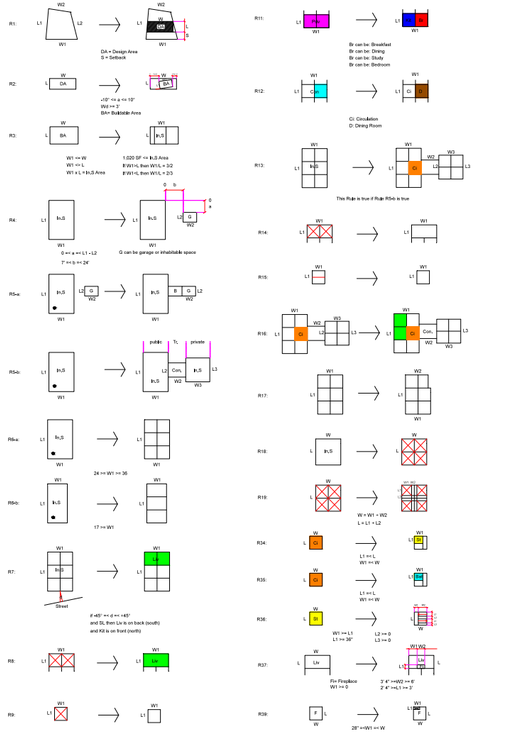


Fig. 7: Selected rules from Hajjar's grammar.

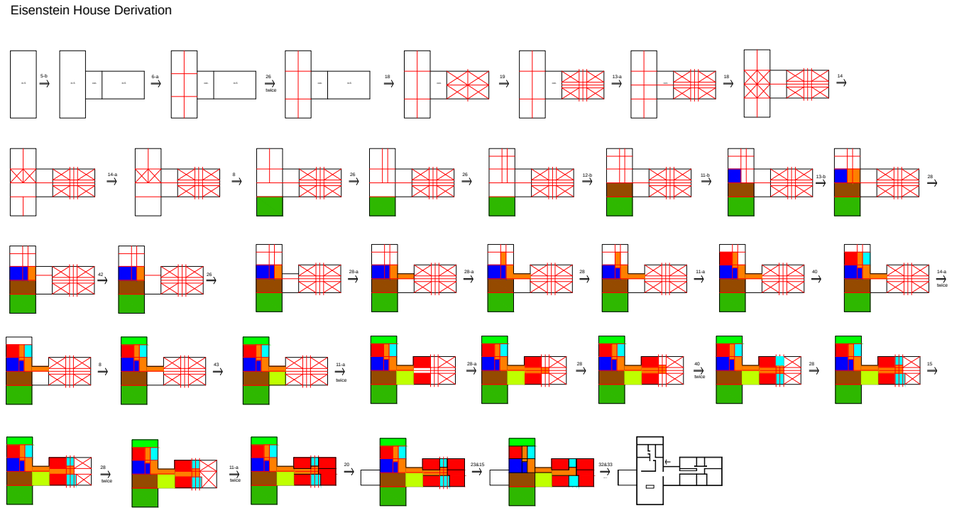


Fig. 8: Step by step derivation of Eisenstein House, designed by Hajjar in 1954.

Bibliography

Anderson, L. (1992), "Oral History Interview with Lawrence Anderson." Interview by R. Brown. Smithsonian Achieves of American Art.

Benros, D. (2018). "A Generic Housing Grammar for the Generation of Different Housing Languages: A Generic Housing Shape Grammar for Palladian Villas, Prairie and Malagueira Houses." PhD diss., London's Global University Bartlett School of Graduate Studies.

Chase, S. and Ahmad, S (2005). "Grammar Transformations: Using Composite Grammars to Understand Hybridity in Design With an Example from Medieval Islamic Courtyard Buildings." CAAD Futures 89-98.

Colakoglu, B. (2005). "Design by Grammar: An Interpretation and Generation of Vernacular Hayat Houses in Contemporary Context." Environment and Planning B: Planning and Design 32: 141-149.

Curtis, W. (1996). Modern Architecture Since 1900, third edition. London: Phaidon Press.

Devlin, K., Nasar, J. L. (1989). "The Beauty and the Beast: Some Preliminary Comparisons of 'High' Versus 'Popular' Residential Architecture and Public Versus Architect Judgments of Same." Journal of Environmental Psychology 9: 333-344.

Downing, F. and Flemming, U. (1981). "The Bungalows of Buffalo." Environment and Planning B 8: 269-293.

Duarte, J. (2001), "Customizing Mass Housing: A Discursive Grammars for Siza's Malagueira Houses." PhD diss., MIT.

Duarte, J. P. (2005) "Towards the Mass Customization of Housing: The Grammar of Siza's Houses at Malagueira." Environment and Planning B: Planning and Design 32: 347–380.

Eloy, S., Duarte, J. P. (2011). "Transformation Grammar For Housing Rehabilitation." Nexus Network Journal 13, no. 1: 49-71.

Flemming, U. (1987) "More Than the Sum of Parts: The Grammar of Queen Anne Houses," Environment and Planning B: Planning and Design 14: 323–350.

Frampton, K. (1983), "Towards a Critical Regionalism: Six Points for an Architecture of Resistance." In the Anti- Aesthetic - Essays on Postmodern Culture, edited by Hal Foster, 16-30. Seattle: Bay Press.

Habraken, J. (1988), "Types as a Social Agreement." Third Asian Congress of Architects, Seoul, Korea.

Hadighi, M., Poerschke, U., Pisciotta, H., Goad, L., Goldberg, D., and Ling, M. (2016), "The 'Air Wall': A Mid-Twentieth-Century Double-Skin Façade by William Hajjar." Proceedings of the Façade Tectonics 2016 World Congress, Los Angeles, CA: 473-482.

Hitchcock, H.-R. and Johnson, P. (1966). The International Style. New York: W.W. Norton & Company, Inc.

King, A. D. (2006/2007) "Internationalism, Imperialism, Postcolonialism, Globalisation: Framing Vernacular Architecture." Perspectives in Vernacular Architecture 13, no. 2: 64-75.

Knight, T. (1983), "Transformations of Languages of Designs: Part 3." Environment and Planning B: Planning and Design 10, 2: 155-177.

Knight, T. (1994), Transformations in Design: A Formal Approach to Stylistic Change and Innovation in the Visual Arts. Cambridge, UK: Cambridge University Press.

Koning, H. and Elizenberg, J. (1981) "The Language of the Prairie: Frank Lloyd Wright's Prairie Houses," Environment and Planning B 8: 295–323.

Kruger, M., Duarte, J. P., and Coutinho, F. (2011). "Decoding De Re Aedificatoria: Using Grammars to Trace Alberti's Influence on Portuguese Classical Architecture." Nexus Network Journal 13, no. 1: 171-182.

Lara, F. L. (2008). The Rise of Popular Modernist Architecture in Brazil. Gainesville, FL: University Press of Florida.

McAlester, V. and L. (1984) A Field Guide to American Houses. New York: Alfred A. Knopf.

Roth, L. M. A (1979). Concise History of American Architecture. New York: Harper & Row.

Stiny G., & Gips J. (1971) "Shape Grammars and the Generative Specification of Painting and Sculpture". C. V. Freiman (ed.) Information Processing 71. Amsterdam: North Holland: 1460-1465. Republished in Petrocelli O. R. (ed.) The Best Computer Papers of 1971. Philadelphia Auerbach, 1972: 125-135.

Stiny, G. and Mitchell, W. J. (1978). "The Palladian Grammar," Environment and Planning B 5: 5–18.

Umbach, M, and Huppauf, B. (Eds.) (2005). Vernacular Modernism: Heimat, Globalization, and the Built Environment. Stanford, CA: Stanford University Press, 2005.

Session 4.0
INTERDISCIPLINARITY on Reuse of Modernist Buildings

Vincenzo Riso

School of Architecture University of Minho, Guimarães, Portugal Associate Professor

Born 1964 in Lucca (I) is an Associate Professor at the School of Architecture of the University of Minho (P) since 2011. Here he has held along last ten years the 'Urban Design' studio and the 'Heritage and Refurbishment' studio courses. He also directed the school as President during the mandate 2012-2015.
He trained as an architect at the Faculty of Architecture of the University of Florence (I), where in 2006 also obtained his Ph.D. in architecture with the thesis "Technology and place in the experience of modern architecture The relationship between tectonic and topographical values in some of the twentieth century built-forms as an interpretative hypothesis towards their cultural and material recover".
He has worked as an architect and as architectural researcher upon different scales and problems such as those related to the cultural and material recovery of the architecture of Modern Movement on one side and to the theory and practice of urban design on the other.
Member of research project group "Exchanging worlds visions: modern architecture in Lusophone Africa (1943-74) looking through Brazilian experience established since the 1930s".
He has tutored many Master degree theses and supervised several Ph.D. as well as published a number of essays in books and in international architectural reviews.
In 2008 he has been awarded honourable mention in the Bruno Zevi prize for a critical essay about Modern Architecture.

Fig. 1: Fernando Távora, Municipal Market of Vila da Feira (1953-59) seen from the street.

Reclaiming the use of Fernando Távora's Municipal Market of Santa Maria da Feira. A Design Studio Experience about Modern Heritage Conservation

Abstract

When dealing with underutilized and/or poor performing buildings, particularly with modern heritage's ones, the problem concerns the reorganization and improvement of things that already exist. By the illustration of a Design Studio experience, the present paper is aimed to discuss how the conservation of twentieth century modern buildings involves significant technical skillsets, it requires capability and practical knowledge of design strategies supported by appropriate critical tools, that are spanning from territorial questions up to constructional details' ones.

Modern Heritage // Conservation // Design Studio // Fernando Távora's Municipal Market of Santa Maria da Feira

Introduction

Within the logic of exchange of experiences concerning the Reuse of Modernist Buildings this paper proposes an example of work I have actually supervised at the School of Architecture of University of Minho, in Portugal. And having this example in mind, the aim is to outline some specific questions, which are recurrent when we are dealing with modern heritage. Hence, the example lies on a Design Studio course unit, taught in the first semester of the 5th year of the integrated master degree in Architecture. It should be made clear that, although our school offers a general master degree in architecture (that is not specialized), students in the 4th and 5th year can choose to attend different kinds of Design Studios varying in scale and type of intervention. In the first semester of the 5th year, the refurbishment of an ancient, yet not listed, building was usually offered as an exercise theme.

In September 2015 I changed this program and proposed to work on the refurbishment of a listed modern building, i.e. I challenged the 5th year students to design the functional and technological adaptation of the Municipal Market of Santa Maria da Feira, built by Fernando Távora in 1959. Fernando Távora is amongst the internationally recognized Masters of the Modern in Portugal and the Municipal Market of Vila da Feira is a work of social commitment and tectonic strength which, not incidentally, he also presented at CIAM 1959, in Otterlo.

Main text

In very few words, the Municipal Market of Santa Maria da Feira is a building which fully displays Fernando Távora´s recognized mastery in integrating local and traditional values within modern materials vocabulary. The lightness and diversity displayed in the spaces with different functions and volumes around a central open courtyard, the nerve of the structure taken to the limit, the elegance of all the proportions and scales, and the relationship between the platforms, the spaces, and the street, and its openness over the existing landscape, result in a meaningful and representative masterpiece. But all of this now lays almost abandoned. Because of changes in commerce organization, and today's legal-hygienic requirements, it could not survive economic competition. With the loss of the Market's practical function, even its remarkable value as a social meeting point has suffered hugely.

Therefore, our case study includes all the requirements necessary to define an explanatory approach towards the elaboration of a heritage and design proposal, both as regards the relevance of the building within 20th century Portuguese architecture and as regards the complexity of bringing it back into full use.

Its plan consists of a 50 meters block, and upon the correspondent modular 1 by 1 meters grid it is composed by four separate pavilions, that are designated to selling different types of goods which, in the whole, organize an inner open square.

A wonderful and subtle relationship between both the inside and the outside is established since pavilions and open spaces are partially visible and partially hidden, due to their organization according to different ground levels.

In a first phase students were given the full archive documentation of the original design dossier and were asked to study and survey the buildings so as to produce a detailed survey observation and drawings of alterations and deterioration problems. In this first phase

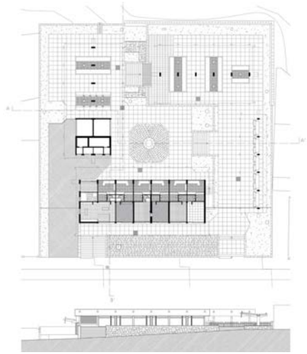


Fig. 2: 2015 Survey of the Municipal Market of Santa Maria da Feira; overall first floor plan and east elevation.

Fig. 3: Fernando Távora, Municipal Market of Vila da Feira (1953-59); view from the inside close to the western-side pavilion.

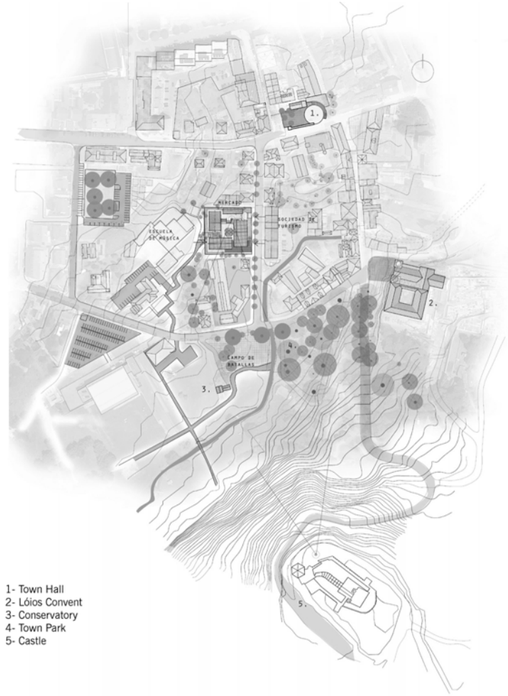


Fig. 4: The Municipal Market of Santa Maria da Feira, its territorial context and a possible strategy towards its revitalization.

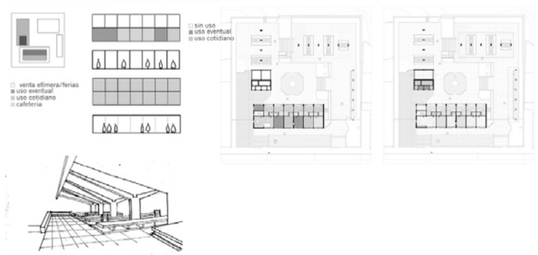


Fig. 5: New selling strategy proposal for the Market and consequent rearrangement of its rooms.

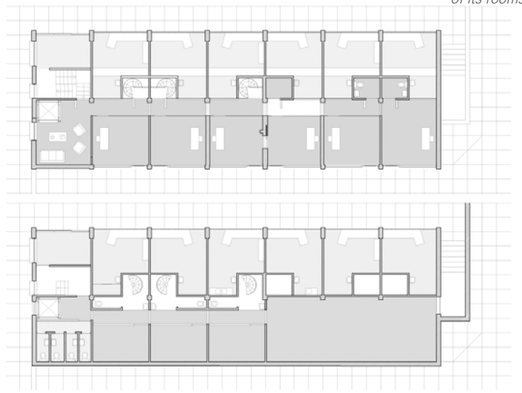


Fig. 6: New layout proposal concerning the main pavilion of the Market; ground and first floor plans.

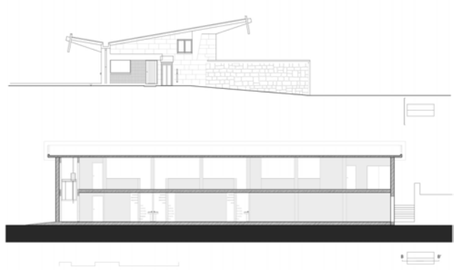


Fig. 7: Plan and longitudinal section of main pavilion of the Market with proposed lift insertion at the top.

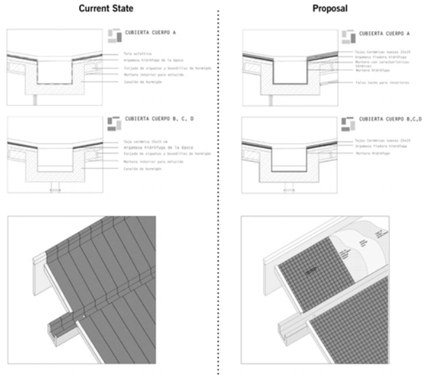


Fig. 8: Market's pavilions roofs details current state and repair proposal.

the whole group of 20 students was divided according to different tasks so as to produce a global result.
Then in a second phase students were asked to imagine and set out a strategy, which could lead to a new possible life for the market; in this phase students worked in smaller groups so as to propose alternative strategies. In general, this new life has been pursued through the recovery of the interplay between the structure and its social context. Particularly, the selected group has gone even further and tried to organize a production association, whose goal was to make the market work as the 'termination point' of the activities of a group of farmers distributed all over the municipal territory.
In a third phase the work became individual. It consisted namely of the translation into the building's spatial organization of the previously outlined functional reorganization strategy.
That is to say that the existing interior layout has been recognized not to be adequate to support the idea that a cooperative of farmers could run and manage the market. This has been solved by cutting the bottom of the transversal separation walls, so that an inside corridor could be put in place, then establishing the possibility for this pavilion to be used by the whole community, avoiding any heavy alterations.
In fact, the new spatial organization would allow the main pavilion to function as a collective building in addition (and not in substitution) to the sequence of separate existing shops.
Another significant functional/technical upgrade has been achieved by the carefully calculated insertion of the elevator in this top side position so as to add also interior vertical communication. It was necessary to cut a new opening on this top side, but the same attention was given to the construction details. This new opening was thought also by studying the masonry layout, so that an existing block could become the lintel of the new opening.
Finally, in a forth phase each student had to deal with the repair or improvement of a construction question or detail, which was to be chosen in the logical continuity of the whole work. This was also an individual development, but it was coordinated within the group so as to reach a good coverage of all the technical questions inherent to the building's refurbishment.
This could, for instance, be explained by this other student's work in which the restoration of the roof of the main pavilion has been developed. What we find today is not the original surface of the roof; as a matter of fact, and probably due to inside rainwater leakage, an asphaltic canvas was placed upon the original terracotta tiles.
As observable in the related drawing, the repair hypothesis has been based on the study of both the original and the existing condition. Then the proposed one was based on the investigation about a specific material product and also considering that the original architectural quality of a listed building should also be preserved, even though we know the chosen solution may not be the best possible one, in terms of thermal insulation. The same concept has been applied to the repair of the expansion joints of the roof.
Another relevant and recurrent question is that of the glasses, specifically the improvement of the thermal insulation of windows and casings. With a similar approach to the search for a solution and materials to achieve improvements, the proposal is that of a mediatory solution to be evaluated by the exact comparison between old and new.
We have tried to observe and achieve a significant amount of detailing questions regarding for instance also the lighting reported in this restricted presentation of the work. Here we have a careful thematic

analysis, the proposal for restoration of the original fittings and lamps, with the application of supplementary lighting which is part of a whole specific (for that student) design strategy and exercise.
As an overall remark, we should make clear that our work has been a kind of exploratory research aimed to recognize problems, to outline operational measures and organize a design agenda as a final result. That is to say, even though our exercise has been a reality one, none of the global or detailed proposed solutions were intended to be absolute, rather a partial piece of a set of interlocked hypothesis.

Conclusion

So as to sum up, attention should be drawn to the following considerations. The elaboration of a new functional strategy turned out to be an essential part of 'invention' work, which students were asked to develop when dealing with such kind of heritage and design situations. The more the idea for a new function is precise, the more the design results inspired and possibly successful; that is to say that the invention of a new functional strategy is as important as the way one implements it; in short, a sort of imagination ability to shape a strategy into an existing architectural realm. And this implies that, as well as professionals, students are confronted with the need to extend their design operative concepts and tools, which cannot be limited to composition and construction tools. On the other hand, we don't have to abdicate from those let's say traditional tools; those tools continue to be essential for the accurate interpretation and intervention on the building.
Thus, on the one hand, detailed knowledge of the context is a vital necessity for rooting functional improvements into the built object; on the other hand, it is the building itself that, depending on its intrinsic material characteristics - to be grasped during preliminary studies - should define the limits of intervention.
As counterpoint it may be observed that the resulting design's hypothesis intervention consist of 'very little things'; which is an evident fact, nevertheless it can be a valuable fact when considered in a pedagogic perspective, i. e. in the sense that those small interventions must be considered as the arrival point of a process, which usually starts with the proposal of large alterations. That is usually the initial instinctive solution proposed by the students, whereas during work progression they may became aware of the cultural and material values of the given building; at that point they begin to get the real meaning and consequences of what they propose. Students are always allowed to imagine any kind of alterations, but they must be always able to evaluate advantages and disadvantages of any given proposal. In successful cases, they gradually come to understand, by themselves, that the value of the intervention does not lay in its spanning and/or impact, and to recognize this fact as a valid option for the conducting of a conservation design. And, if we were to use a slogan of some sort it could be something like 'the aesthetics of the existing corresponds to the ethics of things'.

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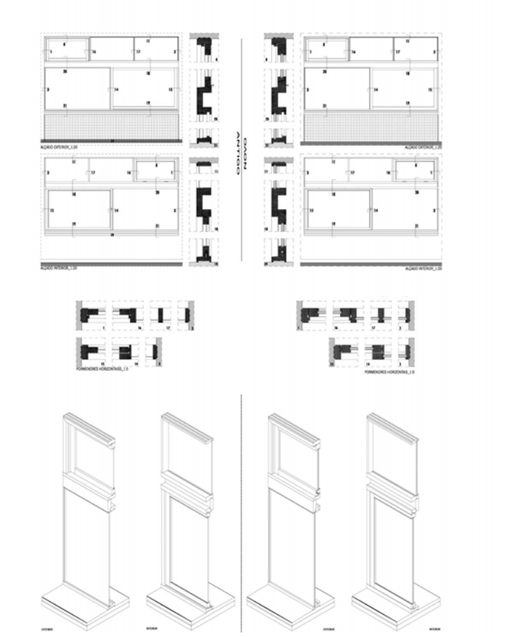

Fig. 9: Hypothesis of replacement of single with double glazing in one of the office openings of the main pavilion of the Market based on the comparison between existing (left side) and proposed (right side) solutions regarding the increased thickness of some framework elements.

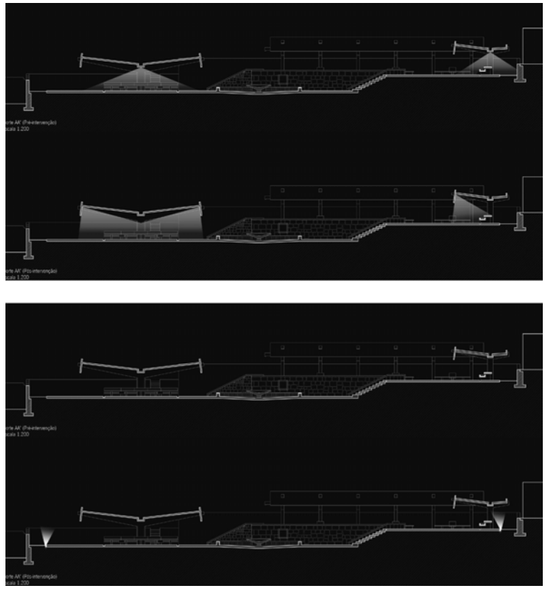

Fig. 10: Market's original lighting layout (as of 1955 plan) restoration scheme -above- and -below- new proposed perimeter lighting.

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Fabrizio Civalleri born on 7th of January 1993 in Torino (Italy), from 2012 to 2017 he studied Architecture at the University of Ferrara, he spent his Erasmus period at the ENSAP of Bordeaux studying Landscape Architecture, he attended a stage at the public architecture Soprintendenza office in Ferrara. In 2017 he graduated in Architecture with a restoration thesis valued 110/110 and Lode mark. He took part in two urban renewal workshop and he collaborated in the book “Interno Verde” on the history of gardens in Ferrara. He is fluent in French and English, quite good in Spanish and Deutsch. He is now a freelance architect and attends a Master in earthquake building improvement.

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Fig. 1

Reuse a welfare modern building: restoration shades

Abstract

Issued from a master thesis, this text underlines the importance of research in a restoration project. As the results of the preliminary analyses, it was clear that the choice of the interventions should pass through the research done in the most complete way re-calling the multidisciplinary role of the architect that own and manage different skills. The study-case is a little modern welfare building of the 30's for which strict conservation has been considered.

ONMI // Trieste // Italy // fascism // Nordio // modern // architecture // welfare // reuse // restauration

Introduction

Modern restauration theories debate mainly about the different kinds of interventions to use in a building, skipping the preliminary analyses that should be done before any project act. Nowadays, the improvement of technologies and the increasing quantity of architecture researches make possible to have a deeper knowledge of a building. This text resumes the complex path that connected project and research during the redaction of the master thesis "l'ONMI di Umberto Nordio a Trieste, progetto di restauro per una architettura moderna per l'infanzia". The approach to the building has been cautious and progressive, with a great importance given to the time spent inside the opera, in direct contact with the architecture and its daily users.

Research moved in different branches: many of which were not first defined but were opened later, following the needing of the project. For these reasons it has been studied the urban development of Trieste, the author's biography and the evolution of the building even before its construction. Furthermore, it has been inquired about the association that owned the nursery, starting from its history and arriving to the other architectures ruled. The status of fact of rooms and materials has been studied through detailed measures and chemical and petrographic analyses. It has been possible also to discover the history of some experimental materials in order to understand better the degradation phenomena and the needed restauration techniques. Before starting designing, pedagogical theories and vocation of use for each room were attentively considered in order to solve the main problems seen in the building. The project has involved also structures, finishings, furnitures and green spaces with a particular care for energy saving problems. Even if after all it has been stated to keep the same nursery there, a new outdoor volume has been designed for giving better services to users and for fire safety improvement.

Main text

Before designing the building indoor it has been inquired the urban context in order to have better consciousness of the neighborhood of San Giacomo, which is a highly populated area close to the port with an historical worker tradition. Trieste, as many of Italian cities, was interested during the 30's by the modern appetite of the regime that defined plans for urban transformation in historical centers: main traces of this politics can be found in big road axes like Corso Italia or in new monumental squares like Piazza Oberdan. Even if the nursery was built in 1935, it is in a quite peripheral area, out from fascist main urban interventions. Today the place where it is situated marks an ideal end to the city center and it is inhabited by a peculiar social mix. Umberto Nordio was the main public architect of the pre-war period in Trieste, this project had to be realized in a short period and in difficult conditions, this explains why he had been chosen to design this welfare institution, built to celebrate the birth of Princess Maria Cristina di Savoia Aosta. Even if Trieste was under Austrian domination before 1918, Nordio studied in Milan and it is mainly for his work that modern style arrived in Trieste, his ONMI nursery is part of the most intense period of Nordio's activity; his good skills and personal rectitude allowed him to continue his work also after the fall of the regime.

Archive folders about this building have given a witness of the difficult designing period that leaded to a sober but modern opera, with high functional standards. Typical themes of the architecture from those years were the tower, using of experimental materials and

Fig. 2: Building Tower.

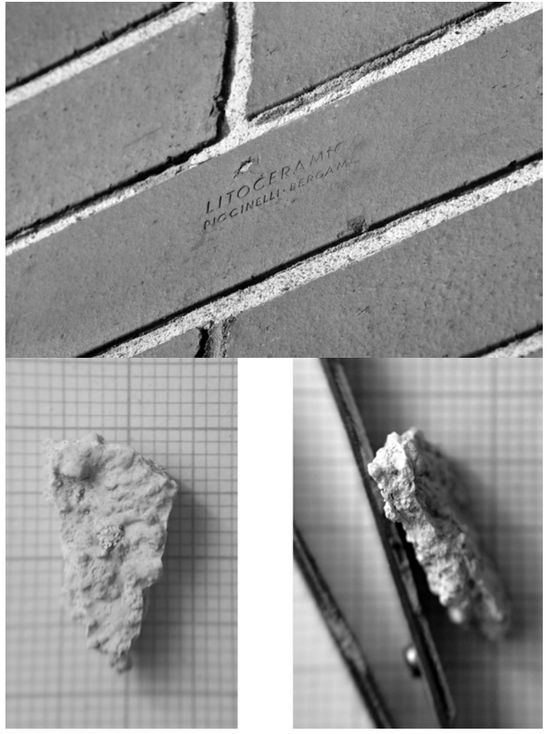

Fig. 3

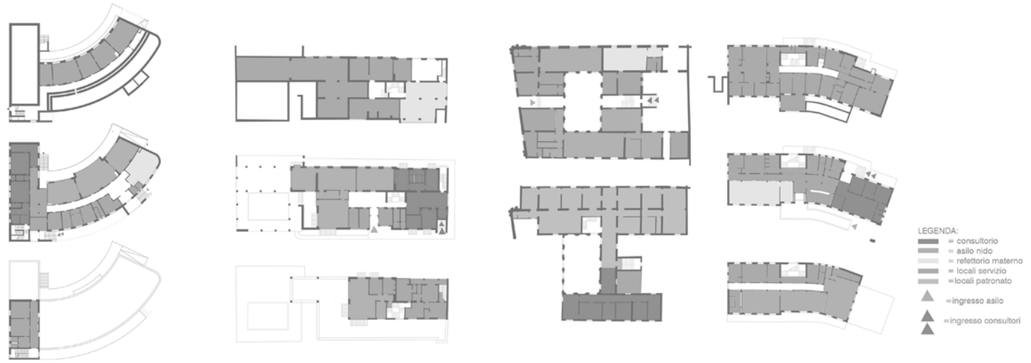

Fig. 4

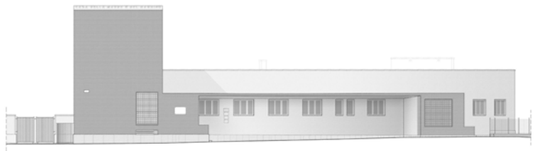

Fig. 5

Fig. 6

the exhibition of reinforced concrete structures. Modernity and quality of this little masterpiece allowed it to be published on the front page of "Casabella" with a laudation article signed by Giuseppe Pagano.
The construction period was marked by many unexpected facts that still today have influence in conservation. During the building process roofing, frames, finishings and even the kind of foundations had to be changed; the opera was realized in a hurry, and this fact had strong consequences after completion and caused many complaining. Studying the ancient interventions made for solving those problems permits today to better understand the status of fact, guiding the research over specific details. After 1945 many alterations took place, in 2007 a fire forced to do a new cycle of renovations that unfortunately destroyed some of the most characteristic elements of the architecture even if this building was protected by the soprintendenza heritage office since 2005.
This building was originally ruled by ONMI (Opera Nazionale Maternità ed Infanzia, National Organization for Maternity and Childhood), this office was created in 1925 and combined services of welfare and education for poor families. Each medium sized city had a ONMI venue. A big number of buildings were realized during the fascism's period, some of them were signed by the most important authors of those years, like Giò Ponti.
A specific research has been held in pre-war magazines in order to inquiry on this building type, that had never been studied until today. Only after 1939 an internal ONMI regulation about architecture was established, it stated as main functions nursery, refectory, milk dispensary and medical consuelings. Trieste's building regrouped all these services and so could be considered a perfect prototype of the ONMI seat, even if it had been designed before the issue of the official guideline. A wider research allowed to trace back many still existing ex-ONMI buildings that are nowadays ruled as nurseries, (for evident continuity of function and use).
The difficult interaction with context was attentively valued by Nordio, who adopted in an innovative way schemes of environmental design, building an opera with an aerodynamic shape in order to pander the flowing of Bora wind. This wind has a constant direction in winter and blows regularly at 120km/h, for this reason a tall block has been designed for protecting the courtyard and the wide nursery's windows from the gusts of wind. Even internal distribution was originally stated in order to maintain on downwind and north sides rooms only adult people and with non-constant presence.
Even if some modifications took place in the past, the restoration project aims to push on the qualities of lights and spaces. The continuous and multiple relationships between indoor and outdoor is one of the strengths of the project: four terraces and a wide garden let the children play outside even in winter because of the perfect south insulation, while during summer trees crowns protect from excessive heating.
Modernity in this building is made evident not only by shapes but also through the use of modern materials, like reinforced concrete, klinker, glass block, aluminum and linoleum. All of them comes from Italian autarkic production, because of the fascism's politics of self-sustainment. Nordio used to combine traditional and modern materials like Istrian stone and klinker; the original external green plaster has been classified by ancient documents which described it like an experimental one called "Arsonia", unfortunately it gave poor results and was soon removed. Still existing small traces have been found by a targeted research and they have been chemically analyzed; petrogra-

phic analyses have been done for all kinds of stones that are in the building.
Degradation phenomena have been attentively studied and classified by UNI and NORMAL standards, generally simple but efficient interventions have been proposed in order to reduce money spending. Even if born in an academic world this study aims to be doable by the municipality that owns the building, so a particular attention has been put on costs. All the incongruous additions found on the opera are designed to be removed as long as they have neither historical nor aesthetic value, restoration of lacks is designed in order to make a new comprehensible intervention congruent with the original look of the opera.
Nowadays the upper floors are occupied by the nursery, the lower floor is totally dedicated to services; this is the unique nursery in Trieste that owns a class for Slovenian-talking children and for this reason has been necessary a short study about Slavic presence in the city.
San Giacomo neighborhood is historically characterized by a relevant number of Slovenian inhabitants and so, during the fascism's era, has been created a big Italian education quarter in order to state the italianity of the area. Even if today the Slovenian talking minority has protection rights, teachers of this school asked for a project that helps children in learning their language without influence of the other Italian-speaking classes.
Paths analysis put in evidence problems due to architectural errors like the closing of one entrance, the creation of a stroller deposit down the main stairs and mainly the transformation in classrooms of rooms that were originally not thought to have this function. Designed intervention try to concentrate in the areas that have already been modified in the past, returning, where possible to its original and more functional plan.
For new finishings, furnitures and colors the project makes reference to modern pedagogic and perception theories, the target is to make this nursery survive inside an historic building but with contemporaneous standards and qualities.
As an example the accessibility for handicapped people will be possible by a new gate that leads to the original external ramp, this avoided the loud impact of introducing a new elevator in the opera and make possible to consider the ramp as an easy emergency exit without stairs for little children.
Together with architectonic design, a new plan for the garden has been proposed in order to make it more joined to the educational function of the nursery, a small didactic vegetable garden has been previewed as the possibility of opening to the community during the summer closing period.
Description of concrete structures has been deduced from historical documents and then critically compared with measurements, attentive analyses of the calculations of project allowed to understand the degree of safety of the building. No situation of risk have been retraced and so the repair interventions are concentrated on the most frail areas or in man-damaged ones, also in this case the minimum impact has been chosen for a better preservation of original parts.
Special attention has been dedicated to frames, not only because they are strongly characterizing the opera but also because they could cause an important loss of energy; historical research made possible to classify the various types of frames that exist in the building and decide in what sense operate: restoration or substitution. Two new smaller gates have been designed in substitution of the wrong main

Fig. 7: Photoplan and degradation, principal façade.

gate in front of the façade, a new deposit for strollers will be created on the back and the thermal power plant will be transferred in a new small block located in the garden. This block has been designed in accordance to the look of Nordio's opera but has been separated from it for having no interference. In order to join fire safety and protection of the ancient building, it is has been drawn a detailed proposition of ad adjustment. Going deep in law prescription has allowed to ask some derogations compensated by higher safety levels on other sides, this in order to avoid too damaging works in the opera.

Conclusion

From this summary it appears clearly that the restauration project cannot be apart from multidisciplinariety that gives to the architect a prominent management role. Research must be developed in function of the characteristics of each single building and just with the widest approach the intervention will be the wisest or, at least, the most complete. Deep knowledge of the opera leads also to reduce the restauration acts to minimum, which is good not only for conservation but makes the project cheaper, and so more competitive, than a re-structuration. Starting the project without pre-concepts helped to find the better solutions, the maintaining of a nursery was not decided before analyses but could be considered the final conclusion of the process. We would state that the best re-use is continuity of use; face to the conservation needing is sometimes necessary for the architect to "don't do" and his "not done" have the same value of his operas. Working on protected buildings could leave short spaces to the designer but it's from the quality of these small interventions that can be measured the professionality and creativity of the author.

Bibliography

AA.VV. (1936). La casa della Madre e del Bambino di Trieste inaugurata dalle LL.AA.RR. Duca D'Aosta. Maternità e Infanzia, XIV, 21-22.
Boico, R. Pica, A. Guacci, A. (1972). Catalogo della mostra: "Umberto Nordio". Trieste, Italy.
Brandi, C. (1979). Teoria del restauro. Torino, Italy: Einaudi.
Capomolla, R. Mulazzani, M. Vittorini, R. (2008). Case del balilla : architettura e fascismo. Milano, Italy: Electa.
Caputo, F. Masau Dan, M. (a cura di) (2004). La città delle forme: architettura e arti applicate a Trieste, 1945-1957. Trieste, Italy: Comune.
Caulo, D. Piccoli, S. (thesis) (2015). La Casa del combattente di Umberto Nordio a Trieste progetto di restauro di un'architettura del ventennio. Ferrara, Italy.
Ciucci, G. (2000). Gli architetti e il fascismo. Torino, Italy: Einaudi.
Contessi, G. (1981). Umberto Nordio : architettura a Trieste

Fig. 8

1926-1943. Milano, Italy: F. Angeli.
Dalla Negra, R. Nuzzo, M. (2008). L' architetto restaura : guida al laboratorio di restauro architettonico. Caserta, Italy: Spring.
Danesi, S. Patetta, L. (1976). Il razionalismo e l'architettura in Italia durante il Fascismo. Venezia, Italy: La Biennale di Venezia.
Di Biase, C. (a cura di) (2009). Il degrado del calcestruzzo nell'architettura del Novecento, Santarcangelo di Romagna, Italy: Maggioli.
Fabbri, R. (2008). Oltre il colore : manutenzione delle cortine edilizie nel centro storico di Ferrara : linee guida. Ferrara, Italy: Edisai.
Gigante, R. (a cura di) (2005). Manuale di prevenzione incendi. Santarcangelo di Romagna, Italy: Maggioli.
Jean, G. (a cura di) (2013). La conservazione delle policromie nell'architettura del XX secolo. Firenze, Italy: Nardini.
Mahnke, F. M Meerwein, G. Rodeck, B. (2007) Color: communication in architectural space. Basil, Switzerland: Birkauser.
Montenero, G. (1972). Umberto Nordio architetto. Il piccolo.
Mulazzani, M. Polani, S. (1996). Guida all'architettura italiana del Novecento. Milano, Italy: Electa.
Musso, S. F. (a cura di) (2013). Tecniche di restauro. Torino, Italy: UTET scienze tecniche.
Nordio, U. (1955). L'edilizia triestina vista da un architetto. Bollettino del cenacolo triestino.
Pagano, G. (a cura di) (1934). Repertorio 1934 dei materiali per l'edilizia e l'arredamento. Milano, Italy: Editoriale Domus.
Pagano, G. (1935). Casa della Madre e del Bambino di Trieste. Casabella, 95, 9-11.
Pagano, G. De Seta, C. (a cura di) (1976). Architettura e città durante il fascismo. Roma-Bari, Italy: Laterza.

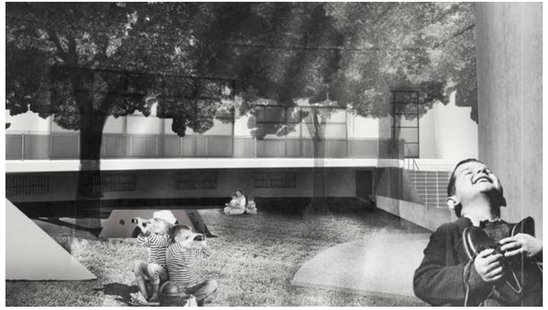

Fig. 9: View of the garden.

Pepe, D. Rossetti, M. (2014). La riqualificazione energetico-ambientale degli edifici scolastici, Santarcangelo di Romagna, Italy: Maggioli.
Piva, A. Cao, E. (2010). La scuola primaria, il pensiero provvisorio. Roma, Italy: Gangemi.
Semerani, L. (1969). Gli elementi della città e lo sviluppo di Trieste nei secoli XVIII e XIX. Bari, Italy: Dedalo Libri.

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Fig. 4: Studying drawings from the thesis
Fig. 5: Photoplan, CAD drawing with degradation, from the thesis
Fig. 6: Project plan, from the thesis
Fig. 7: Project plan, from the thesis
Fig. 8: Rendering, from the thesis
Fig. 9: Rendering, from the thesis

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Fig. 1: Didactic material used for the challenge presentation and settings of the activity.St. Alène church, approximately 1955.

Architect for three hours

Abstract

According to the UNICEF U-KID Urban Index, the experience of childhood is increasingly urban. Over half the world's population – including more than a billion children – now live in cities and towns. This shift is causing us to rethink our cities, but this should not be done without considering the views and aspirations of children and youths. The way we act and relate with the built environment, our ability to interact efficiently and with responsibility, while also demanding quality implies an ability for critical analysis. Teaching through design can promote the development of such skills.

Collaborative and problem-based learning allow to introduce complex thematic, such as urban life quality, through practical experiences, while still allowing framing theoretical concepts.

Urban literacy has been recognized as a key strategy to achieve effective improvement in cities liveability.

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In the present paper results on the two last editions are presented; In 2016 a shelter unit for a member of the faculty had to be idealized and represented in plan at 1:5 scale. In 2017 the shelter had to be developed taking into account a specific urban/site context. The project allows collecting extensive and relevant data on collaborative and problem-solving practices through design, as well as to better understand the aspirations, habits, values and knowledge of the youngsters regarding the use of space and urban issues.

Urban literacy // design // thinking // project-based learning

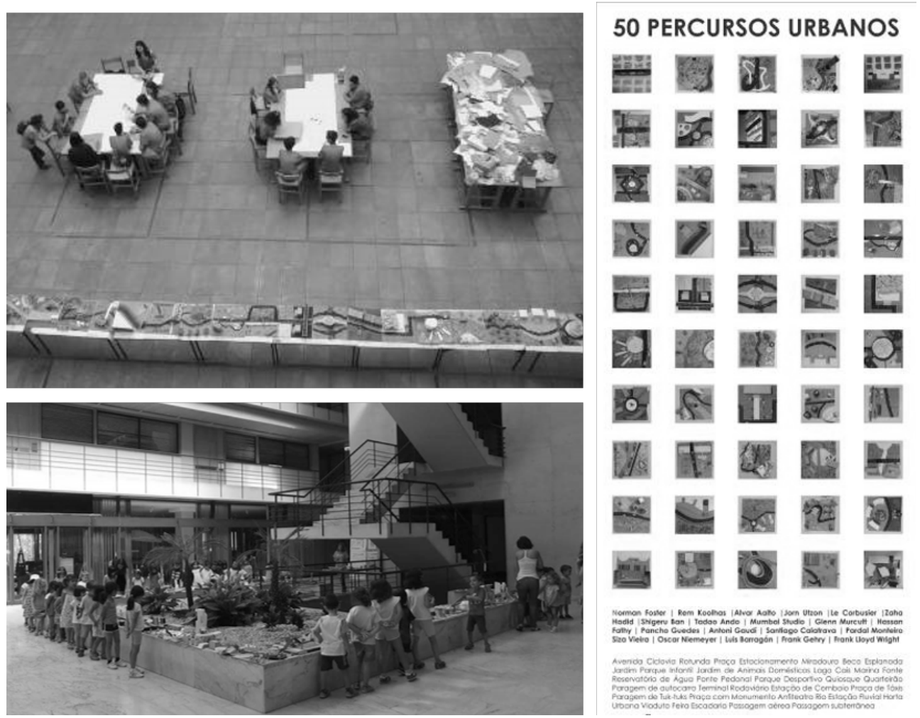

Fig. 2: The activity in development (top left), kindergarten children visiting the exhibition (bottom left) and poster of the exhibition (right)

Introduction

According to the UNICEF U-KID Urban Index, the experience of childhood is increasingly urban. Over half the world's population – including more than a billion children – now live in cities and towns. This shift is causing us to rethink our cities, but this should not be done without considering the views and aspirations of children and youths.

The way we act and relate with the built environment, our ability to interact efficiently and with responsibility, while also demanding quality implies an ability for critical analysis. Teaching through design can promote the development of such skills.

Collaborative and problem-based learning allow to introduce complex thematic, such as urban life quality, through practical experiences, while still allowing framing theoretical concepts.
Urban literacy has been recognized as a key strategy to achieve effective improvement in cities liveability.

Problem-based learning and teaching through design are long term common and disseminated practices in Architecture Schools all over the world. Using similar tools and strategies to raise awareness on urban and architecture liveability qualities at a larger scale targeting the communities to increase urban literacy is currently under discussion (Anne P. Taylor, George Vlastos, 1991).

Design is a concept that prevails in every part of our live, from the clothes we wear to the houses we inhabit (Acer, Ciftci, & Akbulut, 2012). Understanding the concepts of design and its tools is therefore an important skill to operate in a more proficient manner within our urban contexts.

This paper describes and evaluates the results of the project-based learning activity “Architect for three hours” developed and promoted by the Architecture department of Instituto Superior Técnico, Lisbon University, under the program Summer in the University. The program, hosted by the University of Lisbon, targets teenagers from 13 to 17 years old, providing them direct contact to multiple faculties settings, students and staff. The program is running since 2014.

The project allows collecting extensive and relevant data on creative thinking about the city (Tonucci, 2015), as well as to better understand the aspirations, habits, values and knowledge of the youngsters regarding the use of space and urban issues.

Architect for three hours - Context and Conceptual Framing

“Architect for three hours” is a yearly program, running from 2014, at Técnico University, as part of a wider program “summer at Lisbon university”. The program proposes urban and architecture challenges to secondary school students, to be tackled within the university facilities, with the tutoring of bachelor and master architecture students.

The exercise encloses multiple goals; (i) raise awareness on urban life quality issues and improve the students’ critical analysis abilities, (ii) providing secondary school students with a better understanding of the academic life and the university community; (iii) promoting colla-

borative intergenerational practices and (iv) allowing the university students to develop leadership skills.

The activity was structured taking into account the main principles presented by Brooks Harris and Stock-Ward (Jeff E. Brooks-Harris, 1999) regarding their workshops definition: a short-term learning experience that encourages activity, experiential learning, emphasising; problem-solving, skill-building, increasing knowledge and personal awareness/self-improvement.

The model was adapted considering the goals of the activity "Summer in the University", the ages of the participants and the possibility to set up a living lab experience regarding the themes of urban literacy, design thinking and project-based learning concepts.

Structure of the activity

Yearly the University of Lisbon organizes a "Summer in the University" activity, aimed at young people in primary and secondary education (7th to 12th year), to provide future university students with direct contact with professional vocations and university academic life. The event lasts one week, in which the students gain contact with different knowledge areas, including architecture. During that week they are challenged to participate in several activities, interacting dynamically in laboratories, research centres, classrooms and other university facilities.
In the context of this program, the Department of Architecture of Instituto Superior Técnico proposes the activity "Architect for three hours", introducing dynamics about the role of the architect in society and in the development of cities.

The activity, taking place in one of the main atriums of the Department, counts with a yearly participation of about 300 young people, organized in teams of 5-6 elements, in 20 shifts (morning or afternoon), presenting a total of about 50 project/responses on the problematic issues proposed. Figure 1 presents the settings and some of the material/posters of the activity.

Each team is tutored by an architecture student, responsible for the conceptual framing of the works, by giving the younger students insights on urban issues, such as climate, site, materials, sustainability principles, and on project development and analysis tools, such as dimensioning, human scale and other representation strategies. The architecture students are challenged to develop work coordination skills and to transmit acquired knowledge to the youngsters.

The activity is structured according to five main steps (proposed by the tutor but not mandatory to follow): i) research; (ii) strategies and ideas proposal; (iii) representation; iv) discussion and validation of the proposals; (v) communication.

Representation includes drawing and modelling, used as tools for representing ideas, thoughts and concepts. According to (Maciel, 2003) the graphic expression is not only the representation of an idea but a moment of understanding and construction of this idea. This relationship develops from a game of questions and answers in between the two moments.

The construction of the model involves: (i) the selection of materials (re-using and recycling materials left by the architecture students); (ii)

Fig. 3: Results on the urban shelter (one site/one client).

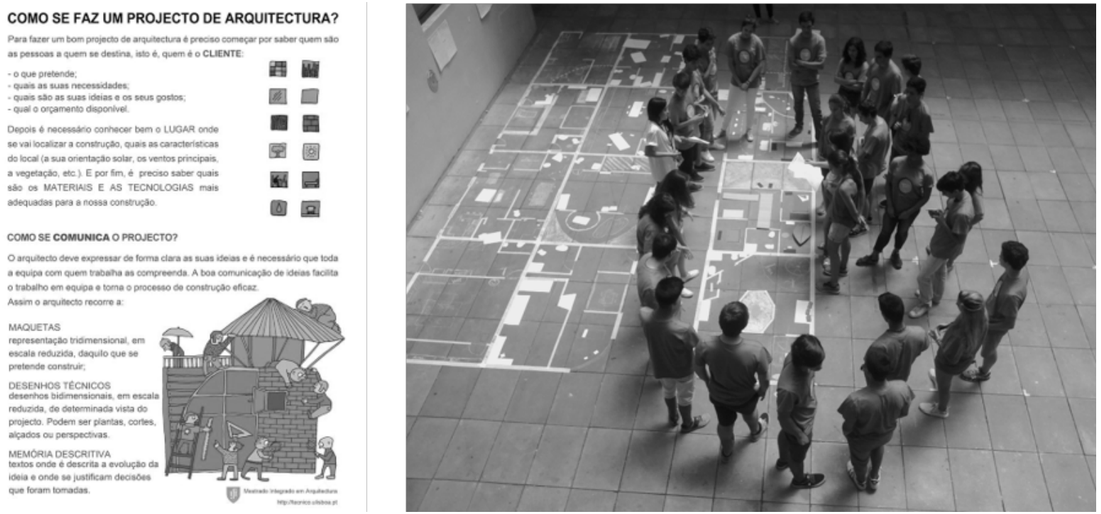

Fig. 4: Didactic material development of the a "studio in the campus" edition.

the identification of strategies for three-dimensional representation of the proposal and (iii) the organization of the team to ensure its construction. The prospect of the communication phase implies that the representation is simultaneously used as a tool to test the ideas and proposals but also as a tool to communicate the project to third parties. As it is taking place, the activity is reported on time through internet platforms (IST Summer facebook).

The results originated weekly exhibitions/performances of the models in a 300m2 plotting area in one of the main university atriums, that were observed, discussed and experienced by the university campus community (Fig. 2).

The four editions allowed to introduce the urban quality concept at multiple scales, from the shelter unit to the neighbourhood and the city. The project allows collecting extensive and relevant data on collaborative and problem-solving practices as well as the aspirations, habits, values and knowledge of the youngsters regarding the use of space and urban issues.

In the next sub-chapter the three first editions are briefly presented. The fourth edition was a remake of the first one.

An urban shelter

The first edition proposed the challenge of building a shelter in a specific setting for a client, taking into consideration the clients' profession (Figure 3). The goal was to introduce two key aspects in architecture design processes: for one hand the clients' functional needs and aspirations and for the other the need to adapt the building to a specific site. The exercise introduced the challenge of responding to multiple needs within the same object – the shelter. Both sites and professions, distributed randomly, provoked the participants creativity. Examples of site-client combination could be "opera singer under a viaduct" or "farmer in a parking lot".

Fifty urban paths

The challenge was to create a city itinerary (urban path) that considered the integration of two main city relevant service equipment, such as schools, hospitals, railway stations, etc. The projects had to be developed taking into consideration the specificity of each site and characteristics of a specific architect. Thus, the imagery of the activity was created: to collaborate during the three hours in the atelier of an architect whose work is publicly recognized. Integrated into a team, students approach the architecture, the urban fabric and the constraints of geographic contexts and specific programs. The main thematic to be introduced in this year edition were: (1) the importance of connection in the city (all the proposals had to be connected with two others) and (2) the architect and architecture cultural and artistic value.

Within the framework of the experience, the students gained contact with the biography and main work of 20 architects, representing the professional practice in the five continents, thus in different geographical contexts. Principles of environmental sustainability have been introduced, discussed throughout the development of proposals, including the adequacy of forms, materials and technologies to places and users.

From the exploration of different spatial elements that constitute the urban space - the square, the street, the equipment, vegetation, etc. - and with the aim of constructing “urban paths”, 50 different fragments of the city were projected with variations in the morphological conditions of the landscape, the infrastructures, the equipment, the living spaces and the architectural language adopted.

Combinations of “architect” and “equipment”, similarly to the previous edition, were distributed randomly, originating 50 different programs/ challenges. Each group started the work from a “city plot” card board square of 50 cm side, representing at scale 1:300, a plot of 1,5 kmx1,5km of area. Within the plot two connections had to ensure mobility between plots. The results gave rise to an exhibition of a 25 meter “city-structure”, made up of the 50 proposals, that could all be interconnected. The exhibition was visited, discussed and experienced by the IST campus community (Fig. 2).

The results of the present edition were more thoroughly presented and analysed in an article entitled Design thinking and collaborative practices. Contributions to urban literacy. (Lourenço, Pacheco, & Heitor, 2018).

A studio at IST campus

A studio in the IST campus intended to introduce the scale of the building in the activity. The participants had to propose a studio for a faculty member, taking into consideration both his/her professional activity and a hobby. The studio, with very limited area, had to respond to the user multiple needs. The scale of representation proposed (1:5) implied that the participants had to consider the functional organizational of the studio. For the first time, the participants were challenged to creatively approach the scale of a small building. The studio plans were represented in the faculty atrium floor (Fig. 4). Results on this edition are now being analysed for publication.

Conclusions

The project allows the young participants to experience a direct link between enunciating a problem and build a solution. The timeframe in which this occurs, allowing them to experience and celebrate tangible outcomes, is a determinant factor of the success of the program. The methodological approach allowed the development of an experience that includes:

1. Enunciating a challenge/ task
2. Translating it into a program
3. Formulate ideas to solve that challenge
4. Build/Test those ideas and validate them
5. Present and defend those ideas to others.

The tutors also play a significant part as they act as effective facilitators of the experiential learning. As they are also students, the informal environment affects positively the presentation and debate of ideas.

The activity also serves as a living lab for the faculty research group, either by allowing testing design-based learning methodological approaches and tools and also by allowing the collection of youngsters opinions, reflections and ideas regarding relevant research themes of the built environment.

Regarding future developments, strategies and tools to measure this type of activities success and impacts is still a relatively unexplored area. How to measure success of activities targeting awareness and aiming at developing long term behaviour and soft skills development is a question still in debate.

Bibliography

Acer, D., Ciftci, A., & Akbulut, M. T. (2012). A Workshop with Architecture Students About Design Education for Children. Procedia - Social and Behavioral Sciences, 51, 48–52. https://doi.org/10.1016/j.sbspro.2012.08.117

Anne P. Taylor, George Vlastos, A. M. (1991). Architecture and Children: Teachers Guide Interdisciplinary Learning Activities of the Architecture and Children Curriculum. Washington: Architecture and Children Institute.

Jeff E. Brooks-Harris, S. R. S.-W. (1999). Workshops: Designing and Facilitating Experiential Learning. United States of America: Sage Publications, Inc.

Lourenço, P., Pacheco, M., & Heitor, T. (2018). Design thinking and collaborative practices . Contributions to urban literacy . Conceptual framing. In INTED 2018, 12th annual International Technology, Education and Development Conference (pp. 9269–9277). Valencia: IATED. https://doi.org/10.21125/inted.2018.2278

Maciel, C. A. (2003). Arquitetura, projeto e conceito. Arquitextos, 043.10(04).

Tonucci, F. (2015). La ciudad de los niños. Un modo nuevo de pensar la ciudad (1oedition). Barcelona: Editorial GRAÓ, SL.

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As a student, she participated in the international student workshop and presented a paper at “Muiscarch’17: Designing with(in) Istanbul”, in the Faculty of Architecture and Design of the Maltepe University, Turkey (2017). As a result from the work developed in her Master Thesis, she has presented a paper at the event “Paisagens Neurológicas, Arte e Ciência [#04 Poéticas, Políticas e Filosofias do Corpo]“ in Condeixa-a-Nova (2017), and the research findings on the case study from her Master Thesis were also published on the online platform of the project “PHI - Patrimonio Historico+Cultural Iberoamericano“ (2017).
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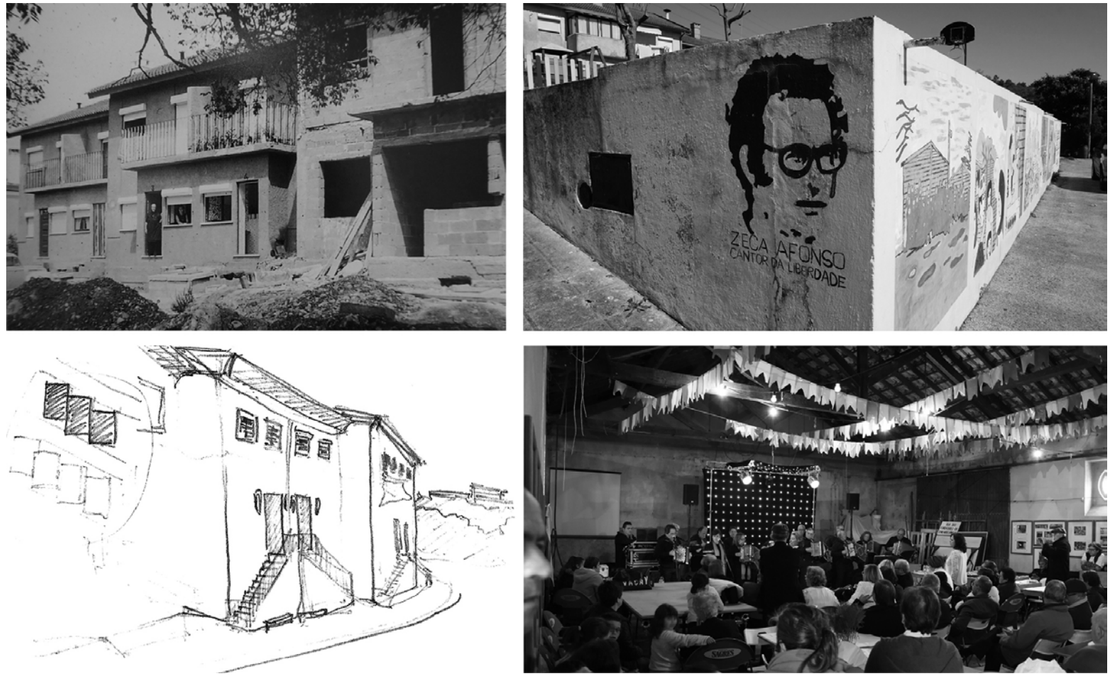

Fig. 1: Interdisciplinary methodologies applied in Bairro da Relvinha.

Understanding the Locus: Interdisciplinary methodologies in the design studio

Abstract

This paper argues that a closer contact with a real intervention site and its inhabitants will provide more inclusive design proposals. Considering Bairro da Relvinha in Coimbra, Portugal, as a case study, it provides an understanding of the relationship between architecture, the social narratives and its contemporary condition, by means of interdisciplinary approaches from the social and human sciences towards rethinking this neighbourhood. Thus, conclusions acknowledge interdisciplinary methodologies in the design studio and the relevance of the locus overall within the pedagogical context.

Interdisciplinary methodologies // Design studio // Architect-inhabitant relationship // Bairro da Relvinha

Introduction - Approaching the site and its inhabitants

This paper aims to discuss how teaching through design can more deeply approach the lived space and how can students more comprehensively understand the built heritage and the overall locus of experience.

Considering that human experiences, such as the uses and meanings attributed to a place, are part of the understanding of that locus, from an architectural perspective this can be translated to the pedagogical scope of the design studio. Hence, this paper argues that a closer contact with a real intervention site and its individuals will provide a deeper understanding of that place and, hence, more inclusive design proposals in architecture schools. In this regard, interdisciplinary approaches from the social and human sciences have been studied, considering them to be informative to the design studio.

The work presented is based upon a Master Thesis (Catré, 2017) that intended to understand how architecture students can perceive a place as a social reality, being able to incorporate that knowledge into their projects.

The case study of this research is Bairro da Relvinha (Relvinha Neighbourhood) located in Eiras, in the city of Coimbra, Portugal. Considering Bairro da Relvinha as a place where it is possible to understand the relationship between architecture, the social narratives and the political contexts, its contemporary condition can be examined by means of an interdisciplinary work that inputs the design towards reusing and rethinking the neighbourhood.

From a fieldwork experience within a case study, supported by a theoretical research, the application of different methods will be presented, followed by the conclusions attained from their application under the context of the pedagogical experience of this Master Thesis research.

Specifically, the fieldwork carried out on this neighbourhood involved recording, describing and interpreting the meanings and the social practices observed and, through that contact with the neighbourhood and its spatial experiences, it was possible to assess the relevance of these methods for understanding that site. Analysing that data allowed us to suggest methods to bring together architecture students and the people who inhabit the space that, in this case, are the residents of that neighbourhood, as a way of getting to know their social dynamics, in order to design for suiting their needs and their sociocultural context.

Thus, this study considers the relevance of a multidisciplinary work in architecture and in its teaching, which has led us to reflect upon the opportunities that the architecture schools have for sensitising students to the lived environment, as meaningful knowledge for the design studio proposals. Consequently, the achieved results lie both in the understanding of the potential of these inputs for architecture and in the identification of the interdisciplinary methodologies that better report them and which can be practiced within the design studio.

Understanding Bairro da Relvinha - Fieldwork experience

The fieldwork experience started by establishing contact with the neighbourhood of Relvinha, which enabled us to reflected upon the methods to apply under the scope of the design studio. These included questionnaires, interviews using photo elicitation, photography, field notes, and others to be described and discussed on their feasibility, achievable outputs and pedagogical potential (Fig. 1).

Fig. 2: Housing in Bairro da Relvinha before the Revolution of 1974.

Fig. 3: Housing in Bairro da Relvinha before the Revolution of 1974 (left) and current photograph of Bairro da Relvinha (right).

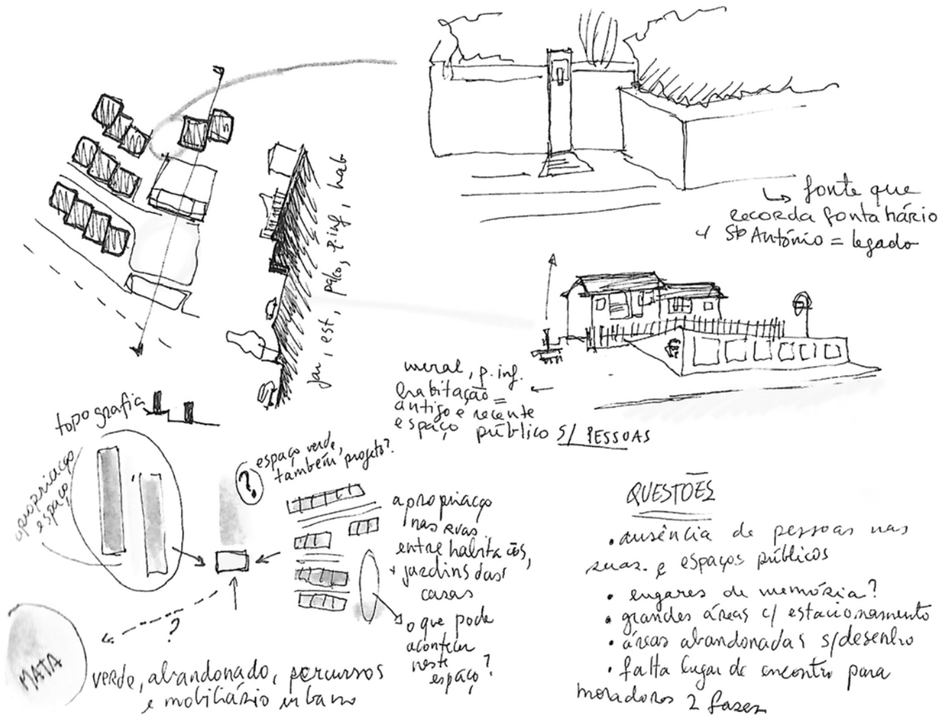

Fig. 4: Field notes from the study of Bairro da Relvinha.

To support this earlier motivation, a theoretical study has been undertaken on the connections between architecture teaching, the design studio projects and society, as a current debate since the discussion of the relationship between the architect and the human experience.

The concept of architecture's social responsibility defended in the 1960s by architects such as Nuno Portas (1964, 1969) and Octávio Lixa Filgueiras (1962)[1], and the pedagogical experiences carried out in Escolas de Belas-Artes in Lisbon and Porto, are an initial outlook on a humanistic formation and the contact with users, as ways of approaching the reality of the intervention sites (Moniz, 2011).

Moreover, it has also been fundamental to comprehend the identity of the Department of Architecture of the University of Coimbra, in which this research has been carried out, as Coimbra affirms its pedagogical strategy in the current discussions about teaching through design, balancing interdisciplinarity and the disciplinary autonomy of architecture.

By analysing this case study, we can identify the consolidation of the debate between society and space, because Bairro da Relvinha is the only neighbourhood in the city that chose to take on a process of self-construction and that was finished under the SAAL Process[2] (Bandeirinha, 2007).

Specifically, the neighbourhood was developed from the modernist urban plans by Étienne De Gröer from 1940 and by Antão de Almeida Garrett from 1955, which aimed at meeting the growing industrial demand in Coimbra. With this growing industrial demand, the inhabitants of this neighbourhood were evicted in 1954 from the area of Estação Velha, to build Avenida Fernão de Magalhães. The families were housed in wooden shacks in Relvinha, where they remained in precarious conditions until 1974, and during this time, the context of poverty and common memory contributed to build the identity of this group (Fig. 2).

After the 1974 Revolution[3], the Operation SAAL began in June of 1975, for fulfilling the needs of the working population established precariously in this growing area of the city, and involved modernist architects like Francesco Marconi and Carlos de Almeida[4]. The residents' decision to join the SAAL Process changed their lives and, with the help of external groups combined with the participation of the inhabitants, helped them to finish building the project by their own hands (Baía, 2012). Hence, this appropriation experience is still a part of its collective memory, which we have confirmed to continue to be present in the current spatial practices.

Understanding the neighbourhood of Relvinha has also started by a theoretical research on the tools to best perceive the territory, by studying the ways in which these have been implemented in architecture and by researching how could these contribute to the understanding of the locus. These methods have either been widely used in architecture: like drawings (Laseau, 2001) and photographs (Kaplan, Taneli & Tok, 2010); or have more commonly been undertaken by the social sciences: like interviews (Warren, 2002) and field notes (Silverman, 2000).

After examining the historical background of the neighbourhood, the first approach was an informal one, starting with spontaneous visits. Specifically, participating in the anniversary of Cooperativa Semearrelvinhas and taking walks through the neighbourhood with the inhabitants, were part of these first fieldwork experiences and provided an overview of the site.

Moreover, these first contacts enabled us to more fully define the

outlines of the research and to adapt the methods to be applied in order to suit this particular context. Also, by considering the identity of the neighbourhood and the legacy that is part of its locus, we have chosen to undertake the following methods: participation in neighbourhood activities, photography, video, interpretative drawings and field notes, questionnaires and interviews using photo elicitation and photovoice.

Throughout the research, it became clear that these inhabitants were aging and that they mainly stayed at home during the day. However, these first contacts also made us conclude that the spirit of collaboration in this community still remains, even though the younger generations tend to emigrate and the former industrial area of the city does not offer as many opportunities to work as it formerly did.

As a more immediate method, photography was very accessible and simple to use. The subjective choice on what to photograph, also brought us closer with this reality and day-to-day life. It allowed us to record a description of the locus and its built and human components, giving an incisive and critical outlook on space. The same happened with observed photographs, like the historic photographs that recalled past experiences and presented a former reality that still holds present repercussions (Fig. 3).

By combining photography with written notes, conclusions have led to the lack of use of the public areas of the neighbourhood and its surroundings. On the other hand, by taking photographs while visiting the neighbourhood with the residents, it was possible to record the paths chosen, the places where they chose to stop and how they related to the different areas of Bairro da Relvinha.

Videos have also proven to be useful for recording real time actions and movements on the streets by people and traffic, as well as their absence. It also allowed us to record what the residents commented on during the visits throughout the neighbourhood and their respective locations in each time. Photography and video proved to be versatile and also effective for remembering circumstances and spatial relationships after visiting the neighbourhood. Their potential use on the design studio can go from comprehending the scales of analysis, the built space, or the practices; to its use in interviews, or as visual elements that represent the site's reality.

Furthermore, field notes and systematic writing and drawing, kept in a graphic diary, contributed mainly to understanding the physical attributes of the different spaces and to keep a record of the thoughts and ideas during the visits. Additionally, drawing proved to be a relevant tool for combining the knowledge on the physical traits of the neighbourhood, with the spatial experiences related to social aspects. Thus, it allowed us to think critically about the connections between people and spaces, through diagrams and sketching by observation (Fig. 4).

Besides, drawing on plans was also significant for this research, allowing us to better understand the scale of the neighbourhood and its enclosure in the surrounding context, as well as the routes that the residents and visitors usually took. Likewise, the systematic drafting of what was observed proved to be effective for more fully perceiving the relationships between housing and public areas, the neighbourhood and the other areas close-by, and between Relvinha and their inhabitants.

Interviews were one of the last methods to be applied, as the questions were systematised from the first contacts with the neighbourhood. This work involved four semi-structured interviews, with different purposes, individually and in a group, complementing each other (Fig. 5).

Fig. 5: Interviews with the inhabitants of the neighbourhood.

More specifically, photo elicitation, as a process of using photos in an interview (Harper, 2002), was also suitable due to the connection between the inhabitants and the image of their neighbourhood, both in the past and in the present. One of the interviews also used photo voice, a technique in which the photos used in the interview are made by the participant. The questions posed in the interview using photo voice were directly related to the photographs of the participant, and the questions concerning the meanings of the spaces provided an individual output from someone who daily relates to this reality.

Generally, the interviews have provided us with information about the needs of the community, the connection between various individuals and groups, and the neighbourhood and its surroundings, in a more complex and wider manner than the remaining methods. As the inhabitants of the neighbourhood spend most of their time indoors, the interviews were an effective method to establish the relationships between individuals, groups and spaces, and to understand the needs of the community from their own perspective.

Overall, each process carried out as part of the fieldwork experience contributed with different inputs to our understanding of the locus, allowing us to perceive architecture's relevance towards current spatial practices in Bairro da Relvinha and, vice-versa, the social practices towards spatial needs. Besides, it was possible to assess the application of these methods both in Bairro da Relvinha and also in the design studio, in general, for understanding the intervention site.

Through this study, the residents have identified several aspects in which it would be positive to consider an architectural proposal, such as building a community centre and rethinking some of the public areas. In what concerns their daily life, participants have identified the spaces where they spent most of their time, through photo elicitation with a plan, referring to their meaning for the neighbourhood (Fig. 6).

Conclusively, the gathered use of multiple methods that complement each other has related us to the social agents, spatial meanings and contemporary experiences, also considering that each method contributed in a different way to the knowledge attained and to

Fig. 6: Plan of the neighbourhood of Bairro da Relvinha, presented to the participants of the group interview with their indication of the relevant spaces for their daily life on the neighbourhood

the possibility of engaging architecture and its users, whether in a pedagogical context or in the professional practice.
For the specific context of the design studio, the experience of participation and collaboration with the future or current stakeholders of the space is also considered to be relevant as a pedagogical experience. Using methods such as the ones presented, it is possible for architecture students to recognise the ways in which the social agents can contribute to the design in an inclusive and constructive manner.

Conclusion - Discussing interdisciplinarity in the pedagogical context

The debate around teaching through design is still in need of discussion beyond past pedagogical experiences, some of which have also been subject of reference for this research.
The concern with the social action of architecture can be materialised through the use of methods for understanding the territory, such as the ones we have presented. Moreover, it can be achieved by interdisciplinary approaches in the design studio, involving the social and human sciences, or the engagement of different social agents for the acknowledgement of the locus or for the design itself.
All in all, a more comprehensive understanding of the intervention sites in architecture schools must encompass the immaterial dimension composed of social narratives, practices, legacy and culture. The processes achieved have also reported that dimension of the built space that will possibly engage students to designing by learning with what surrounds us.
Thus, this research's outputs have led to the conclusion that a pedagogical strategy that includes the holistic understanding of the reality, can enhance the suitability of the proposals to the needs of its users and the specificities of the intervention site, acknowledging the relevance of the locus overall towards architecture pedagogy.

Bibliography

Baía, J. (2012). SAAL e Autoconstrução em Coimbra: memórias dos moradores do Bairro da Relvinha 1954-1976. Castro Verde: 100 Luz.
Bandeirinha, J. A. (2007). O processo SAAL e a arquitectura no 25 de Abril de 1974. Coimbra: Imprensa da Universidade.
Catré, M. (2017). Conhecer a realidade social do lugar de projeto. Uma aproximação ao Bairro da Relvinha. Dissertação de Mestrado. Departamento de Arquitectura da Faculdade de Ciências e Tecnologia da Universidade de Coimbra.
Filgueiras, O. (1985). Da Função Social do Arquitecto: para uma teoria da responsabilidade numa época de encruzilhada. Porto: Escola Superior de Belas-Artes do Porto. Original edition from 1962.
Harper, D. (2002). Talking about pictures: A case for photo elicitation. Visual Studies, 17(1), 13–26.
Kaplan, I., Taneli, Y. & Tok, S. Y. (2010). Photography in architectural education: A tool for assessing social aspects of the built environment. Procedia - Social and Behavioral Sciences, 2(2), 2583–2588.
Laseau, P. (2001). Graphic Thinking for Architects and Designers. Nova York: John Wiley & Sons.
Moniz, G. C. (2011). O ensino moderno da arquitectura : a reforma de 57 e as Escolas de Belas-Artes em Portugal (1931-69). Tese de Doutoramento. Universidade de Coimbra, Coimbra.
Portas, N. (1964). A Arquitectura para Hoje: Finalidades, Métodos, Didácticas. Lisboa: Livraria Sá da Costa.
Portas, N. (1969). A Cidade como Arquitectura. Lisboa: Livros Horizonte.
Silverman, D. (2000). Doing qualitative research. Los Angeles: Sage Publications.
Warren, C. (2002). Qualitative interviewing. In J. F. Gubrium & J. A. Holstein (Eds). Handbook of interview research: Context and methods. (pp. 83-102). Thousand Oaks, CA: Sage.

Notes

[1] For further reading see both Portuguese architects' extensive work on this subject matter, namely: Da Função Social do Arquitecto (Filgueiras, 1962), A Arquitectura para Hoje (Portas, 1964) and A Cidade como Arquitectura (Portas, 1969).
[2] SAAL (Serviço de Apoio Ambulatório Local) [Local Ambulatory Support Service] was a housing process that occurred in Portugal between 1974-1976.
[3] In 1974 there has been a political revolution in Portugal, which put an end to the ruling dictatorship and led towards democracy.
[4] Italian architect Francesco Marconi was followed by the Portuguese architect Carlos de Almeida in the project proposal for Relvinha (Bandeirinha, 2007).

Image Credits

Fig. 1: Interdisciplinary methodologies applied in Bairro da Relvinha (Image credits: Maria Catré)
Fig. 2: Housing in Bairro da Relvinha before the Revolution of 1974 (Image credits: Cooperativa Semearrelvinhas)
Fig. 3: Housing in Bairro da Relvinha before the Revolution of 1974 (left) and current photograph of Bairro da Relvinha (right) (Image credits: Cooperativa Semearrelvinhas (left), Maria Catré (right))
Fig. 4: Field notes from the study of Bairro da Relvinha (Image credits: Maria Catré)
Fig. 5: Interviews with the inhabitants of the neighbourhood (Image credits: Maria Catré)
Fig. 6: Plan of the neighbourhood of Bairro da Relvinha, presented to the participants of the group interview with their indication of the relevant spaces for their daily life on the neighbourhood (Image credits: Maria Catré)

Session 4.0
INTERDISCIPLINARITY on Reuse of Modernist Buildings

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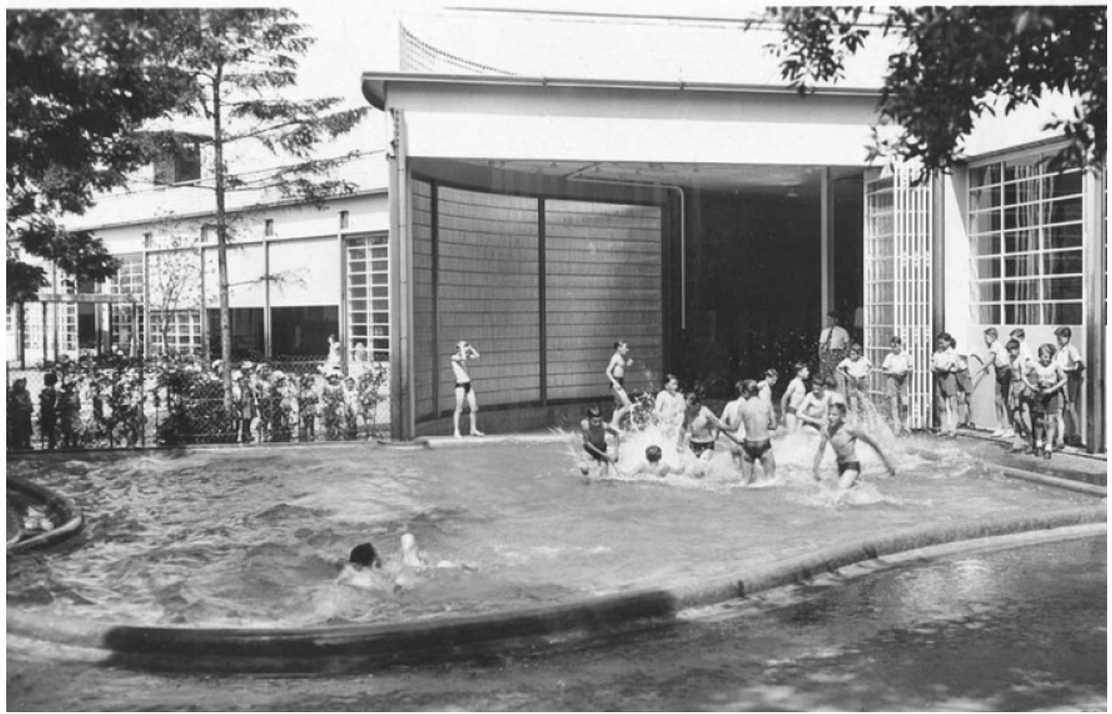

Fig. 1: Open-air School (1931-35), Suresnes, Paris, Beaudouin and Lods.

Modern Children‘s Spaces

Abstract

This paper seeks to contribute towards an understanding of the significance of modern children's spaces, recognizing the importance of the multidisciplinary and interdisciplinary approach in their design. The interpretation of some modern cases provides a basis for reflecting on their cultural significance, to discuss their values, and to confirm the valuable contribution of different disciplines in the pursuit of their educational and social aims.

Children's Spaces // Modern Architecture // School Building // Playgrounds // School Furniture

Introduction

Since the mid-nineteenth century, with the recognition of childhood and the autonomy of children, different political, social and cultural events took place in western countries that triggered a new consciousness about the need for new and appropriate designed spaces for children. Schools and preschools, urban and public spaces, playgrounds, sports and health facilities, orphanages, sport facilities, cultural spaces were created since then, in particular during the modern movement. The future of these spaces constitutes a challenge due to their obsolescence, inadequate technical and safety conditions, and sometimes lack of recognition by the society as spaces of architectural significance and cultural value. The interpretation of some cases produced during the modern period provides a basis for reflecting on the cultural significance of modern children's spaces, to discuss their values, and to confirm the valuable contribution of a multidisciplinary approach in the pursuit of their educational and social aims. It is also an opportunity to look at the modern legacy as an occasion to reflect on current design of children's spaces.

Historical perspective

The growing attention that is now being given to the rights and well being of children and the role that the environment plays in their upbringing had already been declared by Ellen Key in her book 'The Century of the Child' published in 1900. But it was with Philippe Ariès' book 'Centuries of Childhood' (1960) that an intensive debate began within the field of childhood studies. In his book, the use of spaces and material artefacts provided evidence for claiming that a new idea of childhood had begun in early modern Europe, drawing attention to the need for childhood to be studied from an architectural perspective. In the last two decades, this new field of research has been the subject of several articles published in journals, magazines and books. Moreover, exhibitions such as 'Kid Size: The Material World of Childhood', at Vitra Museum (1997), 'Century of the Child. Growing by Design', at MoMA (2013), 'Playgrounds. Reinventing the Square', at Museo Reina Sofia (2014) and more recently 'The Playground Project', at Kunsthalle Zurich (2016) have brought this matter to the attention of a wider audience, leading to a discussion of the material culture of children from a multidisciplinary perspective.

But what are the factors that form the basis for the creation and development of modern facilities for children? Different political, social and cultural events took place in western countries and were responsible for a new consciousness about the need for new and appropriately designed spaces for children, both for their public and private lives. In the beginning of the century, industrialisation process and urban growth, children's birth and mortality rates, the increased participation of women in the labour market, and the decline and regulation of child labour urged the rethinking of urban space to solve insalubrity and public health problems, and raised the attention for the need of spaces specifically designed for children. The Playground Movement in Chicago (1890s), the kindergarten movement inspired by the contribution of Pestalozzi and Froebel, the pedagogical movement of Progressive Education from the late 19th century, the establishment of free compulsory education and the recognition of the benefits of leisure and sports activities, all these topics contributed with new educational and social objectives that deeply influenced the design of modern facilities for children.

As mentioned by Kinchin (2012, 89), the period between wars was marked by the desire of building a new society where children will play a crucial role. They were recognised as symbols of an optimistic future. Safe and healthy children's environments were considered essential to guarantee the transformation of the society. Physical education and play were faced as means to inculcate collective values and teamwork, promoting individualism, health and self-expression. Also advances in medical knowledge and behavioural psychology contributed for the proper physical and mental development of young children, and claimed the benefits of play for the development of cognitive skills, moral tendencies and social values important to create better citizens (Solomon 2005, 8).

The modern movement project, its functional and rational principles supported by the use of new construction technologies and materials, and the importance given to the design and quality of industrial production, embodied the necessary means to meet these challenges in creating appropriate and attractive design for children's spaces.

In the period after the Second World War, different challenges were brought by the destruction of the city centres and the disintegration of social and urban life, and the consequent increase in birth rates and need of reconstruction (housing and schools). It's worth pointing out some major contributions. The CIAM and TEAM X's ideas, defending the redefinition of public space as an element of social practice and the stimulation of man's spiritual growth, and stressing the role that children could play in this new paradigm. Children's needs were placed at the centre of the social policy of post-war welfare states, resulting in a new theoretical approach to urban and architectural questions. Also the impact of international and intergovernmental organizations concerned about children's human rights and their right

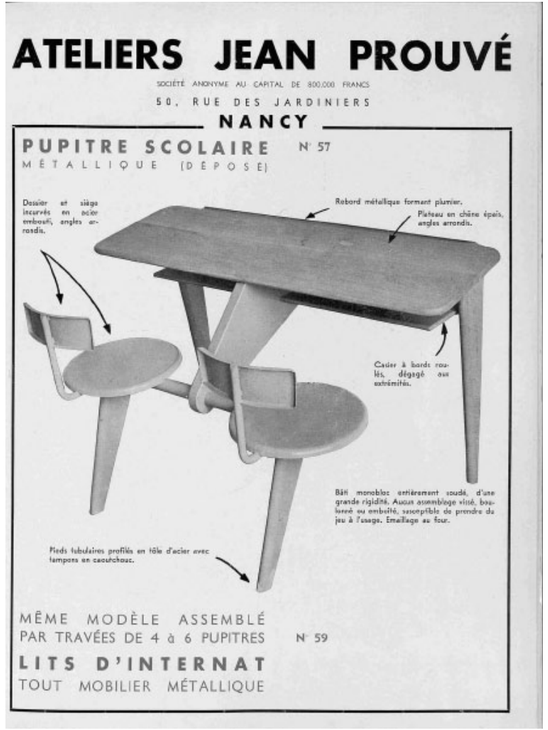

Fig. 2: Jean Prouvé desk-chair (1938).

Fig. 3: Tufsen (1949), Stockholm, Egon Møller-Nielsen.

to education, and their reflection on educational planning, led to the adoption of rational procedures in school building production in order to reduce costs and construction time promoting, at the same time, new educational and pedagogical principles in their design.

Modern Children's Spaces: multidisciplinary and interdisciplinary approach

The significance of modern children's spaces lies on the contribution of different disciplines in the effort of answering to all these challenges. Architecture, urban planning, education, art (in particular sculpture), landscape architecture, medicine and psychology, sociology, engineering and technology, all contributed to the design of new children's spaces.

Design approaches of schools

By the end of the 1920s, there had been a shift in the design of schools as they were seen as an active agent in the educational process. A more equitable, healthy and open society required well-coming, airy, hygienic, and flexible schools, expressing the new educational philosophies and the public health concerns of the time. Schools were seen by progressive educationalists and design reformers as instruments for social change (Kinchin 2012, 99). Schools from the interwar period express an interdisciplinary convergence between progressive pedagogy, medical expertise, and a high modernist architectural and design ideal.

The open-air school in Suresnes, Paris (1931-35), by Beaudouin and Lods, was designed in order to serve a strong social purpose in receiving exclusively unhealthy children (Figure1). This school was one of the two schools selected by Alfred Roth in his book "New Architecture 1930-1940" (1939), where he collected twenty buildings that, in his opinion, fulfilled the predefined criteria of what he called New Architecture. According to Roth, the multidisciplinary approach was essential for the foundations of New Architecture that should express a clear spatial structure and constructive execution, a proper application of materials, and incorporate, at the same time, new contributions provided by science, technique, economy, or art.

Other schools built in Europe and North America, could also be added to Roth's list such as the German schools from the end of the 20's, designed by May, Schule, Schumacher and Taut, as well as the Groupe Scolaire Karl Marx (Villejuif, Paris, 1929-33), by Lurçat and the Cliostraat School (Amsterdam, 1927-30), by Duiker and Bijvoet. These schools underline new principles, replacing the monumental scale of the beaux-arts school for more functional and hygienic models. The functional and rationalist principles of modern architecture based on the use of new materials and construction technologies were seen as the right expression of the new pedagogical principles developed by the New Education Movement, based on respect for the child's own individuality and capacity. These principles required a more flexible and open spatial structure, promoting an active methodology in the learning process, co-education, a healthier life and the connection with nature. In addition, also the economic condition required new architectural solutions for school design based on the development of new technical, constructive and rational solutions.

After the Second World War, schools designed by Scharoun and Hertzberger are representative of a new approach in the design of school buildings. New educational and social challenges guided the design of these schools in two different ways.

Scharoun's schools were guided by the concerns of child social integration in the school community. In 1951 he presented a design for an elementary school in Darmstadt based on a strong spatial hierarchy for helping students to better be integrated in the different groups of the school community. By controlling uses, scale and spatial/physical relationships between the different spaces of the school (classrooms, communal spaces, and circulations) he promoted social meetings and interactions and allowed the achievement of different activities.

Hertzberger also worked on the aim of promoting the social integration of the students, by the development of the concept of 'Learning Street' as the core of the school - a central space that allows meetings and new activities like exhibitions, performances, play, etc. He also worked on transition spaces between the internal space and the exterior that would allow, in his opinion, the meeting of different school community agents (parents, children, teachers).

School furniture

The beginning of 20th century marked a turning point in the production and design of school furniture that began to be mass-produced on an industrial scale. The tubular steel tables and chairs designed at the Bauhaus in 1925/26 influenced the development of tubular steel school furniture, like the children's chair by M. Breuer produced by Thonet (1930), and the school desk by Walter Gropius designed for Isokon Company in London, in 1935/36. Also the pavilion-schools designed and built in Frankfurt am Main, between 1925 and 1930, used tubular-steel furniture influenced by Bauhaus design, allowing flexible furnishing in the classroom in accordance with the implemented progressive educational program (Müller, 2010). Beaudouin and Lods also designed a wide range of school furniture for Suresnes School using aluminum and plywood guaranteeing its lightweight for an easy move by each student.

The development of metal furniture for schools was actively encouraged by a French steel company Office Technique pour l'Utilisation de l'Acier (OTUA), which in 1936 organized the competition "School Furniture Steel" that included designs by René Herbst, Robert Mallet-Stevens, and Jean Prouvé's desk-chair (Figure 2). These examples questioned and changed the paradigm of the existing wooden school furniture, creating a modern, hygienic, resistant to use, lightweight, incombustible and adjustable steel furniture, which allowed a new space organization.

Hygienic concerns and new pedagogical aims also demanded new spaces and facilities within the space of the school like specialist subject classrooms, cloakrooms and sanitary facilities expressing new requirements in terms of its design. Specific furniture and equipment were developed and designed for science rooms, laboratories, libraries, handicraft and art lessons or gymnasiums, among other spaces.

Playgrounds

From the 1950s onwards, playground design underwent an innovative development in response to the conditions generated by World War II, and in defence of children's human rights and welfare. Some of the greatest artists, architects and landscape architects of the time developed new concepts of playgrounds providing richer play opportunities that would develop children's personality in a creative and collaborative atmosphere. Individual play equipment from the pre-war period were replaced by new architectural and urban experiences testing new participatory and democratic process of production (junk and adventure playgrounds), encouraging social interaction in the urban fabric, exploring children's imagination through sculptural play objects, or designing a continuum play experience through the innovative landscape playgrounds (Sio 2018). The exhibition "The Playground Project" organized by Gabriela Burkhalter in 2016 expresses the interdisciplinary approach of the playgrounds from the post-war period, designed in straight collaboration between architects, artists, sculptors, landscape architects, industrial designers, social reformers, or photographers.

For instance, we can point out the idea of junk playgrounds (1943) by Sorensen, that inspired Lady Allen's proposal of adventure playgrounds by the conversion of bomb sites in post war reconstruction period in London, or we can mention the playgrounds designed by Aldo van Eyck between 1947 and 1978 for the city of Amsterdam, built in vacant plots in the city centre (still marked by the war). They were designed with simple, low cost and flexible equipment, as open public spaces for children to play and people to meet, according to the ideas defended in CIAM and by TEAM X to create environments that connect people. Aldo van Eyck believed that children are part of the city, creating multiple opportunities for children to play in the city centre and giving social significance to urban in-between spaces.
The first abstract playground sculpture Tufsen installed in 1949 in Stockholm (Figure 3), or the Saddle Slide created by Melberg in 1954 are excellent examples of stimulating children's imagination by exploring abstract shapes and simultaneously of bringing art to the public space. Noguchi also presented another approach designing playgrounds based only on landscape modeling, without any equipment, and offering several possibilities for play (1952). Other examples underline the interdisciplinary approach in the design of playgrounds such as Submarine design by the French team Group Ludic in 1968 made of recycled industrial materials and produced industrially. This equipment occupied playgrounds in the French new towns where they had to deal with vandalism and violent atmosphere. Also the equipment designed by Joseph Brown (Swing Ring, 1953-55) constituted a challenged to be produced with their mobile parts of ropes and metal springs.

Conclusion

After World War II, new educational, social, and economical circumstances demanded new approaches to increase school construction efficacy. With few exceptions, school architecture was ruled by standard solutions based on new design methodologies, the use of prefabricated modular components and industrialised construction systems, and the use of effective cost and planning control procedures. In part, this was possible by the technical legacy and methodological design procedures of the modern period. But the 'one-size fits all' schools deeply contrasted with modern schools designed with the contribution of different disciplines.
Today's challenges such as flexibility and responsiveness of school space to meet educational requests and new learning methodologies, ICT demands, school integration within the community, technical requests about safety (structural, seismic risk, fire risks), sustainability concerns, coexistence of multicultural and different social groups, require a new design approach that ensure school architecture as an effective contribution to the construction of a new school culture.
On the other hand, aspects such as the influence of consumption and mass media on children, the growing aversion to risk, the time reduction for children left to themselves, the parents constant supervision of their children, the loss of educational and social significance of spaces such as playgrounds, or the new restrictions regarding safety requirements, all these contribute to a new paradigm of children's spaces. Today, digital play environments are replacing built, urban and natural environments.

The historical and cultural significance of modern children's spaces legacy and its multidisciplinary approach could certainly help design better urban, educational and recreational spaces for our children to learn, play and live in.

Acknowledgments

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Bibliography

Burkhalter, G. (2016). The Playground Project. Zurich: jrp|ringier.
Dudek, M. (2005). Children's Spaces. Amsterdam; Elsevier; London: Architectural Press.
Kinchin, J., O'Connor, A., eds (2012) Century of the Child: Growing by Design, 1900–2000, exhibition catalogue. New York: The Museum of Modern Art.
Kozlovsky, R. (2013). The Architectures of Childhood. Children, Modern Architecture and Reconstruction in Postwar England. Farnham: Ashgate Publishing.
Lefaivre, L. and Ingeborg de Roode (2002). Aldo van Eyck: the Playgrounds and the City, Amsterdam: Stedelijk Museum, Amsterdam; Rotterdam: NAI Publishers.
Müller, T. and Schneider, R. (2010) The Classroom, from the late 19th century until the present day. Catalogue of the exhibition "The classroom in the VS school museum". Berlin: Ernst Wasmuth.
Roth, A. (1975). La nouvelle architecture, Die Neue Architektur, The New Architecture. 1930-1940. Zurich and Munich: Les Editions d'Architecture Artemis (1st ed. 1939).
Sio, J. (2018). Playground design: children's play spaces in the city. From the 1930s up to the present day. Master Thesis in Architecture. Lisboa: Instituto Superior Técnico.
Solomon, S. G. (2005). American playgrounds: revitalizing community space. Hanover [N.H.], University Press of New England.

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Fig. 1: Map of Pelotas and Rio Grande do Sul, Brazil.

Fig. 2: Anglo Slaughterhouse, Gable.

Fig. 3: Anglo Slaughterhouse Opening (1943).

Intervention of industrial heritage in the city of Pelotas, RS, Brazil, and its institutional reuse: The case of Anglo Slaughterhouse

Abstract

This article analyzes the issue of how heritage use is being managed from the view of Brazilian preservation and restoration precepts. From this panorama, we propose a reflection on industrial heritage, in relation to the intervention and reuse of historic buildings, through the case of the building headquarters of Anglo Slaughterhouse, located at the port area of the city of Pelotas, Rio Grande do Sul. It was built during the political, social and cultural peak of the history of the city, in 1943. The starting point of this study is the history of this slaughterhouse, from its construction, commercial boom, decay and abandonment of the building in the mid-1980s, until its acquisition in 2006 by the Federal University of Pelotas. Pelotas is a city that had in its historical trajectory a nostalgic moment in the 1980s, when the economic crisis had reached the bottom. Nowadays, it is awaking to an urban transformation, especially punctuated in the port area with the new occupation by the university, which drives to a new conception of space and appreciation of what is in it. The port area has an architecture that is orthogonal, less eclectic, expressing a common desire for the city to become modern through the construction of the first examples of an industrial typology, such as the Anglo Slaughterhouse building. The cultural and heritage value of these buildings is implied in the sense of memory and history. The building that once housed machinery, a work system or an infrastructure, can now become a mirror, an image of awareness of the site. In 2006, when the building was acquired, the objective was to adapt it to house the educational institution and its administration. The current situation of this acquisition is, in, partly due to the revitalization of the site, which the reuse presupposes problematic mischaracterizations. Although necessary for the functioning of the Rectory and courses, this renovation needs more technical and historical discussion. The history of the Anglo building through the new use gives the population a sense of permanence and of its consequent preservation as industrial heritage. The appreciation of the value of industrial architecture emphasizes the sense of identity that the city of Pelotas cultivates and preserves so well.

Children's Spaces // Modern Architecture // School Building // Playgrounds // School Furniture

Introduction

This work is an analysis of the memory, pertinence and history of the industrial architectural typology of the port area of the city of Pelotas, Rio Grande do Sul (Fig. 1), through the case of Anglo Slaughterhouse, built at the political, social and cultural apogee of the city because of the agricultural economy in the early 20th (twentieth) century. The purpose is to show the changes that the industrial complex of the extinct Slaughterhouse is passing through, transformed into the campus of the Federal University of Pelotas.

From the bridge that divides the municipalities of Rio Grande and Pelotas, the dark building, which draws attention to itself, exhibited a pediment that displayed its name: “Anglo” (Fig. 2). The delimited chronological cut coincides with the beginning of the second industrialization in Pelotas in the 19th century, after the end of the charqueadas cycle (charqueadas are dry beef farms). And it extends until the mid-twentieth century. The study has as its starting point the insertion of the slaughterhouse in the port; as context, the end of business relationships; and as ending, the revitalization of this area after the acquisition of the building by the Federal University of Pelotas.

During the years 1910 to 1920, the first cooperatives that installed slaughterhouses in Rio Grande do Sul came to light. The project began with the creation of the Sulriograndense Slaughterhouse, started in 1918 and concluded in the following year, when an intense crisis was announced at the Pelotense Bank, the largest shareholder of the holding company. Facing a bankruptcy, the investors accepted the offer of purchase presented by the powerful English capital of the Vestey Brothers Group, owners of other slaughterhouses in Latin America. Thus, in 1921, the promise of a national refrigeration industry in Rio Grande do Sul was exhausted, giving rise to the installation of the Anglo Slaughterhouse in the city. Though, this venture would only begin in 1943, when the new facilities of the Slaughterhouse were inaugurated.

Deactivated for fifteen years, because of the Pelotense Bank crisis, until 1942, a refurbishing work was done for the new slaughterhouse. Encouraged by the increase in meat exports due to World War II, landfill and drainage of floodplains for the construction of solid structures was progressing day by day. The work has continued until, on December 17, 1943, the Anglo Slaughterhouse at Pelotas was inaugurated (Fig. 3).

British-owned Anglo Slaughterhouse (Vestey Brothers Group) and the three largest North American companies (Wilson, Swift and Armor) dominated the Brazilian meat market in the first decades of the 20th century.

This slaughterhouse operated for more than 90 years, and it had up to 15,000 workers. It started as a daring venture and as high stakes that resulted in equivalent failure in the late 80’s. The city of Pelotas had already 120 years of history when the slaughterhouse was inaugurated. It was, from the beginning, an industrial city, which had once experienced a period of wealth. It was not possible to find photographic records of the work activities inside the Anglo Slaughterhouse, but it is known that during the harvest period, around a thousand oxen were slaughtered per day, to meet local demand and for export (Fig. 4).

Context

By the end of the 1980s, production was already low. The slaughtering function ended in that decade and, shortly before closing, several products were no longer manufactured. As in so many other cases, the group shut down the factory and sold it. The sale occurred in the early 1990s. Officials attempted to reactivate part of the factory’s functions, but in vain. The silence fell on a place that for fifty years did not silence, for a short time. Anglo Slaughterhouse at Pelotas definitively closed its activities in 1991. Without machines, animals and production, the noises that used to be there happened occasionally, coming from minor occupations, anonymous visits, of people, authorized or not, in passing chores (Fig. 5).

Fig. 4: Anglo Slaughterhouse. Late 40’s.

Fig. 5: Anglo Slaughterhouse. Late 80’s.

The industrial landscape of the Slaughterhouse is a place where memory and identity meet.

The structure, which had once housed a large and noisy industry, with its workers, the animals that were slaughtered there, the industrialized products, remained silent for many years. In this period, silence prevailed in the great emptiness that remained in the abandoned industry on the banks of the São Gonçalo canal (Fig. 6). With this began the erasing of memory, which is slowly and imperceptibly for the new generations who didn’t know the history of the slaughterhouse. The memory of what that industry was is in every worker who still lives in Vila da Balsa, which has developed and grown from the Anglo Slaughterhouse.

However, during this decade and a half when nothing seemed to happen, the name Anglo remained stately on the pediment of the building where the meat was once produced. It remained that way, until the Federal University of Pelotas became the owner of the place between the years of 2005 and 2006.

Present

The old industry, which has been silent for so long, has got new life and new noises since the time when the Federal University of Pelotas came to occupy it. There were many changes, but the building where the cold store, was kept its shape recognizable. Although we can no longer see the grand pediment, we still have the great structure, drawing attention from the distance.

Fig. 6: Anglo Slaughterhouse. Late 90's.

Fig. 7: Anglo Slaughterhouse. Universidade Federal de Pelotas.

According to the Nizhny Tagil Charter, industrial heritage consists of remnants of industrial culture that have historical, technological, social, architectural or scientific value. The remainder of the Anglo Slaughterhouse at Pelotas, current Campus Porto of the Federal University of Pelotas, still makes recognizable what this great workplace was. However, in the place where the cold store functioned, the university allocated a space to refer to the history of the old slaughterhouse. The intense changes that took place internally, partly due to the urgency with which they were made, ended up favoring the continuation of some vestiges of what was this industrial workplace (Fig. 7).

Analysis

This discourse can be thought, in different proportions, as the remainder of Anglo in Pelotas. There are still elements with evocative force in what is left. And it's up to the memorial space created by the University to signal this evocation. The expression of memory needs to be shaped so that it asserts itself as a place and a symbolic prelude to ritualize the past. The function of a memorial space is not different from that of a museum: they both embody memorial discourses, employ narratives to identify a particular past, and ritualize objects, ideas, facts, and all sorts of manifestations in which humanity can recognize itself.

During the period in which the UFPel (in Portuguese, short for Universidade Federal de Pelotas) began to occupy the spaces of the old slaughterhouse, many photos were registered with the intention of preserving the memory of the place, since the modifications that were beginning to occur in the factory set began to mischaracterize the buildings and erase traces of the industry. This documentary impulse, often involuntarily, reveals the will to remember. The creation of the Anglo Memorial by the University, is an idea of musealization of part of the factory space, an expression of the understanding that the memory references demand to be enunciated from a physical place (MICHELON, CRUZ, 2016, p. 202). In the space of the memorial, and only there, it was left exhibit part of the constructive technique of the cold stores, making itself understandable to the visitor through the ruins (Fig. 8).

What is the perception of the population regarding the historical and visual bases in view of the existing documentation and the built heritage of the industrial architecture of the Angelo Slaughterhouse in the city of Pelotas (Fig. 9)? In this sense there is a greater approximation of elements considered essential to the memory and history of places and social groups. The redefinition of the concept of heritage, with issues related to monumentality, particularity and identity, according to the understanding of the groups involved, directly or indirectly, that are considered responsible for the conservation and preservation of a certain heritage.

Based on bibliographical references, studies, historical accounts and on the perception of society and urban memory about it, "the appreciation and consideration for the architecture of eclecticism, identified as representative of the local culture" in the city is "unanimous". And everywhere there is evidence of the golden age of the charqueadas cycle. What is the pertinence that this building, as an industrial character, which through its subsequent interventions and alterations, after the acquisitions made, have for the memory of the city? The panorama we have today, because of this acquisition, is in partly due to the revitalization of a partially abandoned district of the city, which today also includes investments in the private real estate sector, but which, on the other hand, promotes a mischaracterization of buildings that are important to the history of the city (Fig. 10).

Conclusions

Determined by the intention to respect the real meaning of the built complex and its formal composition, and by the knowledge gap that can be filled following the guidelines already demonstrated in the recent literature, and by the in-depth study of the bases of this industrial architecture, this work stands out for its importance as historical and cultural identity catalog. As Rossi says, "the world in which we live for a long time is full of places where images are present to have the function of bringing something to memory."

"Memory finds its place anywhere. May it be this big or small, near or far, physical or immaterial. What matters is that the place of memory is the ritualization of what is left of an end time, relentlessly sensed by remembrance". (MICHELON, 2012).

The physical rehabilitation, contemplated with the new buildings and recovery of the existing ones, was accompanied by a general requalification of the urban zone, through the infrastructure and the landscaping. This result, driven in part by the University, partly by the municipality, private initiative and community, configures the idea of an understanding that the memory references demand to be enunciated from physical places, and in this case, industrial patrimony (CRUZ, 2016). At the same time as it constitutes a new privileged place of the city, due to the location of the university center, it represents a space of rupture with the remaining tissue, mainly in relation to the new zones to the east and north of the city, where the foci of the new subdivisions and urban developments. The region is also marked by the contrasts between the old and the contemporary or between the new and the preserved. The theme of the renovation of the old architectural structures became the main axis of argumentation in favor of the identity of the cities and the permanence of the urban meanings.

Bibliography

BUCHANAN, R.A. The Theory and Practice of Industrial Archeology. Bath, Bath University Press, 1968;

CANAL, J. L. Orígenes de la arquitectura industrial moderna. Barcelona: Universidad Politécnica de Catalunya, 1992 (Tese de Doutorado);

CIVERA, I.A. La investigación sobre el Patrimonio Industrial. Una revisión bibliográfica. Universidad de Valencia: Revista Dossier, 2001;

CHAVES, Rita Miréle. Arquitetura moderna em Pelotas: aspectos de uma particularidade. 2002;

COSTA, Leonardo. A história dos frigoríficos no Brasil. Stravaganza, 17 mar. 2011. Disponível em: Acesso em: 16 jun, 2013;

CRUZ, Ubirajara B. FRIGORÍFICO ANGLO DE PELOTAS, A NEW HISTORY. Revista Memória em Rede v.8 n.14 jan/jun 2016 pp.181-186. Disponível em:<https://periodicos.ufpel.edu.br/ojs2/index.php/Memoria/issue/view/462>. Acesso em: 14 março, 2018;

KUHL, Beatriz M. Algumas questões relativas ao patrimônio industrial e à sua preservação. Patrimônio: Revista Eletrônica do IPHAN, 2006 - portal.iphan.gov.br;

Patrimônio industrial: algumas questões em aberto. Arq. urb, 2010 - usjt.br;

Preservação do patrimônio arquitetônico da industrialização: Problemas teóricos do restauro. Ateliê Editorial, 2008;

MENDONÇA, Adalton da M. Vazios e ruínas industriais. Ensaio sobre friches urbaines. Arquitextos 014.06, Portal Vitruvius, julho 2001. Disponível em:<http://vitruvius.com.br/revistas/read/arquitextos/02.014/869>. Acesso em: 18 jan. 2018;

MENEGUELO, Cristina.(2010). Urban voids and deindustrialization: industrial heritage in large Brazilian cities. Brazil-Portugal Network of Urban Studies and with Fapesp's Theme Project, Erudite and technical knowledge in the configuration and reconfiguration of urban space, Lisboa (2010);

MICHELON, Francisca Ferreira. Sociedade Anônima Frigorífico Anglo de Pelotas: o trabalho do passado nas fotografias do presente. Pelotas: Ed. da Universidade Federal de Pelotas, 2012;

PHILIPS, Alan. Arquitectura Industrial. Barcelona: Editorial Gustavo Gili, 1993;

ROIG, Carmem Vera; POIDORI, Maurício Couto. Patrimônio Cultural, Cidade e Inventário – Um Caminho Possível para a Preservação. PET/FAUrb/Ufpel, 1999;

TICCIH. Carta Niznhy Tagil. 2003. Disponível em:<www.patrimonio-industrial.org.br/modules.php?name=News&file=article&sid=29>. Acesso em: 10 fev. 2018;

VIÑUALES, Graciela María. Olhares sobre o patrimônio industrial. Arquitextos, Portal Vitruvius 091.03, dezembro 2007. Disponível em: <http://vitruvius.com.br/revistas/read/arquitextos/08.091/182>. Acesso em: 10 fev. 2018;

VIÑUALES, Graciela María: Las industrias y sus transformaciones. Summa, Buenos Aires, n. 262, junho 1989, pp 50– 55.

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Fig. 1: Map of Pelotas and Rio Grande do Sul, Brazil.
Source: the author.
Fig. 2: Anglo Slaughterhouse, Gable.
Source: Francisca Michelon. Late 80's.
Fig. 3: Anglo Slaughterhouse Opening (1943)
Source: Pelotas Memória

Fig. 8: Anglo Slaughterhouse_Constructive Technique, 2010.

Fig. 9: UFPEL, old Slaughterhouse ANGLO..

Fig. 4: Anglo Slaughterhouse. Late 40's
Source: Pelotas Memória
Fig. 5: Anglo Slaughterhouse. Late 80's
Source: Pelotas Memória
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Source: the author
Fig. 7: Anglo Slaughterhouse. Universidade Federal de Pelotas
Source: SECULT_Secretaria da Cultura de Pelotas
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Fig. 9: UFPEL, old Slaughterhouse ANGLO.
Source: Universidade Federal de Pelotas, 2016.
Fig. 10: UFPEL_general, old Slaughterhouse ANGLO.
Source: Universidade Federal de Pelotas, 2017.

Fig. 10: UFPEL_general, old Slaughterhouse ANGLO..

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Ilaria La Corte is an architect and a PhD student at the Faculty of Architecture of the University of Porto (Faculdade de Arquitectura da Universidade do Porto – FAUP), Portugal. She Graduated at the Faculty of Architecture of Roma Tre University, where she obtained the master degree in 2009. In 2016 she joined the PhD Program in Architecture (PDA) of the Faculty of Architecture of the University of Porto (FAUP), where she is currently developing a PhD research entitled "POLÍTICA, CIDADE E HABITAT NO DEBATE INTERNACIONAL (1950-1970) Os contributos paralelos de Nuno Portas e Giancarlo De Carlo", supported by a scholarship from the Foundation for Sciences and Technologies (FCT). Since 2014 she is assistant professor at the Politecnico di Milano where she has been carrying out didactic activities in the field of architectural and landscape design, lecturing academic lessons, assisting as thesis supervisor and participating as a tutor in seminars and international workshops such as the International Summer School of Piacenza. As an architect, she has been working with several architectural firms in Rome and Lisbon, always accompanying her professional experience with theoretical research on the themes of the project in sensitive contexts. She has participated in multiple research and urban planning groups in South America and Africa, and collaborated in 2010 with the NGO Live in Slums working on site in the Mathare slum in Nairobi and in the City of the Dead in Cairo.

Fig. 1: Student protests during the 1960s, in Italy.

UNIVERSITY AND CITY: the crisis of the Italian university system in the sixties and the Urbino University Colleges of Giancarlo De Carlo

Abstract

In the 1960s, a few years after the explosion of university uprisings in Italy that marked the transition from elite to mass university, Giancarlo De Carlo was called to design the University Residential Colleges of Urbino. For De Carlo, who was always careful to study the academic dynamics constructively, this project became an opportunity to experiment in a practical way with the theoretical considerations expressed in the book La piramide rovesciata, in which De Carlo analysed the university situation at the time. This paper investigates the relationship between the university uprisings and the design process of Urbino's University Colleges and point out how this project anticipated issues, such the management of the project between the scale of the building and that of city, that after forty years are still relevant for research and practice within architecture and urbanism.

City // University // Giancarlo De Carlo // Urbino University Colleges // Architects' e

Introduction

The social and cultural context: the student protests of the 1960s and La piramide rovesciata

The university system existing in Italy in the 1960s was based on a rigid model characterized by a pyramidal system made up of a hierarchy of roles. This model considered the University as an instrument of ideological control and a source for providing the ruling class (De Carlo, 1968). The student protests against this system broke out in December 1963, marking the first sensational case of university uprisings in Italy: shortly after the beginning of the academic year, the students of the School of Architecture of Milan began a strike (Fig. 1). A few months later, the strike extended to other universities all over Italy. Besides the initial issues, the dispute touched on much more delicate matters, such as the tasks that architects must perform in society and the type of preparation that the school had to guarantee to allow them to carry out their work in society.

For Giancarlo De Carlo, who had dedicated himself to teaching since the 1950s, when he became a professor at the IUAV of Venice, the academic activity had always represented an important moment of elaboration, also for practice activity (Bunčuga, 2000).

His great respect for the students of the school is confirmed by the passionate way in which De Carlo followed the protest events, trying to understand their underlying motivations. A clear outcome of this interest is the book La piramide rovesciata (Fig.2), written and published in 1968, in which De Carlo, departing from the Italian student uprisings, tried to analyse not only the situation of the university but also to reflect on education and the role of architects. This led to a wider and more involving discussion about the crisis of the project that seemed to be ever further from the social reality of the country.

One of the main causes of the confrontation between the students and the university system had its roots in the latter's incapacity to renew itself in the face of the social changes that were taking place. This failure in turn caused an inefficient and outdated response of university education, which did not allow future architects to deal with specific skills in the different situations that they faced.

From elite to the mass university

One of the most important components of the transformation of contemporary higher education is the transition from elite university to the mass one. This passage is marked by the significant increase in student numbers across the globe, from the USA to Japan and Europe, between the first years of the 20th century and the 1960s (De Carlo, Mancuso, Semerano, Viti, & De Rosa, 1968).
However, the quantitative phenomenon also had qualitative implications, which, beyond the dimensional aspects, concerned the function and organisational structure of the university.
The problem of university expansion could not correspond only to the expansion of existing places or the creation of new offices. It was a radical transformation that undermined the traditional relations, upon which higher education had been based up until that time, beginning with its goals. These goals converged on the sole aim of providing the notions required to exercise a profession that could be deemed stable, not only because it corresponded to a well-defined specialisation, but also because it was adjusted to a set of values that the elite automatically approved.
In the society under the transformation in the 1960s that produced mass universities, jobs were no longer stable. On the contrary: they were characterised by continuous fluctuations arising from exchanges of knowledge and experiences. In addition, the system of values had become much more articulated than in the past, and its configurations were no longer univocal, but dialectic. For this reason, the same job had different characters.
It follows that mass university, even maintaining the goal of preparing students for a job, had to alter the ways. "A mass university must produce individuals specialised in the job, but able to relate their specialisation with other contiguous experience" (De Carlo, Mancuso, Semerano, Viti, & De Rosa, 1968).
From this transformation, a series of consequences followed. These modified the university structure based on traditional teaching of the "by rote" type, including, among the most important, a change in the traditional relationship between students and professors that was consequently no longer frontal and unidirectional, but tended to be replaced with group work and a vast network of educational centres to be used depending on the curriculum.
This reduction of the vertical system of the university also affected universities' autonomy, which was understood as an opening to external experiences. The mass university lost the character of the closed campus, entailing contact and continued involvement with external events, which led to a different structure in terms of space. Indeed, the border between the university and the city fell, as the city became part of its weave.

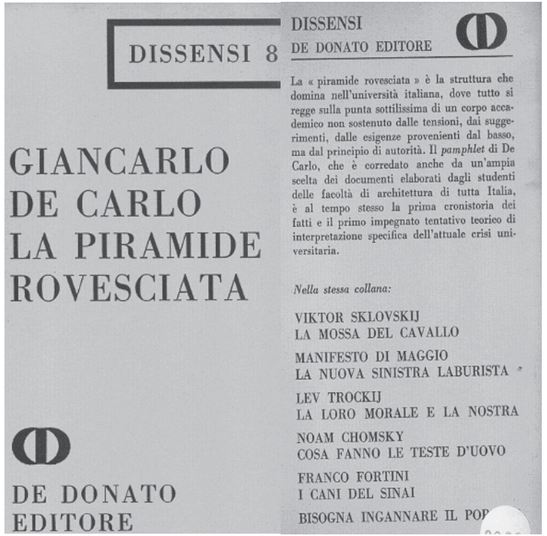

Fig. 2: Giancarlo De Carlo, La piramide rovesciata.

A new model, the University Residential Colleges of Urbino

From an urbanistic and architectural point of view, the university became a necessary infrastructure for the whole urban community. Therefore, it had to be easily accessible from across the inhabited territory in which it was located and had to be highly integrated with it. The university was no longer just a basic service, but an actual infra-

Fig. 3: Map of Urbino with the projects by Giancarlo De Carlo. On the right the University Colleges (4).

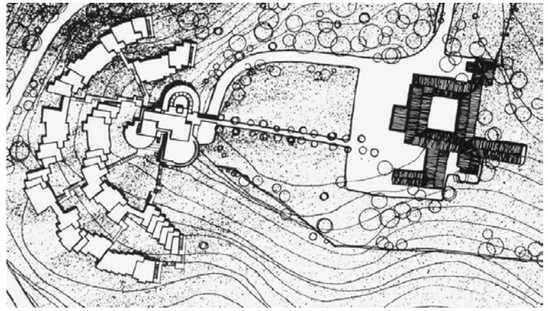

Fig. 4: Plan of Collegio del Colle, on the right the Convento dei Cappuccini.

structure that had to be planned with the city. An example of this is the wide complex of University Colleges made by Giancarlo De Carlo in Urbino during the period in which the 1960s student uprisings had made evident the gap that existed between the university system and the society of the time. The intervention in Urbino allowed De Carlo to investigate issues related to the university and the city experimenting new solutions.

The relationship between Giancarlo De Carlo and the city of Urbino began in the 1950s, with the design of the town plan. The realization of the University Colleges in the 1960s marked an important step in this relationship. In this project, De Carlo's interpretation of modern architecture in relation to the historical city is particularly evident as a necessary reading of the site, including all the subjects of the project. For Giancarlo De Carlo, Urbino became, as he himself said, a map to which he always referred to understand and verify his own path as an architect (De Carlo, Nicolin, 1978).

The building process went on for more than 20 years. Between 1962 and 1966, the first core, the Collegio del Colle, which had to host 150 students, was realized. Around ten years later, the Colleges needed to host more than 1.000 students; thus, in the period between 1973 and 1981, there was a substantial extension of the structure, with the realization of the Nuovi Collegi Universitari: Il tridente, L'aquilone and La vela. This transition from 150 initial students to 1.000 shows strong similarities with what happened in the evolution from the elite to the mass university, a phenomenon wherein the reasons for the student protests lay.

The place chosen by Giancarlo De Carlo to establish the University Colleges is the Colle dei Cappuccini, ten minutes' walk south-west from the city (Fig. 3). The entire project was developed around the old Convento dei Cappuccini which, in the general configuration of the intervention, became a centralising element based from which he identified a series of other poles. Each of these poles keeps together several other facilities and services that are larger cores, which, albeit independent units in form and function, are closely linked with one another by a coherent and standardised spatial rationale. All these parts are linked by a capillary system of paths that characterise the whole complex.

The design choice made by Giancarlo De Carlo revealed his interpretation of modern architecture in relation to the historical city. In fact, he researched the exact urban dimensions for his project that would have a strong contemporary character but make clear references to the historical city.

The Collegio del Colle was completed in 1965. The project immediately secured for De Carlo an international reputation, as it was published on the opening pages of the Team 10 Primer (1968). "It was considered a striking resolution of themes then being explored by Team X as a whole: to do particularly with hierarchies of use and parallel hierarchies of form, capable of mediating between the scale of the building and that of the city. It also reflected De Carlo's own concern with history and the possibility of extracting tangible lessons from existing contexts"(Zucchi, 1992, p.74).

Located opposite to the Convento dei Cappuccini (Fig. 4), the Collegio del Colle complex was designed according to the Team X's principle of the building as fabric and consists of two main parts. The core of the common areas, which represents the hub of the whole composition around which the student lodging developed along arcs able to accommodate 150 students in individual rooms.

The central core with the common areas is developed on three cylindrical volumes around a central block that intersect and are vertically staggered in relation to one another so as to follow the contour of the sloping site. On different levels they houses the dining room, living room, reading areas and other communal services. The highest cylinder, to the right of the main entrance, contains the conference room. Its location at the highest level, therefore dominating the rest of the structure, means that, within the entire complex, this space is recognized and distinguished from the remaining areas destined for other activities.

The lodgings are divided into a system of branches that accompany the level curves. Each architectural cell is designed to house two bedrooms, each with an independent entrance. The two nuclei, the private and the collective, are connected by paths that wind their way from the large terraces of the central building in staircases, cutting the natural curves of the hill.

The set of three cylinders shows itself as an example of brutalist architecture, both in the treatment of materials and in the play of volumes with light, establishing a perfect balance with the surrounding nature. In fact, the basis of this design is the study of the relationship between man and landscape architecture.

The Colleges were developed with the aim of creating an organism able to stimulate community life while preserving the intimacy and autonomy of each student. This is emphasized by the morphological aspect of the two nuclei: one circular, the other trapezoidal. In 1962, Aldo van Eyck, one of the members of Team X, wrote an article in Forum magazine, which underlined the archetypal value of circular figures as symbols of gathering places and collectives (Fig. 5). In dealing with the subject, even from an anthropological point of view, he identified that aboriginal rites and dances take place in a circular or semicircular configuration. One of the examples published by Van Eyck shows a similarity to the form of the University Colleges

Fig. 5: Aboriginal dance published by Aldo Van Eyck in Forum Magazine in 1962.

designed by Giancarlo De Carlo (Fig. 6).
About ten years later, in the face of the need to increase the student rooms to 1000 unities, Giancarlo De Carlo had the opportunity to deal with the expansion project of the Colleges that would be in settled in the same place and in proximity to the existing complex. This transition reflected the same dynamic of the evolution from the elite to the mass university referred in the book La piramide rovesciata: "Mass university is not elite university expanded or simplified. A quality leap corresponds to the quantitative leap, transforming it into a model radically different from the previous model" (De Carlo, 1968). The Collegio del Colle was considered an exemplary case of an open system; in fact, in case of the need for expansion, it would have been sufficient to increase its plan with ramifications of the same type. In fact, De Carlo designed the new settlements by radically altering the previous system. So, as he reports in La piramide rovesciata (1968), he realized not a quantitative but a qualitative transformation.

De Carlo expresses himself in these terms: "...contrary to what was expected, I ended up projecting a new system that is not in continuity with the previous one, but changes radically. Why? Firstly, because in the ten intervening years the circumstances changed and so did I; secondly, because relations to the first project were recorded and taken into account; finally, and most importantly, because the quantitative leap was such that it required a different quality" (De Carlo, Nicolin, 1978).
Undoubtedly, the designing choices made for the first College (Il Collegio del Colle) were fundamental for the other structures that De Carlo decided to divide into three distinct nuclei, each characterized by a central part containing the collective spaces, around which the residential spaces are articulated in a very different configuration according to the landscape characters.
Each new nucleus is strongly related to the others and to the pre-existing buildings (the Collegio del Colle and Convento dei Cappuccini), which, in this way, assumed the role of the historical centre and memory of the site. Meanwhile, the different types of residential solutions characterize the new "neighbourhoods" of this university double town (Fig. 7).
The first intervention generated an organism in the form of a city. The second proposed instead to create a piece of city, whose organizational and compositional fabric reflects the built and natural fabric of Urbino (De Carlo, Nicolin, 1978).
The ancient convent, the first autonomous structure, became an active part of the whole system. Each organism contains collective equipment, distributed to different extents and so as to encourage the animation that characterizes the population centres. The three new Colleges were built using the same materials as the first and also the modular subdivision of lodging, although the residential environments are smaller in order to prevent students from using them in an overly individualistic way. Likewise, single rooms (some doubles for couples) were also concentrated in groups of six or eight and provided with shared sanitary facilities and collective living spaces.
The University Colleges of Urbino cannot be considered as a single building or a series of different buildings. A correct reading of this work must consider it as a unitary set, even with specific design rationales for the different scales of the project. This uniformity allows the planned spaces to be seen in a strong analogy with certain spatial characteristics of the historic city. Giancarlo De Carlo in fact openly declares his intentions for the project in this regard: "The general texture, as in Urbino, has a constant plot: materials, technology, scale proportion, volumetry. And, as in Urbino, it has a variable spin: organisational types and formal space configurations and, thus, also forms of use" (De Carlo, Nicolin, 1978).
Although the context always remains strongly naturalist, it almost never leaves a fully built space. Through different operations, buildings constantly follow visitors, restraining the view from both sides and allowing it to penetrate only occasionally. As such, the paths that structure the system are actual streets, which in turn flow into squares resulting from the coverage of collective spaces.
"What makes this building a house and a city (the reason for its success) in addition to the consistent use of the same construction, the same vocabulary, the same materials, the same colour everywhere, is another trick. It is two places at the same time; open and closed, inside and outside, big and small and above all has a meaning both individual and collective. It belongs to the building to the same extent it belongs to the area, in fact the building is the area and vice versa."

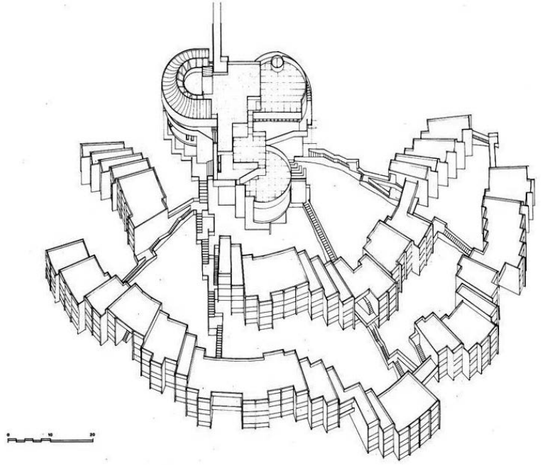

Fig. 6: Axonometry of the Collegio del Colle.

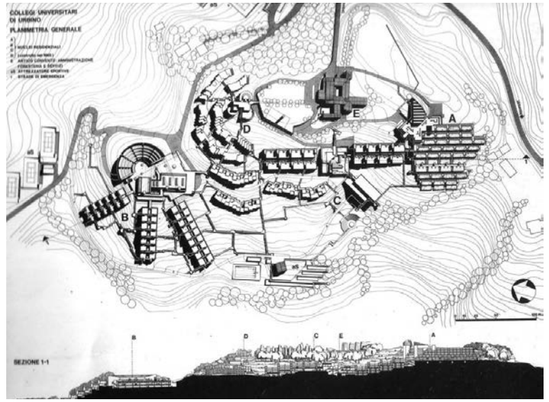

Fig. 7: General plan of the University Colleges of Urbino: A. La Vela (1974-1979); B. Il Tridente (1973-1979); C. L'Aquilone (1975-1980); D. Il Collegio del Colle (1962-1966).

This is how Aldo Van Eyck expresses himself in Zodiac 1966, n.16, referring to the continuous system of paths, stairs, terraces, interiors and exteriors that connect and penetrate all the spaces, large and small, individual and collective, integrating the architectural intervention with the landscape in a unique way (Fig. 8-9).

This permanent confrontation between the general principles of planimetric implantation and the specific characteristics of the types of spaces they give rise to is the basis for the studies De Carlo carried out on project scales across the years. The Colleges of Urbino showcase the nature of a work that extends between architecture and city, whose project choices seem appropriate due mainly to strong project control at its different scales.
This subject is also repeatedly highlighted in La piramide rovesciata (1968). On several occasions, the author stresses the need for specific professional preparation for the different stages of the project. The social context that the architect would face thereafter was deeply altered or, better said, widened, thus increasing the number and type of project issues to which the architect had to relate. The architecture project thus had to cover a series of skills that went from object to city.

The spatial qualities of the Colleges, resulting from a project developed in parallel with the different architectural scales, is even more noteworthy when one examines the detail. Each of the cores identified above follows, in the relations between its parts, the same conceptual matrix; while the originating spaces are clearly differentiated form one another.

The sole constant aspect is still the use of materials that helps give unity to the whole. The buildings with major volume, around which the residences are articulated, always host collective activities.

Conclusion

The Colleges of Urbino can be studied from two different points of view. On the one hand, there is an architectural and spatial structure that is repeated using the same principles at the different project scales.
On the other hand, there is a wide range of activities and social relations that arise from the organisation of physical space. The collective activities occupy spaces that expand and contract

Fig. 8: Il Collegio dell'Aquilone, general view.

Fig. 9: Collegio del Colle, view of an external walkway.

according to whether their use is more or less individual. This double nature of interior common spaces gives the structure ambivalence both physical and conceptual, placing it midway between external and internal. Spaces for study are interpolated with wider areas equipped with small amphitheatres for theatre activities, cultural gatherings, and collective moments in general. Is clear that the architectural complexity of the university Colleges seems to be the result of a series of attempts and experiences that took place over time and led to a final choice only later.

Indeed, in the University Colleges, Giancarlo De Carlo took up some of the concepts expressed in La piramide rovesciata, including for instance the awareness of the fact that quantitative growth must lead to qualitative improvement. This is inherent to mass society: the existence of both the university and architecture is conditional upon their end users, whose numbers had increased significantly over the relevant period, therefore adding new requirements to the pre-existing ones.

Forty years after the realization of the University Colleges of Urbino, these buildings remain a functional structure and are still an important reference for research and practice within architecture and urbanism. In particular, the research for an idea of social space linked to the careful reading of the needs of its users, can be still current and can contrasts some formalist tendencies of contemporary architecture as well as the attention to the physical and social context can still have an operational capacity in the projects for contemporary urbanized territories.

Bibliography

Guccione, M., Vittorini A. (ed.) (2005), Giancarlo De Carlo: Le ragioni dell'architettura, catalogo della mostra, MAXXI, Roma 2005. Milano: MondadoriElecta.

McKean, J. (2004). Giancarlo De Carlo: layered place. Stuttgart: Edition Axel Menges.

Samassa, F. (ed.) (2004). Giancarlo De Carlo. Inventario analitico dell'archivio. Padova: Il Poligrafo.

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Fig.1: Bunčuga, F. (2000). Conversazioni con Giancarlo De Carlo. Architettura e libertà. Milano: Eleuthera.

Fig.2: De Carlo, G. (1968). La piramide rovesciata. Bari: De Donato.

Fig.3: De Carlo, G., Mancuso, F., Semerano, P., Viti, G., De Rosa, L. (1968). Pianificazione e disegno delle Università. Roma: Edizioni universitarie italiane.

Fig.4: De Carlo, G., Nicolin, P. (1978). Conversazione su Urbino. Lotus 18.

Fig.5: Van Eyck, A. (1966). University College. Urbino. Zodiac 16.

Fig.6: Zucchi, B. (1992). Giancarlo De Carlo. Oxford: Butterworth Architecture.

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Ana Maria Reis de Goes Monteiro is an architect and urban planner with masters in urbanism and doctorate degree granted by State University of Campinas - UNICAMP. Since 2001 she has been teaching at the Architecture and Urbanism course at UNICAMP. She was the coordinator of the Architecture and Urbanism course at UNICAMP between December of 2010 and April of 2012. She represents the University at the Municipal Council of Urban Development of Campinas – CMDU. Since 2016 she has been the director of the Memory Centre of UNICAMP - CMU. Since 2017 she has been vice president of Brazilian Association of Architecture and Urbanism Education – ABEA. At the postgraduate level, she works in the Architecture, Technology and City program at UNICAMP's Faculty of Civil Engineering, Architecture and Urbanism. She has experience in Theory and Design, working mainly in the following subjects: architecture teaching, Brazilian Architecture between the 1930's and the 1980's.

Fig. 1: Distribution of slums – Municipality of São Paulo – 2016.

Fig. 2: Irregular occupations in São Paulo municipality.

Education for reuse of modernist buildings: what to do with abandoned buildings in urban centers?

Abstract

In Brazil abandoned buildings in urban centers are continuously being occupied by homeless families. The aim of this work was to design a housing architectural project, considering the existing conditions of Prestes Maia Building occupation, located in the city center of São Paulo. The main principles of the architectural design were to think about solutions that optimized ventilation and natural lighting as well as the creation of collective spaces for socialization. The student also made an intervention in an area located in front of the Building, to demonstrate different possibilities for urban occupation in city centers.

City // University // Giancarlo De Carlo // Urbino University Colleges // Architects' education // Design process // Modern architecture

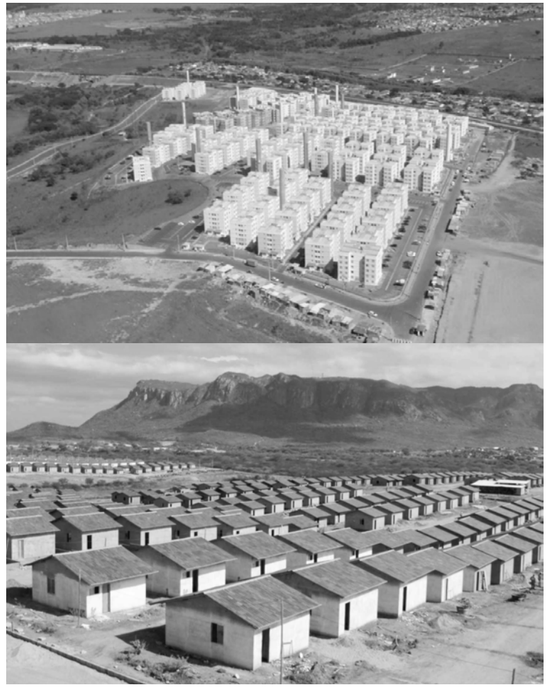


Fig. 3: Examples of housing developments implemented by the Minha Casa, Minha Vida Program;Sirius Residential – Campinas city – São Paulo State - Piauí State.

Fig. 4: Prestes Maia Building - 2016.

Introduction

The main goal of this work is to present the teaching methodology and the result of an academic research study for a final work, under my supervision, in Architecture and Urban Planning undergraduate course at the State University of Campinas, in São Paulo, Brazil. The work still reflects the project methodology developed during the Architectural Design subjects, which I am responsible for.

The growth pattern of Brazilian cities can be characterized by the sprawling, the concentration of population in large urban centers, the strong social exclusion, the precarious state of public services and especially by the inadequate conditions of housing. Fig. 1 shows the distribution of slum areas in the city of São Paulo. Predominantly located in the borders of the city, the slums are characterized by the lack of urban infrastructure, the deficiency of public services, not to mention the precarious housing itself.

In the most central and noble part of the cities there are other types of precarious housing, they are tenements and empty buildings occupations. According to the Grupo de Mediação de Conflito (in free translation: Conflict Mediation Group), of the Municipal Housing Bureau of São Paulo, there are 206 occupations in the city of São Paulo, housing around 45,872 families. Out of those, 53 occupations are in the downtown area of the city, where 3,300 families have lived in (Fig. 2).

In the last years, the Brazilian govern established the Minha Casa, Minha Vida Program (in free translation: My House, My Life) that has been characterized by the implementation, throughout Brazil, of huge housing developments located far from urban infrastructure, as seen in Fig. 3.

Meanwhile, São Paulo city government has invested in the downtown area, through some renovation projects, including cultural institutions, public buildings and a general urban renovation plan. It has also invested in the renovation of derelict buildings, transforming them into social-scope housing. However, the housing deficit is enormous. Abandoned buildings in urban centers have still been occupied by homeless people, as it has happened with the Prestes Maia Building, the aim of this study. Another issue focused by this work is the fact that housing projects have been projected to users and, most of the times, do not have a properly-characterized profile, what may end up causing adaptation problems upon the time of the effective occupation of these housing developments.

The experience

The characteristics of the contemporary urban Brazil bring up growing challenges to architects and urbanists. They are asked to provide diagnostics based not only on the empiric reality knowledge but also endorsed by scientific information. However, due to its own professional nature, their actions are not limited to this; it is fundamental to present a project kind of proposal. The same is observed when targeting the training of these professionals, especially for the Trabalho Final de Graduação (TFG - Final Graduation Work). By the Brazilian legislation, this is a mandatory curricular work and, among other points, must be individually developed. Added to it, this study is to be developed within a year of the academic life.

To better understand the didactic strategies adopted, it is necessary to position the Final Graduation Work developed in the Architecture and Urban Planning undergraduate course at the State University of Campinas – Unicamp, into two scopes: the first related to the federal legislation, and the other, to internal regulations of the course. In

the federal scope, the Resolution No. 2 of the National Council of Education (CNE - Conselho Nacional de Educação) of June 17th. 2010, established the National Curricular Guidelines for the Architecture and Urban Planning undergraduate courses. It is composed of 11 clauses and the legislation preconizes that its curricular contents should be allocated in two groups - Conhecimentos de Fundamentação (in free translation: Knowledge of Rationale), Conhecimentos Profissionais (in free translation: Professional Knowledge) and the Trabalho de Curso (in free translation: Course Work). The Rationale group is composed of knowledge-related areas that subsidize the theoretical basis needed to the professional future for developing a proper learning. The Professional Knowledge group comprehends the learning fields toward the characterization of the graduated student professional identity. The Course Work is a mandatory curricular item to be carried out during the last year of the undergraduate course (CNE, 2010).

The legislation also provides that the Course Work should: be monitored by a faculty member; involve procedures related to technical-scientific assessment; be developed by the academic student during the last year of the course. Besides, it is supposed to focus on a certain theoretical-practical area or professional development, as a synthesis activity and a knowledge integration and consolidation of researching techniques. The clause 9 of this law act states that the Course Work should also observe the following precepts:

"I – an individual work, with free-choice topic selected by the undergraduate student, and must be related to the professional responsibilities;

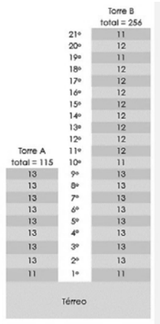
II – to be developed under the supervision of an advisor professor, selected by the student among the faculty members of the course, depending on the Institution" (CNE, 2010).

The legislation also provides that the Course Work should count on a specific regulation, approved by the Higher Council of the Institution of Education, not only containing the criteria, procedures and evaluation mechanism, but also the guidelines and techniques related to its elaboration.

Based on the guidelines above mentioned, the rules and procedures were elaborated to compose the Course Work of Unicamp, herein named Trabalho Final de Graduação – TFG. In general, the TFG of the Architecture and Urban Planning undergraduate course in Unicamp is carried out individually and it is based on a project. It should synthetize and express the integration of the knowledge and contents covered during the whole course. Students are free to select the theme of the TFGs, provided it is in accordance with the political-pedagogical project of the course. Each student is oriented by an architect and urban planning professional, a professor of the course. The evaluations are carried out periodically by a group of advisors, members of the faculty with some evaluation criteria being considered throughout the work development as: the conception/conceptualization of the topic; the methodology and the project process; the feasibility and/or constructability of the proposal and the quality of the graphic representation. The final evaluation is held by an examination panel composed of the student's advisor, an architect and urban planning professor member of the course and an external architect and urban planning professional. At the time of the final evaluation, the student should demonstrate self-sufficiency as a project planner, ability to identify and develop a project in its urban/social condition and consolidate the project as an urban/architectural proposal – using correct technical and theoretical tools required to

Fig. 5: On the left, a patio between the two towers of the Prestes Maia building; on the right, the view of the ground floor.

Fig. 6: View of the common areas on two different floors .



Tower B		
Number of relatives	Quantity of families	Number of apartments needed
1 person	82	122
2 people	53	82
3 people	50	78
4 people	31	48
5 people	16	26
6 people	6	9
7 people	2	3
9 people	1	2
12 people	1	1
Total	242	371

939 people living in Prestes Maia building!

Tower A: 9 floors, 115 families, among 11 and 13 families per floor
Tower B: 21 floors, 242 families, among 11 and 13 families per floor

Fig. 7: Family composition of residents living in the Prestes Maia Building.

Survey of areas (m²)	
Land	1.107,12
Underground	1.107,12
Ground floor	1.060,20
Mezzanine	799,17
Pavement type Tower A (9x)	338,90
Pavement 01 Tower B	553,19
Pavement 02 Tower B	334,69
Pavement type 03 a 09 Torre B (7x)	536,97
Pavement type 10 a 21 Torre B (12x)	444,25
Cover and engine room	509,15
Grand total	16.503,41
Total Residential	13.027,77

Area per inhabitant
13.027.77 / 939 = 13,87m²/people

Fig. 8: Floor areas of the Prestes Maia Building.

the activity of an architect/urban planning professional.
This work was developed in this urban and academic context and refers to an intervention for the Prestes Maia Building. This modernist architecture building is in the downtown area of São Paulo city. It was inaugurated in the 1960's as a textile factory, the Companhia Nacional de Tecidos, which went bankrupt in the beginning of the 1990's. Since then, the property has been abandoned and experiencing a slow deterioration process (Fig. 4).
The building is composed of two towers: one with 9 floors and the other with 21 floors. In 2010 it was occupied by some homeless families. It is the largest vertical occupation in Brazil. The elevator is broken, so the residents must climb the stairs up to its 20 floors and in obviously precarious equipment conditions, as shown by the images here included (Fig. 5).
One of the first challenges was to define the didactic-pedagogic strategies and the concepts over which the faculty member would endorse, so the undergraduate student carrying out the TFG would eventually connect the critical thinking about the spatial, social and territorial segregation process existing in the city, the different political, urban and programmatic levels involved, their potentialities, characteristics and particularities as well as some possible regeneration programs of that modernist building or, as properly defined by Morin (2010):
"Every knowledge constitutes, at the same time, in a translation and a reconstruction, from signs, indications, symbols, as representations, ideas, theories, discourses. The knowledge organization is carried out based on principles and rules…it comprises connection operations (combination, inclusion, implication) and separation operations (differentiation, opposition, selection, exclusion). The process is circular, passing from separation to connection, from connection to separation, and from analysis to synthesis, from synthesis to analysis."
The TFG challenge to project a decent housing for the families currently occupying the Prestes Maia building, taking into consideration the pre-existing conditions, was quickly identified. Such premise would mean a huge effort, especially when observing that, despite being abandoned, this building has kept its original characteristics of factory-designed features. It is known that renewals of urban sites/buildings in Brazil tend to a gentrification process. However, the Brazilian appreciation of "differentiated" uses (in the sense of stylish and exclusive) for valuing old buildings must be emphasized here. According to Ulpiano Bezerra de Menezes (2006):
"(...) it is as the recognized qualities of these buildings could not be contaminated by some "less noble" uses, inherent to work and daily routine (…) the safer way to create more favorable conditions toward the social inclusion in cultural heritage buildings is, without any doubt, the recognition of the primacy of the everyday life and the world of work in identification, protection and valorization policies and, consequently, of functional potential maximization'
In the first phase of this work, the undergraduate student carried out a bibliographic review, related to housing in Brazil, and undertook several site visits. It was immediately perceived that a woman was the general coordinator of the building, there was one manager for each floor who must attend their monthly meetings and a strict code of behavior that residents must follow: it is prohibited to carry weapons, to consume alcoholic beverages or illegal drugs in it. Beggars are not allowed in the occupation site either, all residents must work or be looking for jobs which, most of the times, are informal labor workers. It is prohibited to walk in its corridors without a shirt or in intimate apparels. Every day one resident of each floor shall wipe and clean the corridor's floor with a cloth. Another person is in charge of the bathrooms. The organization and tidiness can be seen in all common areas on the floors, as observed in Fig. 6.
After carrying out a vast assessment, it was possible to identify the total number of people living in the building. There are 242 families in the higher tower and, 115 families in the lower one, a total of 939 residents. Out of these, around 300 are children ranging from just-born babies to 12-year old kids. Based on the information of the family composition it was possible to establish the number of apartments on demand – 371 – and to define the area required for each floor (Fig. 7 and 8). Important to mention that not even the coordinator of the building was aware of the total number of residents living there.
The next step was to assess the current legislation. It showed that the currently average area of each unit (15 m²) did not even reach the minimum area requested by the Sanitary Code of the State of

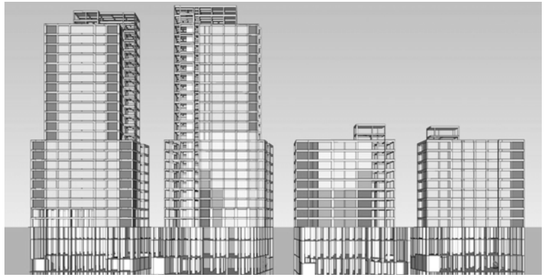


Fig. 9: Final study of insulation and ventilation for the building facades.

Plan for the 1st. floor

Plan for the 2nd. floor

Plan for the 3rd. up to the 9th. floor

Plan for the 3rd. up to the 9th. floor

Figure 10: Occupation proposal of the standard floors

São Paulo for bedroom/living room units. That said, it is safe to say that the two towers did not count on enough area to house all those families. Since the main premises of the project were to propose solutions to optimize its natural ventilation and insulation, to assure pleasant common spaces and privacy for the residents, some simulation programs were used in this study (Fig. 9).

The great length of the slabs, especially in the "B" tower, of almost 18 meters between the facade of Prestes Maia Avenue and the facade of the internal patio, impeding an adequate access to the natural insulation and ventilation. For this reason, a rupture of part of the slabs was proposed for the standard floors, to create some open spaces and potentialize the natural air flow, the incidence of sunlight and circulation to allow some meeting areas as well as privacy for accessing the apartments. The residents already had a small library and it was relocated to the mezzanine on the second floor. On the top floor of the A tower, a leisure space was proposed – for barbecue – and a collective laundry room. Due to the family composition of the current residents, 4 types of projects were then proposed: a bedroom and living room unit; a one-bedroom unit, a two-bedroom unit and a three-bedroom apartment for a family of 12 people (Fig. 10).

Considering they are low-income residents, it is likely that they could not afford to pay a future fee for the building maintenance. Therefore, a commercial area was proposed for the ground floor, so its rental cost could be used to pay the building conservation expenses. The supermarket proposed could also meet the demand of the surrounding population with a mid-sized retailing trade business. The ground floor was projected to give access to the apartments, and would count on a bakery, a butcher and a supermarket. The administrative area and the place for providing support for the employees were placed on the mezzanine while a storage area was proposed for the basement. (Fig. 11)

This project proposed 229 apartments to provide house for a total of 494 people. However, as previously seen, 371 apartments were requested to meet the demand to include its 939 residents. Therefore, an issue urged to be solved: what to propose for those that were not included here? Where to relocated them? In the housing developments proposed by the federal government and mentioned in the beginning of this study?

The solution was just facing the Prestes Maia Building. As observed in Fig. 12, the construction of a metro station had left behind a huge empty area in front of the building. It is quite disappointing but, in Brazil, there is a lack of communication between different bodies of the State, concerning the public policies. In this specific case, an integration including the Housing Department and the Local Secretariat of Urban Development would be extremely important to create new housing options downtown, as well as recreation and leisure areas in the residual area left by the construction of metro stations.

Therefore, the undergraduate student formulated a proposal for the whole area, indicating possibilities for occupying and increasing the population density, quite often overlooked in Brazil. The project for this specific area proposed the implementation of three housing towers, capable to include 250 families, besides those that would be reallocated from the occupation of the Prestes Maia building. On the ground floors of these buildings, a commercial area, a children daycare and a small health care unit were proposed. A large pergola, passing over the metro station area will offer proper space for popular fairs, a quite common event in Brazil (Fig. 13). It is expected that through this proposal we will be able to have more lively and human cities.

Conclusion

The experience reported in this study is based on procedures related to the traditional methodology of Final Graduation Works been carried out by Brazilian Architecture and Urban Planning undergraduate courses, as well as keeping up with the premises proposed by the national curricular guidelines. However, its results validate the need to promote variability and constant reflection over these methods, aiming to be up to the natural extensions of TFGs' themes and complexities, as well as to the constant and growing social requirements concerning the activities of future professionals. The traditional architecture teaching models and methodologies are not consistent with the current social complexity. Moreover, the answers and concepts to be apprehended by students are often beyond the architecture scope, although complementary to it. It is crucial to take into consideration

Figure 11: Plans for the ground floor, the mezzanine and the basement.

both the social actors and their specificities (structural determinations, symbols, signs of belonging, choices, values etc.) and the space of which they interact – not as a mere scenario, but as a product of the social practice these agents accumulate, and as a determination factor of their practices. Space and place may and should be differentiated through the everyday life appropriation. Thus, the place could be recreated by the user and would represent there the identity that is continuously constructed with the space that was projected by architects.

Bibliography

Bonfim, V. C. (2004). Os espaços edificados vazios na área central da cidade de São Paulo e Dinâmica Urbana. Dissertação (Mestrado em Engenharia) - Escola Politécnica da Universidade de São Paulo, Brasil

Brasil. Ministério da Educação.(2010) Conselho Nacional da Educação. http://portal.mec.gov.br/index.php?option=com_content&id=12991:diretrizes-curriculares-cursos-de-graduacao. [Online] [Acesso em 09/04/2018]

Meneses, U. T. B. de, Arantes Neto, A. A., Carvalho, E. de A., Magnani, J. G. C., & Azevedo, P. O. D. de. (2006). A cidade como bem cultural: áreas envoltórias e outros dilemas, equívocos e alcance da preservação do patrimônio ambiental urbano. [Debate]. Patrimônio : atualizando o debate. São Paulo: IPHAN.

Morin, E., (2006) Os sete saberes necessários à educação do futuro, 11ª ed. São Paulo: Cortez; Brasília: UNESCO.

Morin, E., (2010) A cabeça bem feita: repensar a reforma, reformar o pensamento, 17ª ed. Rio de Janeiro: Bertrand Brasil.

Image Credits

Fig. 1: Distribution of slums – Municipality of São Paulo – 2016
Source – Secretaria Municipal de Habitação (Municipal Housing Bureau)
http://infocidade.prefeitura.sp.gov.br/mapas/9_distribuicao_das_favelas_2016_10251.pdf
Fig. 2: Irregular occupations in São Paulo municipality
Source – Municipal Housing Bureau
https://g1.globo.com/sp/sao-paulo/noticia/cidade-de-sao-paulo-tem-206-ocupacoes-onde-moram-45-mil-familias.ghtml
Fig. 3: Examples of housing developments implemented by the Minha Casa, Minha Vida Program
3A - Sirius Residential – Campinas city – São Paulo State
Source - http://anpur.org.br/app-urbana-2014/anais/ARQUIVOS/GT1-202-110-20140530195511.pdf
3B - Piauí State
Source - http://www.appm.org.br/media/uploads/Serra1.jpg
Fig. 4: Prestes Maia Building - 2016
Photo by: Gustavo Takatori
Fig. 5: On the left, a patio between the two towers of the Prestes Maia building; on the right, the view of the ground floor
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Fig. 6: View of the common areas on two different floors
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Fig. 9: Final study of insulation and ventilation for the building facades. The darker green area represents the best situation and the red shows the worse one
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Fig. 10: Occupation proposal of the standard floors
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Fig. 11: Plans for the ground floor, the mezzanine and the basement

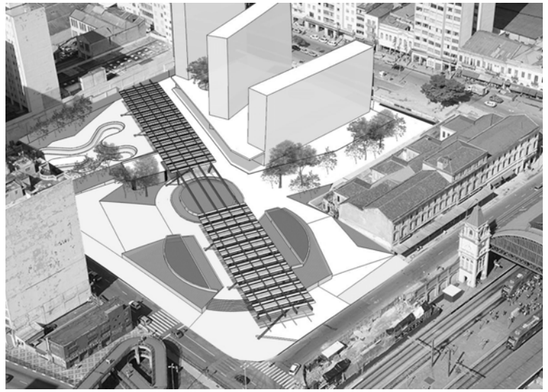

Figure 13: Occupation proposal for the area surrounding the Prestes Maia Building.

Author - Gustavo Takatori
Fig. 12: On the left a construction site located in front of the Prestes Maia building, at the time that a metro station was implemented. On the right, after the implementation was concluded, we can observe the huge empty space left behind, a space that could be used for new housing options and leisure areas
Source - http://tetraarq.com.br/projetos.php
Fig. 13: Occupation proposal for the area surrounding the Prestes Maia Building Author - Gustavo Takatori

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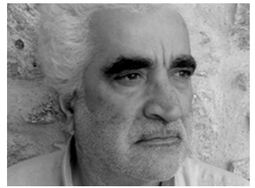

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Reuse of Modernist Buildings: professional practices and pedagogical experiences

Architecture is facing new challenges caused by developments like globalization in general, global warming and demographics changes. These trends have strong impacts on the architect and related specialists. Because of these changes in the architects profession there is a demand for adapting the training of architects accordingly. This question is especially relevant in dealing with urban areas where the 20th century buildings are waiting for stratic interventions, ranging from re-novation to demolishing.

The architect needs new tools because just drawing is not enough anymore to understand neither the building nor the people who live there. The methodologies are more complex because they have to integrate not only the technical and spatial dimension but also the social one. This inclusive approach demands not only for new tools but also needs the dialogue with other disciplines, promoting an effective interdisciplinarity.
In order to train this interdisplinarity spirit for future architects, in architectural education the design studio should be more a laboratorium, than a workshop, where new tools and methods are explored and tested by means of research.

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